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ENGINEERING THE FUTURE

PROF. T G SITHARAM
Chairman and a Civil Engineering Veteran
All India Council for Technical Education (AICTE)

INSIDE **IIRF**
BEST ENGINEERING COLLEGES-2023

SOON-TO-BE ENGINEERS TAKE A DEKKO

Here's an opportunity that doesn't come by too often. Tata Technologies has launched a competition called InnoVent that aims to provide engineering students in India a chance to showcase their creativity and come up with solutions that address challenges facing the manufacturing industry. The idea is to inspire the next generation of engineers to innovate solutions for the future, the company says.

Third- and fourth-year engineering students across India can apply to participate in this competition. All you need to do is propose innovative projects that address real-world problems. The projects can span areas like electric or autonomous vehicles, data, cybersecurity, smart manufacturing, Artificial Intelligence or the Internet of Things (IoT).

Teams that are shortlisted will be given all innovation tools and technologies. Besides, Subject Matter Experts from Tata Technologies will mentor and guide the shortlisted project teams. The company has stressed that teams with women engineers and special needs students will get an advantage when the projects are assessed on diversity, novelty, feasibility and impact.

The top three winning teams stand to win a total cash prize of Rs. 4.5 lakh and all winning members will be offered a paid internship at Tata Technologies.

The last date to submit the projects is August 31. So, don't wait. Get to work.

"We believe that Tata Technologies InnoVent reflects our commitment to engineering a better world for our youth by collaborating with academia and empowering young innovators with a platform to learn, exhibit creativity and develop novel solutions. As part of the program, we have identified real world challenges that are being faced by the manufacturing industry and I am looking forward to receiving innovative project entries that we can mentor and incubate," said Warren Harris, MD and CEO of Tata Technologies.

Tata Technologies innovation is "underpinned by a can-do attitude, a value that propels us to question existing frameworks, innovate new solutions, and address our customers' business challenges," said Santosh Singh, the company's EVP. He added that he was "specifically looking forward to the participation of women innovators and specially-abled team members."

Women engineers in India, or a lack of them, is a topic we have majorly touched upon in this month's issue. Why are there such few women in core engineering fields? Is it a global phenomenon or is this dearth special to India?

What we found out was that the issue lies with the general Indian mentality that the girl will have to work mainly with men, what will her future in-laws or husband think, she will be building roads and bridges – that's a man's job.

It's time we ponder over this archaic mindset.

Happy reading.

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Chairman and a Civil Engineering Veteran
All India Council for Technical Education (AICTE)

CORE ENGINEERING STUDENTS

WILL HAVE A FLEXIBILITY TO PURSUE MINOR DEGREE COURSES IN EMERGING AREAS ALONG WITH CORE COURSES

All India Council For Technical Education and a civil engineering veteran, **Prof. T.G. Sitharam** talks about his ambitious plans for engineering and technical students of India. In an exclusive conversation with **Tanay Kumar**, Special Correspondent, Education Post, the AICTE chairman informed that the council will soon launch a placement portal and minor degree courses, which are going to be beneficial for students, teachers and professors.

Your academic journey is rather inspirational. Please tell us about your school days and family.

I did my primary and high schooling in two different government schools of Chitradurga, Karnataka. For my higher studies, I moved to National College in Bengaluru. As a student, I always had a thirst for knowledge and curiosity that pushed me to explore various subjects. I was lucky enough to have the most supportive parents who encouraged me throughout my learnings. They supported me, guided me and provided me with all the required resources so that I can pursue my dream without any hindrance. I must acknowledge the hard work my parents have put in to educate me and my sisters.

My parents always knew my potential and trusted it positively, their belief in me has actually worked as a fuel to boost my motivation and helped me to become the person I am today. I am so grateful for their guidance and the values they have instilled in me, which have been instrumental in my journey of personal and intellectual growth.

I come from a middle class family. My father, T.S. Gundu Rao, who is now 87, was a village accountant and a farmer by profession. My mother, N. Vatsala who is 82 years old is a homemaker.

Both my parents live in our hometown Challakere in Chitradurga. I have three sisters who are graduates and are happily living in Bengaluru with their families.

My wife, Dr. M.V. Anuradha, is a scientist by profession. However, after we became parents, she decided to dedicate her full time to our children and I respect her decision. My son, Aditya Bhargava, who is 24-year-old, is pursuing his Master's in Mechanical Engineering and my daughter, Arundhati Sitharam, is currently pursuing her Bachelor's in Artificial Intelligence and Machine Learning.

Coming back to my education, I am proud to say that I have always been in the top list of students and also received a government scholarship which used to be conferred on the merit basis.

I completed my Bachelor's in Civil Engineering in 1984 from the Government BDT College of Engineering in Davangere, Karnataka, which was then the part of the University of Mysore. I did my post-graduation from the Indian Institute of Science in Bengaluru in 1986 with a sub-branch of Civil Engineering. After working for about a year, in 1988 I pursued for my PhD from the University of Waterloo in Ontario, Canada in the domain of Civil Engineering. I received research and teaching assistantship from the University of Waterloo for the entire period of my stay there.

Further, I moved to the University of Texas in the US from 1991 to 1994 for my post-doctoral studies in the area of Geo-mechanics. It was such an honor for me as I moved again to the Indian Institute of Science, Bengaluru in 1994, not as a student but as a faculty at the Department of Civil Engineering. I was also the Chair Professor in the area of Energy and Mechanical Sciences [Karnataka State Industrial & Infrastructure

Development Corporation Limited (KSIIDC) Chair] at Indian Institute of Science, Bangalore from 2015 to 2018.

Geomechanics and Geotechnical Engineering have been one of your repertoires. What exactly is Geotechnical Engineering and how is it different from geology and geophysics?

Geotechnical engineering is a discipline within Civil Engineering that focusses on behavior of geomaterials and engineering properties of earth materials using the principles of soil and rock mechanics for the design of earth structures. However, Geology and geophysics are related to the earth sciences. Geology primarily studies the earth's materials, processes, and history, with a strong emphasis on rocks, minerals, and the formation of geological structures. Geophysics, on the other hand, explores the physical properties of the earth and its subsurface using physics and mathematics. It involves studying seismic waves, gravity, magnetism, and other geophysical phenomena to understand the earth's internal structure and processes. The fields of geotechnical engineering and engineering geology have overlapping areas but geotechnical engineering is aligned more towards civil engineering. Geotechnical engineers use their knowledge to determine the properties (physical, chemical and mechanical)

"Today, there is no need for parents to pressurize or advice their children to opt only for science or technology courses. Today, with confidence and conviction, anyone can study any course and can have ample of opportunities. Secondly, thanks to the National Education Policy 2020 (NEP), which offers freedom to take subjects and get evaluated."

of soil and rock for the design of earthworks, foundations, earth dams, embankments, bunds, tunnels and retaining structures. For last 30 years, I was involved in teaching geotechnical engineering subjects and carried out research in broad areas of geotechnical engineering, earth sciences, design of earth filled dams, site investigations of ground conditions to determine seismic hazard at ground level considering local site effects and determine depth of foundations.

Thankfully, I was part of a committee, which has been constituted to review foundation work related with Ram temple, Sri Ram Janmabhoomi Tirth Kshetra, Ayodhya; and to suggest effective measures required for the temple's foundation. I was also listed in the world's top 2% of scientists for the most-cited research scientists in various disciplines by Stanford University in 2020, 2021 and 2022. I carried out seismic micro-zonation of many urban centers in India, like Bengaluru, Lucknow, and Delhi NCR region. I was the President of Indian Society of earthquake Technology (ISET) located in IIT Roorkee for the last 4 years until April 2023. I was also recipient of Honorary fellowship of Indian Geotechnical society (IGS) and in addition I was Executive Committee member of Indian Geotechnical Society and received life time contribution awards from IGS.

The PhD program in Transportation and Infrastructure Engineering at IISc Bengaluru is your brainchild. What was the reason behind introducing this particular branch for research?

I started the Centre for Infrastructure, Sustainable Transportation and Urban Planning (CISTUP) at the IISc in 2009, the year which marked the centenary celebrations of the institute. Base funding for the program was from the administrator of the Government of Karnataka and many valuable inputs were received from prominent professors and personalities. Total fund received was Rs. 30 crores.

The vision of CISTUP was to become an eminent center for impactful and multidisciplinary research, education, and technology transfer in the following areas: multimodal transportation science, systems engineering, and technology; sustainable transportation systems and urban planning; and Infrastructure systems.

The mission was to provide thoughtful leadership for planning, operation, design, management, and policy of transportation systems in India through the following activities:

- creation of scientific knowledge (through high impact publications),
- decision-support tools, and technology solutions;
- education of next generation transportation leaders;
- training of transportation professionals and capacity building for decision-makers; and
- collaboration with government, industry, and other academic institutions.

The introduction of the PhD program in Transportation and Infrastructure Engineering at IISc Bengaluru stems from the critical need to address the complex challenges faced by transportation systems and infrastructure networks. This specialized branch of research

recognizes the indispensable role of transportation in economic growth, sustainability, and societal well-being. By focusing on this field, the program aims to cultivate a pool of experts who can develop innovative solutions, optimize transportation networks, improve infrastructure resilience, and advance sustainable mobility options. It is a timely initiative that aligns with the evolving needs of a rapidly urbanizing world and holds immense potential for shaping the future of transportation and infrastructure engineering.

In February last year, under your chairmanship, IIT Guwahati introduced the Master in Liberal Arts. How can Indian students leverage their career from liberal arts as most parents in the country want their children to opt for STEM courses?

The Master in Liberal Arts program introduced by IIT Guwahati offers Indian students a unique opportunity to leverage their career in non-STEM fields. While STEM courses are often favored by parents, but pursuing liberal arts can provide a range of benefits. Liberal arts education develops critical thinking, communication, and problem-solving skills, which are highly valued in today's dynamic job market. Students can explore diverse subjects such as literature, philosophy, social sciences, and arts, gaining a well-rounded education. This multidisciplinary approach prepares them for a variety of careers, including management, journalism, public policy, entrepreneurship, and creative industries. Embracing liberal arts opens doors to a world of possibilities beyond traditional STEM pathways.

Today, there is no need for parents to pressurize or advice their children to opt only for science or technology courses. Today, with confidence and conviction, anyone can study any course and can have ample of opportunities. Secondly, thanks to the National Education Policy 2020 (NEP), which offers freedom to take subjects and get evaluated.

As the director of IIT Guwahati, I was responsible for creating five new schools and five new academic centers in trans-disciplinary areas at IIT Guwahati during 2020-21. During my tenure of three and a half years, IIT Guwahati got the second rank in citation per faculty in India (Rank 41 globally) in the QS world ranking 2022. IITG jumped 95 ranks from 2019 to 395th rank globally in 2022. In the NIRF ranking, IITG ranked eighth rank in engineering in 2021 and earlier positioned at seventh rank in 2020. In the NIRF ranking, IITG maintained its seventh rank in engineering under my leadership. I also created some new industry Interaction and special initiatives (II&SI) cell at IITG and has attracted a large number of companies and incubated a large number of start-ups. I led research park and Technology Incubation Center at IITG effectively. I also improved research environment at IIT Guwahati and also successfully got additional philanthropic funds to start the school of Data Sciences and Artificial Intelligence; and, the School of Agro & Rural technologies. I also planned to upgrade scientific infrastructure at IIT Guwahati. I developed a strategic partnership with Government of Assam in establishing a medical school and a commitment from the government of Assam to

start a state-of-the-art multispecialty hospital at IITG with partnership.

I also created a new Industry Interaction and Special Initiative (II&SI) group at IITG and has attracted 22 numbers of companies at Research Park and incubated a large number of start-ups in Technology Incubation Center of IITG. In 2020-2021, IITG has transferred about 20 technologies to industries during this pandemic.

Under your leadership, IIT Guwahati signed many MoUs with a number of universities, ranging from Ethiopia's Bahir Dar Institute of Technology to Japan's Kyoto Institute of Technology. How did these MoUs benefit Indian students?

IIT Guwahati has established several MoUs with universities worldwide, benefiting Indian students in numerous ways. These partnerships are targeted to foster collaborative academic and research activities along with exchange visits of faculty, research staff and students. Memorandums of Understanding (MoUs) have been signed with a number of institutions in Asia, Europe, Australia, USA and Canada which seek to promote institutional collaborations ranging from student and faculty exchange, student internships, joint conferences, and workshops to joint research projects. However, joint degree programs started with Gifu University is very unique one, where Japanese students also spend a couple of semesters at IIT Guwahati, besides IITG students taking courses in Gifu University.

Through the office of the Alumni and External Relations (AER) at IITG, we facilitated the interaction and developed academic, industrial and research collaborations. The collaboration with Ethiopia's Bahir Dar Institute of Technology facilitated our students to gain cross-cultural experiences and exposure to different educational systems. Additionally, the MoU with Japan's Kyoto Institute of Technology led to joint research projects, allowing Indian students to engage in cutting-edge research alongside international scholars. These collaborations enhanced the educational experience of Indian students, fostering global perspectives, encouraging knowledge exchange, and facilitating academic growth through international cooperation.

What are the challenges of proliferating higher education in North East India, especially technical and scientific, as you have tremendous knowledge of the region?

In the past, the challenges of proliferating higher education in the northeast of India were: geographical reasons (not well connected); developmental reasons (poorly developed areas); and, tensions between tribal people and migrant people from other parts of India.

However, change and improvement is happening for the last several years. Today, Guwahati is very well connected to the mainland and it is developing as a major route for linking Southeast Asian countries. IIT Guwahati has emerged as a destination for many students and faculty across India and has students coming from 600 districts of India. IIT Guwahati has played a major role in the development of higher education in the region connecting all NIT's in eight states and creating a scientific infrastructure for the entire northeast. IITG aims to promote

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entrepreneurship development and generate technology to benefit society.

I was the director of the Indian Institute of Technology Guwahati, Assam for 3.5 years (from July 2019 to December, 2022). I am also in the Board of Governors at CIT, Kokrajhar and heading the Board of Management of North East Regional Institute of Science and Technology (NERIST), Nirjuli, Arunachala Pradesh. I am also the Director (additional charge) at Central Institute of Technology Kokrajhar, Assam for 1.5 years (May 2021-November 2022).

When COVID-19 started in March 2020, IIT Guwahati has been at the forefront to fight the spread of coronavirus and was providing scientific support, extension of sophisticated instrument facilities as well as involved in the immediate development of life-saving equipment to Assam State and Guwahati Medical College and Hospital (GMCH).

To improve the administration, research and teaching, which are the three pillars of any educational institute, attempts were made to properly co-ordinate these pillars for the success of the institute. In the last 28 years of IIT Guwahati's journey, IITG has built the world class infrastructure to impart quality education and research in the northeastern part of the country to serve the society at large. Today, IIT Guwahati is a tower of excellence contributing to the growth of nation and northeast in particular. Steps were taken to collaborate with institutions and organizations in the northeast India to move from tower of excellence to be a network of excellence in the northeast.

Last year, Former IIT Delhi director V. Ramgopal Rao mentioned that a majority of students want to opt for either Computer Science Engineering or its allied branches, not the other branches like mechanical, electrical, civil, chemical etc. How can this situation be addressed?

We (at AICTE) have provided greater

flexibility to students by opening all minor courses for all engineering disciplines, so that a civil engineering student can also pursue a minor course in information and technology and become job ready during their stay at the institute. To improve admissions in core engineering courses, including civil, mechanical and electronics, the AICTE will now allow students to pursuing these programs flexibly to also pursue a minor degree in any emerging area.

The minor degree concept was introduced by the regulator of technical education in 2020-21 to make students ready to work in the industry. However, not all minor courses are open for core engineering students. The new rules have been reflected in the AICTE's approval process handbook (APH) of 2023-24.

The council allowed teachers of core engineering courses to take 18-credit online course on emerging areas for the upcoming academic session and get certified. The AICTE will launch a placement portal for engineering colleges in rural areas and semi-urban areas, for which more than 1800 industries have agreed to be partners to improve the situation for core engineering programs. The AICTE has created more than 2.5 crore internships. AICTE has asked all affiliated engineering colleges to promote these courses by interacting with industry experts, introducing compulsory internships, and providing hands-on experience.

Q. AICTE Training and Learning (ATAL) Academy is one scheme that will empower faculties. What is this scheme and its procedures?

This initiative aims at empowering faculties in technical institutions. The scheme focuses on enhancing the skills and knowledge of faculty members through specialized training programs. The procedures involve inviting proposals from reputed institutions, organizations, and industry experts to conduct faculty development programs in various domains. These programs cover emerging areas such as artificial intelligence, data analytics, robotics, and entrepreneurship. The ATAL Academy provides financial support to selected proposals, ensuring access to quality training for faculties and promoting the overall growth and development of technical education in India.

Q. In January last year, AICTE tied-up with Khadi and Village Industries Commission (KVIC) to help students get internship opportunities. What are the achievements of this initiative and future ambitions?

The collaboration between the AICTE and the Khadi and Village Industries Commission (KVIC) has yielded remarkable achievements in providing internship opportunities to students. Since the beginning of this partnership in January of the previous year, numerous students have benefited from this scheme, gaining valuable practical experience in the khadi and village industries sector. These internships have enabled students to develop essential skills, explore entrepreneurial ventures, and contribute to the sustainable development of rural communities. Looking ahead, the AICTE and KVIC aim to expand the program's reach, fostering greater participation and encouraging students to actively contribute to the growth of the khadi and village industries in the future.

AICTE has also tied up with Unnath Bharat Abhiyan (UBA)

to adopt five villages in and around AICTE institutions.

The policy document of AICTE's PARAKH (Students Learning Assessment) states its mission for policymakers and institutions to assess global competitiveness of students, faculty members and stakeholders. What are the achievements of this initiative?

PARAKH (Performance Assessment, Review, and Analysis of Knowledge for Holistic Development) Students Learning Assessment by the All India Council for Technical Education (AICTE) has made significant strides in assessing the global competitiveness of students, faculty members, and stakeholders in India. This rational initiative has yielded several noteworthy achievements. First, PARAKH has enhanced the overall quality of technical education by introducing standardized assessments and benchmarks. It has fostered a culture of continuous improvement and accountability among educational institutions. Second, PARAKH's focus on assessing student learning outcomes has resulted in better career prospects for graduates, as they are equipped with the necessary skills demanded by the global job market. Lastly, PARAKH's implementation has enabled policymakers to identify areas for targeted interventions, leading to the refinement of educational policies and practices. Overall, PARAKH has played a pivotal role in strengthening India's education system and enhancing its global competitiveness. The World Bank has selected PARAKH as one of the main projects for funding for the year 2023-24.

Related to the same question, how will PARAKH be different from the National Skill Qualification Framework?

PARAKH, which stands for holistic development, is a recently introduced initiative in the country aiming at transforming the assessment system for students. It differs from the National Skill Qualification Framework (NSQF) in several ways. While NSQF primarily focuses on vocational skills and certifications, PARAKH is a comprehensive framework that assesses a broader range of skills, including academic, co-curricular, and extracurricular domains. PARAKH emphasizes a holistic approach to evaluation, considering not only theoretical knowledge but also practical application, critical thinking, problem-solving abilities, and life skills. It aims to provide a more accurate assessment of a student's overall development and readiness for higher education or the workforce.

Many countries around the world are emphasizing on Green Engineering. What is the vision of AICTE regarding this futuristic branch of sustainable development?

AICTE envisions a significant role for Green Engineering in fostering sustainable development. With the growing concern for environmental degradation and the need for sustainable practices, AICTE promotes the integration of green principles into engineering education and research. The council emphasizes the development of environmental friendly technologies, energy-efficient systems, and eco-friendly infrastructure. AICTE encourages engineering institutions to offer programs that focuses on renewable energy, waste management, pollution control, and sustainable design. By fostering a culture of innovation and research in green engineering, AICTE aims to create a workforce that can contribute to a greener and more sustainable future for the nation and the world.

This year, the AICTE has taken a resolution to plant one crore saplings involving all students of AICTE institutions and other universities through the program – "One Student and one Tree." Further, jointly with an NGO, AICTE is implementing NET ZERO campus in 75 institutions as a first step.

The AICTE will launch a placement portal for engineering colleges in rural areas and semi-urban areas, for which more than 1800 industries have agreed to be partners to improve the situation for core engineering programs. The AICTE has created more than 2.5 crore internships. AICTE has asked all affiliated engineering colleges to promote these courses by interacting with industry experts, introducing compulsory internships, and providing hands-on experience. AICTE permits to establish new institutions in engineering and technology in the academic year 2023-24. The application for establishment of new Institutes will route through National Single Window System (NSWS) portal instead on AICTE web portal directly as per the directives of Ministry of Education.

Everyone has hailed AICTE's PRAGATI scheme that promises adequate financial support for female students. Is the AICTE taking some initiatives for gender inclusivity, including transgenders as well?

The council has been actively promoting gender inclusivity in the field of education. In addition to the PRAGATI scheme, which provides financial assistance to female students, AICTE has taken several steps to support transgender students as well. We have issued guidelines to ensure a safe and inclusive environment for transgender students on campuses. AICTE also provides scholarships and financial aid to transgender students pursuing technical education. AICTE's initiatives reflect its commitment to fostering an inclusive and equitable educational ecosystem for all students, irrespective of gender identity.

APH 2023-24 has also taken several steps to ensure safety and healthy environment for girl students in campus. From this year, Institutes must have 24x7 women helpline number and a security system in the campus for providing safety to students and female staff.

What steps is the AICTE sternly taking to arrest malpractices in engineering and management institutions?

AICTE has adopted "Light but Tight" approach for approval of new colleges and new programs with mandatory inspections to check weather proper implementation are being done by the colleges or not. It is very important to mention that AICTE developed several quality initiatives, which are being monitored through ranking (NIRF ranking), accreditations (NBA/NAAC), creation of

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Autonomous Institutions and benefits are provided to the institutes who are doing well in NBA/NAAC/NIRF ranking. The council will start random inspections to check whether these institutes have provided correct information and taken quality initiatives to improve the quality of education. In addition, AICTE has adopted digital technologies for data presentation and also to bring transparency in the operation. We have also made our grievance redressal system completely online using a portal and IVRS assisted phone complaint system.

Last year, the AICTE put a halt on approval for opening of new engineering colleges which has been extended till 2024. Please share rationale behind this decision and the extension.

Yes, the council had put halt on approval until last year. The council had announced moratorium on opening new institutions in traditional areas of engineering & technology at degree, diploma and PG Level from 2020-21 onwards for two years in 2019. It was reviewed in 2022-23 by an expert committee which has recommended to continue the moratorium in 2022-23 with few exceptions. Again, this moratorium is reviewed by another expert committee in 2023-24. And, as per the recommendations of this expert committee, AICTE permits to establish new institutions in engineering and technology in the academic year 2023-24. The application for establishment of new Institutes will route through National Single Window System (NSWS) portal instead on AICTE web portal directly as per the directives of Ministry of Education.

In line with the National Education Policy (NEP) 2020, AICTE has done many reforms which include starting of multiple programs in an institution, minimizing various compliances, strategical steps to enhance Gross Enrolment Ratio (GER), to promote collaboration with the foreign universities etc. The AICTE encourages its institutions to have collaborations with foreign universities under Collaboration and Twinning Program. Until last year, the top 100 NIRF ranked institutions were permitted to collaborate with the top 500 QS (or) Times Higher Education (THE) ranked foreign universities. For 2023-24, top 100 AICTE approved institutions having rank in the NIRF, are permitted to have collaboration with the top 1000 QS / THE ranked universities of the world.

NEP 2020 emphasizes to revitalize the educational ecosystem in the following areas:

- Financial assistance/scholarships to needy students
- Conduct outreach on opportunities
- Make admissions more inclusive
- Inclusive curriculum
- Increase employability potential
- Courses in Indian languages
- Disabled- friendly facilities
- Bridge course for SEDGs
- Provide socio-emotional and academic counselling
- Sensitization on gender-inclusivity
- Strict non-discrimination/anti-harassment rules
- Setup Institutional Development Plans (IDPs)

Your academic journey has predominantly been in Civil Engineering. Other than engineering, were there any other courses that you had wanted to study.

B.Sc (Agriculture) and Medicine (health

care) were the other two courses of my choice when I was in 12th standard, back in 1978. Coming from a lower middleclass family this was our idea when I passed class 12th and in those days' options were also limited.

Please share a few recommendations for all students to read, whether they belong to engineering or any other branch.

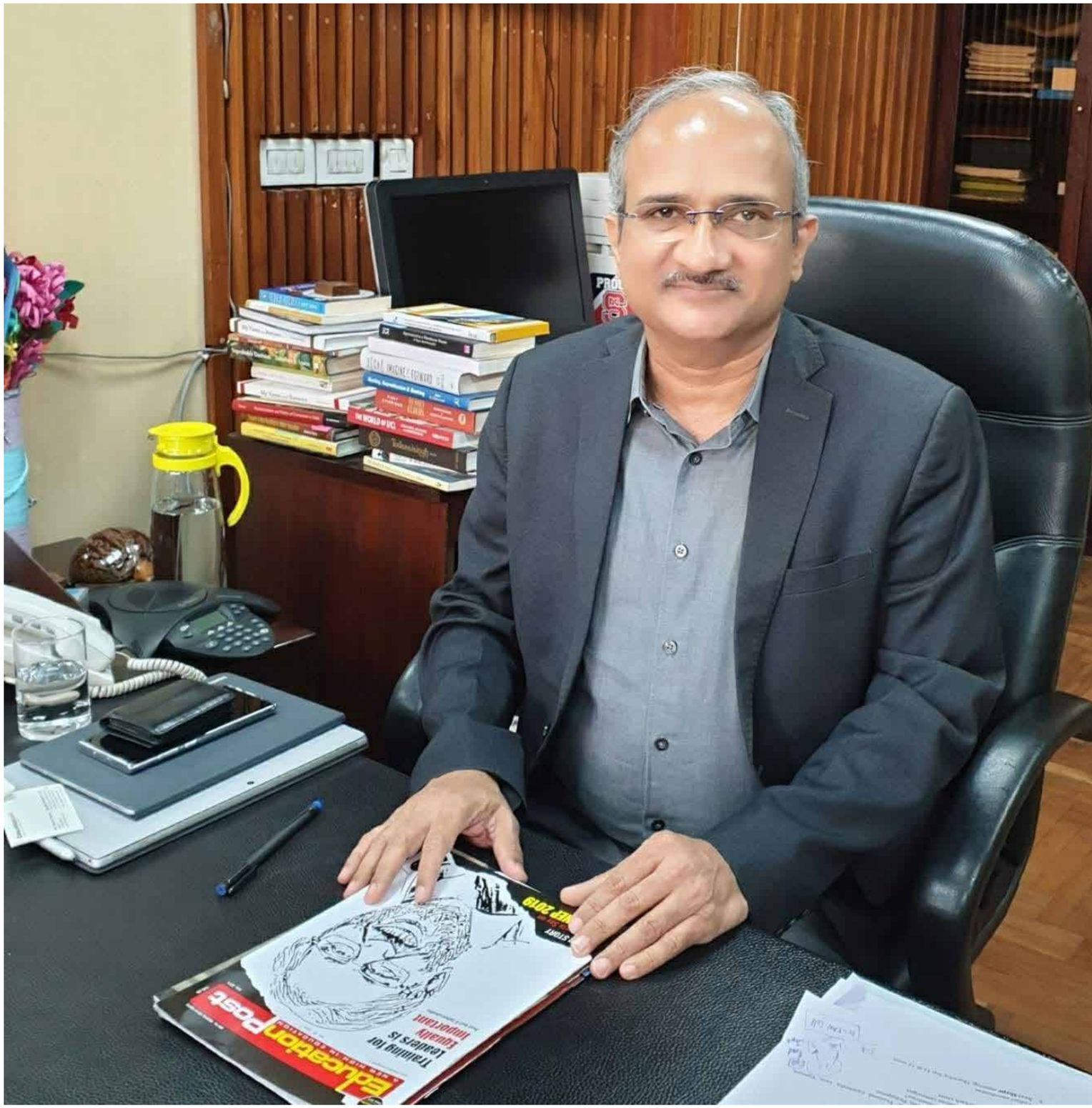
1. **"Sapiens: A Brief History of Humankind" by Yuval Noah Harari:** This thought-provoking book provides an insightful overview of the history and development of humankind, exploring various aspects of human culture, biology, and society. It offers a broader perspective and encourages critical thinking.
2. **"Thinking, Fast and Slow" by Daniel Kahneman:** This book delves into the fascinating realm of human decision-making. It explores the two systems of thinking that drive our actions and provides valuable insights into cognitive biases, rationality, and judgment, which can enhance problem-solving skills.
3. **"The Lean Startup: How Today's Entrepreneurs Use Continuous Innovation to Create Radically Successful Businesses" by Eric Ries:** This book introduces the concept of the lean startup methodology, emphasizing the importance of experimentation, iterative development, and validated learning. It is relevant for students interested in entrepreneurship, innovation, and problem-solving.

These books offer valuable perspectives on history, psychology, and entrepreneurship, which can contribute to a well-rounded education and help students develop critical thinking, decision-making, and innovation skills.

Prof. V. Ramgopal Rao
Group Vice Chancellor
Birla Institute of Technology & Science
Pilani Campuses

INDUSTRY-ACADEMIA COLLABORATION SHOULD BE MANDATORY BY LAW

Providing one solution to the plight of industry-academia gap, **Prof. V. Ramgopal Rao**, Group Vice Chancellor at the Birla Institute of Technology & Science, Pilani Campuses shares his insights with **Tanay Kumar,** Special Correspondent, Education Post.



BITS Pilani Campus

We come to know about a recent development at BITS Pilani that the institute will give students and faculty a year off to work. What brought about such a pathbreaking decision?

We are only highlighting the possibilities. See, in India, everybody is in a kind of hurry to finish their education and take up a job. On the other hand, in the West, students easily take a year off and go around the world, explore possibilities, and observe things at several places and come back to finish their study. So, taking breaks in the USA and Europe is very common. Some people in the West opt to work for a year in the midst of their education and then come back to complete their study.

In fact, at BITS Pilani, after graduation, if a student has not found what they are looking for in the company they got placed during campus placements, they can come back and look for other jobs out of the placement activities by placement cells. So, we are only helping them with these opportunities and try out something new. Letting them explore other possibilities of the world within their study may enable them to come up with ideas to start their own ventures and start-ups.

Students and people will have to be enabled to start their own micro and small enterprises, if India wants to solve its unemployment issues. If our demographic dividend doesn't explore these possibilities and other opportunities, it may not utilize its full potential.

We thank you for pointing out an issue last year about a majority of students looking only for CS/IT, and even many seats of electronics going unfilled. In your view, how can this situation be resolved?

Solution has to come from all the different levels. Probably, the fear of missing out is a driving factor behind opting CS/IT in the majority. Getting a job right after obtaining a Bachelor's degree could also be a reason. Another apprehension could be that pursuing higher education in the non-CS/IT branches would only mean becoming a professor. Unless one wants to be in the academic area, many students don't really want to pursue higher education. So, these are the reasons that students are taking that decision.

Awareness is the key issue here. Even many entrepreneurs with a Bachelor's degree in engineering are majorly in either e-commerce or FinTech sectors. Majority of the unicorns have been founded by B.Tech. graduates and many of them come from a particular community where doing business comes naturally to them and when they come to a place like IIT, they receive a training as well.

In the last 10 years, we haven't seen any start-up that became a unicorn in biotechnology or nano-technology or space or quantum technology space. And, it hasn't happened because one needs a much deeper understanding of these subjects to innovate in these areas, which can only be attained by working either in the related industries for long time or by pursuing higher education and research.

Many students from core engineering sectors, e.g. biotechnology, are also entering the IT sector. Unfortunately, a bio-technology company would hardly pay that amount of remuneration to an entry-level biotech professional than an IT firm. Firms in the core engineering sectors usually look for PhD students or post-graduates at least, and many students want jobs just after their graduation. Seeking a job just after graduation is not a bad thing, but it has become a kind of vicious cycle.

Plus, suppose if a person has worked for a long time in other core branches and if they want to start a company, they will struggle to get venture capitalists and investors for the company as investors don't wait for eight or ten years to see some substantial profits in these branches. So, that's also a predicament. And government funding is available for research, but the funding to start a business in these branches is too low.

Why are PhD graduates are not encouraged to work with industry?

It all goes to just one thing – academia-industry collaboration, which has been severely missing in our country for a long time. And, the industry sector is hardly keen on supporting research in academia, so they barely see its relevance. If any company doesn't feel relevance of any research, it will save money and will train a Bachelor's student to work at it.

To address this plight, there is a program known as the Prime Minister Fellowship Scheme, under the collaboration of Department of Science and Technology, Confederation of Indian Industries (CII) and Federation of Indian Chambers of Commerce & Industry (FICCI). Under this scheme, the DST provides the basic scholarship and the industry partners are supposed to provide the matching funds. So, for example, a research student will get twice the amount of standard fellowship that students get in the other streams. The government also provides Rs. 2 lakhs per year as contingency.

All they expect the industry to provide Rs. 35,000 per month for a period of four years and give the research scholar a problem or important area to work on, related to the sector. Under this scheme, a student can even do the internship at the company as part of PhD and there can also be a mentor from the industry.

So, it is a beautiful program in which industry can work with the academia on the problem the industries find important. The DST also announced a thousand fellowships, but there were not enough industry takers and there were around 150 students at max in the period of five to six years. The program is running, but it hasn't made the required impact.

Then, are the industries in India also a bit aversive or apathetic towards industry-academia collaboration?

Most of the industries are short-sighted. Most industries keep chasing the targets from one financial quarter to the second. Any collaboration between the industry and academia needs a long-term collaboration. It can't happen in one quarter that I give some money and within a quarter or even a year, I start reaping profits.

I have always argued that the only way to have a solution in this situation to have some policy intervention from the government

to mandate industries to spend a fragment of their corporate social responsibility (CSR) fund on bridging the gap with the academia. Right now, there are five or six fields in which CSR funds are allowed to be spent and academia is one of them, but it is hardly looked as an option for CSR.

So, if there was a mandate that a part of CSR fund would be utilized into the academia, that can surely become a game-changer. Also, by doing so, the industry sector will get to know to work and collaborate with the academia and they can share their expectations as well.

CII has recommended making industries participate and work with the academia and many in the industries have also felt that unless it is mandated, hardly any industry or sector will work with the academia to go beyond a financial quarter or even a year.

In one of your articles, you mentioned a term - Adaptability Quotients. Why do you think that it is necessary today for the youth?

One perceptible problem with our younger generation is that they are more comfortable with machines as compared to humans. If you observe any room, if there are six people in it, there is a big possibility that each one of them will be engaged with their own mobile phones and they won't talk to one another. So, due to these things, they feel lots of inertia and emotional issues when they join any industry because every industry or organization is based on teamwork. How will one adapt with another in the real and human-to-human circumstances?

In a team, if everyone talks about their superiority, how would the team work?

So, the adaptability quotient is about adapting to different people. How good you are with your team is more important than how good you are in yourself. In India, many individuals are good in themselves when they work alone, but when you put them to work in a team, problems start arising. Also, I saw many students at IIT Delhi who come from different backgrounds but struggle to adapt to a new situation and environment and then their mental health starts deteriorating.

Therefore, I mentioned the adaptability quotient in the context of adapting to the human situation.

You have spoken out about private universities paying their teachers and faculty poorly. What's the solution to this problem?

Only the government can help with this problem by implying some law. Erecting just big fancy building but not paying the remuneration the teachers and staff deserve will not help our country progress in terms of innovation. Faculties and students build an institution, not the building itself. Also, it's not difficult that the governments can't enforce colleges to pay a decent salary to their teachers.

Names of those private institutions can be counted on fingers that are paying the salary by the Seventh Pay Commission's recommendation to their teachers and such colleges are not even more than 10. It's also not good that all the regulatory and checking bodies are turning a blind eye to this very pressing issue.

And, suppose if the institute cries that their financials are not that strong that they can pay the salary as per the Seventh Pay Commission, then how are they getting the finances to run giant advertisements and campaigns.

So, in conclusion, a whole system of good teachers, infrastructure and the industry-academia collaboration is indispensable for India's growth. EP

IN DEPTH **INTERVIEW**

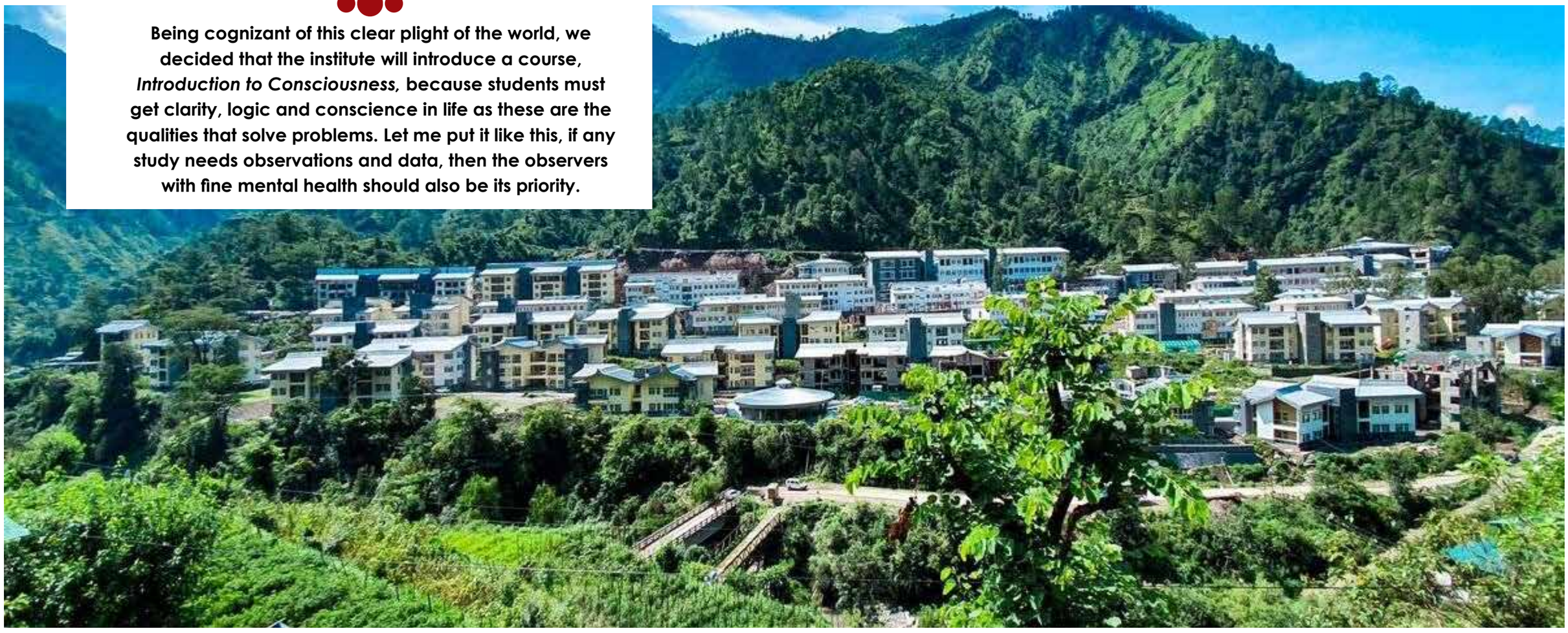
Prof. Laxmidhar Behera
Director of IIT Mandi

IIT MANDI STARTED CONSCIOUSNESS CENTER FOR STUDENTS' MENTAL WELL-BEING

A veteran of robotics-artificial intelligence and someone who has been practicing spirituality since his childhood days, **Prof. Laxmidhar Behera,** Director of IIT Mandi, talks to Education Post's **Tanay Kumar** about the balance of science and conscience in life.

IN DEPTH **INTERVIEW**

Being cognizant of this clear plight of the world, we decided that the institute will introduce a course, *Introduction to Consciousness,* because students must get clarity, logic and conscience in life as these are the qualities that solve problems. Let me put it like this, if any study needs observations and data, then the observers with fine mental health should also be its priority.



Q Being a learned person in technology, you are also a regular practitioner of Adhyatma (spirituality). We would like to know whether you have got a spiritual inclination from your family, and please tell us about your parents and early education.

Yes, it surely is the influence of my parents and family that I practice and study spirituality. Every day, before going to work, my father, Sri Kailsah Chandra Behera used to read me one chapter of Shrimad Bhagvadgita. I was born in a district of northern Odisha, Balasore. My father used to work at a public health center and after a year he was transferred to southern Odisha. Electricity used to be a big problem in those days. My father had read me many Holy Scriptures like Ramayana, Mahabharata and many others. After my school time at 5 pm, I used to spend time reading these books and it left a strong impression upon me.

During the Navratris, my mother Smt. Kamalini used to wake me up early in the morning and we used to prepare everything for the rituals and other activities. Another good thing I remember is that every morning, my parents used to tune into All India Radio Cuttack. I remember an incident when I was in the fourth standard, an ascetic visited our locality and because of his sermons and lectures, many people got inclined towards spirituality and they started reading our Holy Scriptures. It also further influenced me towards spirituality. One ascetic explained me the entire Shrimad Bhagavad-Gita. It was probably 1993 when I met a professor of IIT Delhi, who is also devotee of Lord Krishna, and several conversations on adhyatm further influenced me.

Q You have taught for almost two decades at IIT Kanpur, one of the first generation IITs, and now you're leading IIT Mandi, which is a second generation IIT. Please tell us about the differences and challenges of these two roles at two IITs of different generations.

I joined IIT Kanpur in 2001 when it used to be the number one among all IITs. At that time, I was doing my post-doctoral study in Germany. Many of the professors, who are teaching at second generation IITs, have taught at the first generation IITs. And since their establishment, first generation IITs have been attracting the brightest minds of the country.

So, in my view, the first challenge is that second generation IITs are competing with the first generation ones, and a healthy competition is always good. Whereas, the first generation IITs have many professors and mentors, second generation IITs are in continuous process to get good faculties and it is a gradual process as no institution is built within a month or even only a year.

One thing that the second generation IITs enjoy more than first generation ones is, having younger generation of mentors and professors. So, the energy level is always high at the second generation IITs as every subject wants to

enhance the level of their newly established institutions. Further, since they are younger, so both the professors and students can be trained better according to the latest science and technology.

Q IIT Mandi is in the state of Himachal Pradesh. What are the advantages that a technology institute from mountain areas offers that one in plain areas can't?

The first and foremost advantage at IIT Mandi or any educational institute in the hilly areas is that everyone enjoys fresh air. Ask anyone from the metro cities about the importance of fresh breathing air. Professors and students at IIT Mandi frequently go for a walk in the evening, and I must emphasize here that these are undisturbed walks. Research scholars take undisturbed strolls and keep pondering over solutions, papers, proposals and ideas for their research.

Second, students and professors at IIT Mandi cordially interact with the local people. IIT Mandi has developed an algorithm to cater to the problem of landslides in the hilly areas. Research scholars of the institute placed landslide monitoring systems at many places in Mandi and Kangra districts and we are constantly evolving this system. A normal landslide cuts off many villages in the hilly areas and since our scholars are evolving this solution, they enjoy great engagement with the local people.

Last but not the least, hilly areas like Himachal are eminent centers of extreme sports like trekking, hiking, paragliding, camping, etc. So, setting an educational institute in hilly areas easily offers these sports which nowadays are getting popular among youth. IIT Mandi is also working with the Himachal Tourism department about how we can enhance its tourism operations.

Q IIT Mandi is one of the few institutions that publish their annual reports in the official language of the state, i.e. Hindi, and recently regulatory authorities like UGC, are promoting to teach technical and scientific subjects in other Indian languages, along with English. What are your thoughts on this?

It is a fact that when it comes to higher education, we have been taught in the English language. It is fine for those students who have been dwelling in cities. On the other hand, it is really beneficial for those who have studied till their secondary education in local languages. Students from villages and small cities have a tendency to think in their local language, which is a very common scenario in India.

Due to too much emphasis on English, we have lost some heritage of the local language. During evaluation, I keep coming across mistakes that many of the first-year students make in their answers and they do the same in their local language as well. Language is a medium to exchange ideas and thoughts.

The government of India has taken an initiative to provide education material in the languages of our nation. In Germany, I saw that most of their laboratory professionals know English, while they talk and discuss ideas in German. So, we can learn from other parts of the world as well.

Q People are talking about the infusion of artificial intelligence in every sector, and along with robotics, this has also been your area of expertise. According to you, do the 12th standard students need to know any coding or programing before choosing core branches of engineering?

I worked as an editor of a research journal at the University of Ulster from 2007 to 2009. One might be surprised to know that in 2007, all schools in Britain were teaching artificial intelligence in their 11-12th standards. So, in the future, AI might take a good segment of the job market. After I came to IIT Mandi, I have been trying to familiarize this domain among students to prepare them for future jobs. Last year, we started a program called PRAYAAS 1.0 (Promoting and Accelerating Young and ASpiring innovators and startups) in which 100 students from state's schools were taught basic robotics, how to build one from scratch, its programing and controlling. We facilitated them to stay at the institute's campus for a full month during that training.

In the second development of this program, 200 students from Uttar Pradesh are at the IIT Mandi campus for PRAYAAS 2.0. In fact, this year our institute has invited schools' teachers as well. Teachers will train their students further when they will be acquainted with this technology.

So, every country is developing their human resource according to this future technology. We are moving with our developments. So, for the future, we'll have to keep training our secondary students for this science as it is surely going to be infused in every other technology sector.

Q The institute has partnered with some prestigious colleges in countries like Germany and Norway. Are there some criteria that must be fulfilled if an Indian institute wants to partner with these globally recognized colleges?

There is only one criteria that there should be a win-win situation for the partnering institutions. Recently, IIT Mandi completed a student exchange program with the Worcester Polytechnic Institute (USA) in which 20 WPI students stayed at IIT Mandi for three months and they worked with our students. All of them worked on socially relevant projects.

It shouldn't be like a one-way street that only Indian students go abroad and study. In September, IIT Mandi is going to have another student exchange program with a German university in which 15 German professors will also visit our campus and will work on a variety of projects.

Whenever we sign a MoU with any global institute, both the parties try to mutually benefit each other, in terms of academics, projects, research and several other things. For example, we have also signed a MoU with another global institution to set up a branch named Bachelor in General Engineering.

Q Introduction to Consciousness and Wellbeing is a course offered by IKSMHA center (Indian Knowledge System and Mental Health Applications) of IIT Mandi. How do students benefit by this course?

Lots of people often think that one has to perform many rituals in order to learn spirituality. On the other hand, it's eventually a cumulative study of body, mind, and consciousness. And, it's our treasure that it has existed in India for centuries. Crisis of mental health had already been a kind of epidemic in the world and it evidently exacerbated after the COVID-19 pandemic. In 2019, the World Health Organization (WHO) reported that one in eight people around the world are having a mental disorder, among them anxiety and depressive disorders being on the top. So, if the world's current population stands around eight billion, then staggeringly, a billion people of the world are having mental health issues and I don't need to further state that how big this number is.

So, being cognizant of this clear plight of the world, we decided that the institute will introduce a course, ***Introduction to Consciousness,*** because students must get clarity, logic and conscience in life as these are the qualities that solve problems. Let me put it like this, if any study needs observations and data, then the observers with fine mental health should also be its priority.

In this course, students are taught basics of meditation and they regularly practice it in class and every weekend, a batch of some students go for nature camping and trekking. They are also trained for their physical health also as due to a kind of fast-paced lifestyle some students often feel drowsy and a bit lethargic. They are given a band to track their sleep, locomotion and other physical activates and that data is collected to help them and their consciousness.

Stuart Hameroff, Co-founder and the director of Center for Consciousness Studies, Arizona State University in the US, really contributed to collect data of students' mental health, efficiency and their holistic well-being. And after that, we worked to introduce this course and it significantly improved their mental well-being. If I say it in one line, to help the efficiency of students and youth, we'll have to work and help them in their mental and conscious well-being, along with providing them all the teaching-learning resources. EP

A.B. Soni
Director
National Institute of Technology
Raipur

Reservation in Technical Education Can Encourage Female Participation in Core Engineering Industries

An erudite of chemical engineering, **Dr. A.B. Soni,** director at National Institute of Technology, Raipur, shared some feasible solutions with **Tanay Kumar** on how female participation can increase in engineering & technical study.

Q Right from graduation to PhD, your education has been in chemical engineering. We would like to know the motivation behind choosing this stream.

My parents were engaged in the teaching profession throughout their lives. My father was a school principal and my mother worked as a headmistress of government schools. Since my childhood, I found them rewarded by many organizations because of their sincerity and quality teaching. And so, teaching became my passion also. I completed my graduation, post-graduation and PhD in chemical engineering. In my opinion, a teacher should be an expert in his/her area. Further, during my graduation, only three to four female students were in engineering, studying either electrical or chemical. I opted to be a chemical engineer because of my interest for analytical, design and control aspects of chemical industries.

Thus, motivation can be either: your family, your likes to work in this field or your choices to go for teaching or industry in chemical engineering. So, one can find your motivation in chemical engineering based on above aspects.

Q Waste water treatment, bio-fuels, and solid fuels have been your area of interests. Please tell us about the potential of these branches for female students in the future.

A lot of waste, both in solid and liquid form is generated and there is utmost need for treatment of these wastes for which effort is needed both on research level as well as largescale so that a sustainable solution is obtained for the treatment of these wastes. In the fuel sector, alternative fuels have been the need for the hour. A few female candidates are in this stream, though it is definite that research does not bifurcate between a male or a female candidate and hence both find equal suitability in this area.

On an industrial level there is equal potential of female candidates in terms of testing, R&D and control room modelling and simulation activities. Waste generation collection, analysis, procedural treatment strategy and ultimately the scale up can be done equally well by a female candidate. Hence it's the matter of more of interest of a student (male or female) and not any lapse of not permitting a female candidature in these areas of work.

Q Applied geology, metallurgical and materials engineering, mining engineering are some very unconventional courses that NIT Raipur has introduced as a separate graduation course. In your views, how can Indian academia attract students in vocational branches, e.g. these aforementioned ones?

The vocational courses have been focused highly by the new National Education Policy (NEP) 2020 to impart specific industrial skills to the students so that their expertise in the specific area of the industries is utilized. The unconventional courses like applied geology, metallurgical and material engineering, mining engineering, have curriculum developed in such a way that they may not need to be going for Master's and PhDs since their curriculum itself is preparing them to be masters and doctorates in these special areas. Many industries have job options for these specific vocational courses as they are specialized to these areas only.

So, a student whose focus is to work in those specific areas can go for these courses to be knowledgeable in the stream. Similar courses are prevalent in various higher education institutes like aeronautical engineering, biomedical engineering, paper and pulp etc., which are meant to attract students to get their expertise in the specific areas so that their candidature for those streams could become strong during interviews and selection procedures.

Q NIT Raipur has signed many MoUs with different organizations, e.g. with Taylor made Renewable Limited or National Institute of Hydrology in Roorkee. What are some of the achievements these MOUs have brought about?

Many research projects both on Master's and Doctorate levels have been on product development, design and technology transfers/innovations pertaining to the MoUs signed by NIT Raipur. Some testing and consultancy is also going on between the organizations with which NIT Raipur had signed the MoUs. NIT Raipur is also providing solutions to

the problems raised by the experts besides students and faculty members are motivated to extend their contribution to the solution of these problems through various mini projects.

Through the exchange programs in institutes, students and faculty members are having opportunities to work in the organization with which MoUs are signed. NIT Raipur and its MoU-allies have been conducting a few training/short term courses also. The organizations are also assisting in providing training to the students of NIT Raipur.

Q It is a delight to see a woman being the head of a technical institute, but often, a large number of females are not in the engineering and technical field, even today. What reasons do you see behind it?

There is a misconception in the minds of female candidates about their suitability in the field of engineering and technology sector. However, this gap has been diminishing in the last few decades. Earlier, there were no female candidates in the mechanical engineering stream, but today, there are 20-40% female candidates in these engineering professions. Even in research areas more female candidates are now seen in interviews, owing to the research potential of female candidates.

Q By your experience, what must all of us as a society do so that more girls opt for technical and engineering courses?

- ❖ Make female candidates aware of the potential of engineering and technology and their role in engineering education.
- ❖ Have a reservation for female candidates in the engineering education sector.
- ❖ Financial support to female candidate.
- ❖ Reducing the partiality among genders, both in terms of safety, potential and working culture (hours) in the engineering profession.
- ❖ All female candidates should be provided in house campus accommodation, so that their safety aspects are taken at top priority.
- ❖ Placements to offer reservation for female candidates for on campus interviews.

Q What things should students keep in mind if they choose chemical engineering as a formal education and their career?

The mindset of a student shall have to be clear before choosing chemical engineering as a career. If the liking of a student is in the field of computation sector specially gaming, programming, coding etc., his choice should definitely be computer science or IT.

However, if the mindset is for society and environment, may it be computation; there are a wide range of areas where a student with a mindset of computer science, can see his role in chemical engineering. Chemical engineering itself has a wide aura of applications and potential that a student of any field in any time of life could see his role in the field of chemical engineering and hence contribute to the profession. EP

Dr. Ajay Kumar Sharma
Director
National Institute of Technology, Delhi

STUDENTS SHOULD STOP THINKING THAT **GOOD PAY IS ONLY AVAILABLE IN CS/IT**

Dr. Ajay Kumar Sharma, director of the National Institute of Technology, Delhi, tells Education Post's **Tanay Kumar** about why students should opt for engineering branches other than CSE/IT and why more and more research scholars should come forward to partake in the industry.

Q. In 1986, electronic and electrical communication engineering was your stream when you completed your graduation. We would like to know your motivation behind opting for this subject.

Electronic communication in India was in its nascent stage of development in the early 1980s. The introduction of the new economic policy in early 1980s led to a significant growth in the electronics hardware industry. I've always been fascinated by how technology works and how it can solve real-world problems.

When I was considering different fields of study, computer science was not a standalone major. It was folded into the math major as dual major and computer science majors were merged into some degree with majors in electrical engineering. So, I was drawn towards Electronic and Electrical Communication Engineering, as this area was advancing rapidly and there were endless opportunities for innovation. I was particularly interested in the ways that Electronics and Communication can improve people's lives in various sectors, viz. telecommunication, defence, etc. Throughout my education and work experience, I've developed strong skills in electronics, communication and computer science, including proficiency in solving real-world problems, and experience working on complex systems.

Please tell us about your transition to teaching computer science while your graduation and post-graduation were in electronics and electrical?

Being an intelligent creature on earth, a human being needs to discover the disparity between learning about technology versus using technology to learn. When I started my career as an engineer, there was no computer available in my institution. The first room-sized computer came to my institution when I was in B.Tech. final year. We used to see those big-sized computers through window screens only, as we were not allowed to work on those big machines, and these made me zealous to work on them. So, I started attaining the skills required to work on those big machines, and my decision of pursuing engineering turned out to be a passion. Over the past few years, there is a significant evolution in computer science engineering, and it's not just about studying computers. Moreover, I did my PhD in Electronics Communication and Computer Engineering. My research area during PhD was Optical communication and optical networks. I have thirst for knowledge. Being a learner, I fundamentally believe that one needs to learn new things to grow in their life and career, which is why I transited into the area of computer science engineering. Therefore, be amenable to constantly reinventing yourself.

Last year, former IIT Delhi director, Prof. V Ramgopal Rao felt sorry that many engineering aspirants are seeking only CSE/IT (computer science) over other core branches (electrical, mechanical, and civil), and this situation is almost the same in every engineering college. What do you think about this plight and possible solution for it?

Opting for CSE/IT field is due to the lack of knowledge and feedback that senior secondary students receive from the so-called educated society. Even many so-called educated ones create a hypothetical mindset in students that they will get good packages in CS/IT branch only. So, it's not a matter of student's interest rather, it's a hypothetical talk created by some. Not every student is driven towards CS/IT field. Many opt for this field due to societal pressure.

Today, there are numerous things to explore. The students must look out for different fields like Automotive Engineering, Aeronautical Engineering, Artificial Intelligence and Data Science, Medical Engineering and Science, Materials Science and Engineering, Civil and Environmental Engineering, Marine Engineering, Nuclear Engineering, Industrial Engineering, Software Engineering, Biomedical Engineering etc, and set their career accordingly. So, proper career counselling should be there for the students.

Talking about NIT Delhi, the students of electrical engineering as well as electronics and communication engineering have done remarkably well in the placements compared to CSE. The maximum CTC procured by electrical engineering, electronics and communication engineering, and computer science engineering student is 82.6 lakhs, 55.7 lakhs, and 36 lakhs respectively. The placement and package do not depend upon the branch one opts for rather it's about the skills that a student develops during their journey of graduation.

PhD scholars hardly opt for industry jobs. What reasons do you think are behind this pattern as India has been facing the industry-academia gap?

Eventually, this trend is now changing, and PhD scholars are shifting towards industry jobs. Transitioning from academia to industry can be an exciting experience, but it comes with some challenges.

Comprehending Timelines:

The research timeline in industries is crucial, whereas the scholars' work with a certain degree of flexibility, when it comes to research timelines. Thus, extending the research timeline can have a cascading effect throughout a company, resulting in business losses and investor scepticism. Hence, industrialists prefer graduate students, who work swiftly on the problems.

Pursuing Projects That Are Not Directly Related to Company Goals:

The industry focuses on manufacturing the products/delivering the services and company's success, whereas in the academics the pursuit of exciting research topics is encouraged and rewarded. As a result, academics may find it difficult to let go of intriguing research topics that may not be directly related to the objectives of the company.

Lack of Training in Business and Soft Skills:

Academic credentials such as a PhD or post-doctoral experience are rewarding, but they are not the only factor in determining one's success in industry. Soft skills like adaptability, communication, and teamwork are comparably significant. Additionally, it is essential to acquire new abilities in areas like project management, marketing, and regulatory affairs that may not have been emphasized in academia. If adequate training regarding the business and soft skills is provided to the academic researchers, a lot of successful business ideas/ start-ups can be germinated, eventually will grow to revolutionize industries.

Lack of Experience Working in Highly Collaborative Settings:

One might need to collaborate with people in business development, regulatory departments, computational science, biologists, customers, etc., depending on the size, structure, and objectives of your company. A significant number of these individuals will have totally different degrees of technical and scientific knowledge. The industry career advancement demands learning effective communication with people of different background.

To conclude, making a transition from academia to industry can be challenging, but it can also be incredibly rewarding.

The NIT Delhi's website has an intuitive and elaborative interface about research projects. What are the institute's future plans to galvanize its other research projects and motivate students for research?

NIT Delhi, though less than two-decade old Institute and represents the younger generation of NITs, has been able to garner the generous research funding of over Rs.10 crore so far. The institute has some other plans like:

Sponsored Research Policy:

The Institute recently drafted and implemented its policy for the Sponsored research projects, which aims to provide the research-oriented environment with ample support from the Institute in terms of well-equipped laboratory, trained force, interns to a faculty to not only attract, but to successfully execute a sponsored project. Only in a year, the institute can attract a handsome grant of over 3 crore from various scientific organizations as grant for sponsored research projects.

Consultancy Projects:

The Institute has recently drafted and implemented the policy for the consultancy projects. Through the said policy, the Institute can provide incentive to the faculty executing the consultancy projects. This has brought an instrumental change in the institute, and I would like to mention herewith, that the civil engineering department of the Institute has been proved focal in attracting impressive grant of about Rs 1 crore from the industries within a year.

Institute Post-Doctoral Fellowship Program:

An Institute faculty who has been able to draw a funding of more than Rs 30 lakhs shall be eligible to get a post-doctoral fellow to boost his research and leverage the same to other heights. This way, the faculty shall not only be able to mentor the Post-Doctoral Fellow, but at the same time, can jointly plan, prepare, garner funding and execute newer research projects in his/her domain with the Post-Doctoral Fellow.

Opportunities for Sponsored Post-Doctoral Fellows from CSIR/ SERB/ INSPIRE etc.:

The Institute is striving for extending support to the INSPIRE/CSIR/ SERB/ Project based etc. supported Post-Doctoral Fellows through active invite and proving the conducive environment for producing extensive research-based outcome in form of research publications, IPR, products, etc. The sponsored post-doctoral fellows are provided institutional support in terms of laboratory, supervision to the M.Tech./ PhD scholars as well as BTech students/ Summer Interns.

Support to the Start-ups:

The Institute has implemented policy for start-ups policy to provide a conducive environment for incubation of the start-ups by the Institute faculty/ students so that the start-ups can be granted space, laboratory usage, interns etc. for their further growth into full grown industries.

Galvanizing the students for Research & Developments:

The Institute is striving to galvanize the

students to excel in research and development related activities such as publications, IPR, products, copyrights etc. Special emphasis is given for higher grades to the B.Tech. and M.Tech. dissertations in case a student has produced research outcome as a part of the same.

Internship for B.Tech., M.Tech. and PhD students:

The Institute has provisioned for the Internship for the B.Tech., M.Tech. and PhD students at the Institute for duration of 3 months to 12 months for better exposure to the industrial practices, research and development practices as well as business and soft skills to the students for improving their contributions to the organizations serving after completion of the course enrolled.

The Institute is going to further revamp its website in a more interactive manner to showcase the significant research outcome over the same for wider publicity as well as dissemination.

Today, there are numerous things to explore. The students must look out for different fields like Automotive Engineering, Aeronautical Engineering, Artificial Intelligence and Data Science, Medical Engineering and Science, Materials Science and Engineering, Civil and Environmental Engineering, Marine Engineering, Nuclear Engineering, Industrial Engineering, Software Engineering, Biomedical Engineering etc, and set their career accordingly. So, proper career counselling should be there for the students.

You headed IKGPTU, Jalandhar (a tier-2 city) for three years and now you're the director of a technical institute in a metropolitan city. In tier-2 cities, what are the key areas for institutions' authorities to pay attention so that students don't leave the city for study?

One of the foundations of any civilized society is a robust educational system. As the director of a technical institute, I have observed that the education sector is plagued by numerous infrastructure gaps. The case is particularly terrible in tier-2 cities, where students are generally underserved by the inaccessibility of essential educational resources. The pitfalls are:

Lack of quality education:

In India, there are over 35,000 colleges that offer degrees. Apart from IITs and NITs, these institutes lack quality teachers, and fail to produce brilliant students. Therefore, to enhance quality education, these institutes can collaborate with subject experts from IITs, NITs, and industry for delivering lectures on weekends or any weekday after working hours.

Lack of innovation and research:

A big majority of tier- 2 institutes lack the research laboratories, and hardly encourage inquisitiveness. So, these institutes must provide research facilities like IITs/NITs, and should encourage entrepreneurs.

Lack of effective utilization of government funds:

According to the required growth of the country and our huge population, we really need big budgetary allocation for research in higher education. And, tier-2 and tier-3 cities' institutions hardly get the research fund from the allocated budget.

Thus, attentiveness towards aforementioned areas can lead to the uniformity in quality of education across the nation. EP

Yeshwanth Raj Parasmal
Co-Founder & Chief Operating Officer
21K School

INDIAN CURRICULUM IS VERY POPULAR ABROAD,

ESPECIALLY IN NON-ENGLISH SPEAKING COUNTRIES

*With an aim to make schooling years meaningful and joyful, **Yeshwanth Raj Parasmal**, Co-Founder & Chief Operating Officer of 21K School, tells Education Post's **Tanay Kumar** the difference in the schooling education of India, the UK and the US.*

21K School

World Class Education
For Your World

Q Your post-graduation was in Education Management from Southampton University. Please tell us about this stream of study, and if there is a similar study available in India?

I did my MBA, specializing in Education Management, from the University of Southampton. Back in 2006-07, this was the only University in the UK (none in India) that offered Education Management as part of an MBA. Most other universities offer MA or M.Sc. in Education Management.

I wanted to study and learn best practices about strategic planning, HR, Operations, Marketing & Branding and Service Quality in the specific context of educational institutions. My class cohort included students from some of the top universities and edtech space from around the world.

Unlike MBA, MA and M.Sc. had a more academic focus. I was fortunate to have been selected by the School of Management based on my experience and career track record. Today, we have a few universities offering MA and M.Sc. in Education Management or Administration in India, but I haven't come across an MBA Program.

You had done your schooling at a high school in Bengaluru. How was the schooling then and what lacunae must India address first in achieving efficient public education in India?

I studied at Baldwin Boys High School, Bangalore and am a proud alumnus of the Council for the Indian School Certificate Examinations (CISCE). I did my Karnataka Pre-University Program (Grade 12) at Sri Bhagwan Mahaveer Jain College (SBMJC), Bangalore. In those days, there was little awareness and understanding of skill-based or competency-based education; the focus was mainly on knowledge. I am grateful to all my teachers today. I stand on the shoulders of those giants in teaching-learning.

Indian schooling system has made great strides since the announcement of the National Education Policy in 2020. After 17 years, we now have a new school curriculum – the foundation stage curriculum was announced last year. I was extremely pleased to read the curriculum frameworks focus on competencies and skills. It's a remarkable change since the National Curriculum Framework in 2005. In my view, the National Credit Framework announced last year is the greatest educational policy change. The entire ecosystem – including parents – is more aware of the need for skill-based learning and assessment. However, the challenge is implementing it in physical schools, mostly under the fee bracket of Rs. 4000 per month or less. Some of the more progressive schools offering international curricula are doing a better job, but 85% of Indian Schools are in the affordable category, and that's the challenge.

Q How does 21K School help Indian students in their education and how does it differ from other stakeholders?

A person spends 16 years of his precious young age in schools. If you think about it, these 16 years lay the foundation for her success or failure in life. What she will achieve in her life is dependent on what kind of schooling she has. I strongly support the research that has established that natural intelligence and abilities can be developed and enhanced over time. You don't have to be born a genius to make it big. Sure, there are exceptions, but your schooling,

environment and exposure can well change the trajectory of your growth in life.

That is why at 21K School, we aspire to make the 16 years of schooling meaningful and joyful. We focus on improving learning outcomes using technology to shape better life outcomes. We do this by reimagining schooling:

- We have reduced the time of schooling by cutting off travel time. This gives students five extra hours daily to focus on pursuing her passion
- We offer a choice of three different curriculums for students to chose
- Two different batch timings to meet their need
- We have built a truly global, secular classroom with no backbenchers
- The focus is on skills and competencies with project-based and inquiry-driven learning
- Lastly, we are making schooling affordable. Studying Cambridge or Edexcel, UK Curriculum for under Rs. 70,000 per year (including travel and all other costs) is unheard of nowadays.

We have seen our students develop a global vision and a growth mindset. I am not surprised that over 200 students have published their novels. Many of them are excelling at the national level in sports, music and arts.

Q 21K School is providing formal K-12 education in Britain and the US as well. Please tell me the differences and similarities in K-12 education in India and the rest of the world.

Private Schooling abroad is very expensive as they invest in resources and pay good salaries to their teachers. A typical private school abroad would charge fees of $6000 to $12000 per year, compared to average fees in India, which is less than $500 per year! It's a striking difference in fees and quality. However, it is a myth that higher fees mean a better quality of schooling.

I can tell you from my experience that globally, every parent is the same – they want schools to deliver better education. They want better learning outcomes in all subject areas. I have never encountered a parent who says don't make my child learn skills or don't make him smart.

In the last three years, talking to thousands of parents has made us realise that the Indian curriculum is very popular abroad, especially in non-English speaking countries. Parents abroad, of Indian origin, and Foreign Nationals, have very high regard for the CBSE and CISCE Boards.

Q Strategum Eduserve Private Limited was co-founded by you. Please tell us about 'Curriculum As A Service' and how it benefits schools?

That's right. Along with Nupur Yeshwanthraj, I started Strategum Eduserve Private Limited in 2007 after I returned from the UK. Strategum Eduserve is one of the few education advisory and management companies that helps clients establish and manage preschools to universities. It has done amazing work across India, managing over 75 educational institutions. It started SWAP21 – curriculum as a service model for preschools to support non-franchised preschools to compete better with franchise schools with systems, recourses, curriculum and more. It saw great adoption and scaled well in the pre-covid era.

Q If Indian schools should stop some old practices that are no longer relevant, what are those practices?

That's an interesting question. I think schools must start focussing on the child's learning rather than teaching. Once you start thinking about "Is the child learning", I am sure every teacher will become a facilitator and a super mentor. This requires a change of mindset – unlearning and relearning.

Q Please recommend some books, documentaries or even films that motivated and taught you at a great level.

The best book related to school education is the Ethics of Excellence by Ron Berger. It's a short book but very impactful. I would also strongly recommend the book written by Arthur Costa and Bena Kallick, Learning and Leading with Habits of Mind: 16 Essential Characteristics for Success. The Habits of Mind are the student attributes we also implement at 21K School.

John Dewey's Experience & Education is a classic that must be mandatory reading for every educationist. Deeper Learning – beyond 21st Century Skills, edited by James A Bellanca, has an excellent compilation of some of the best articles on 21st-century skills. EP

Osamazaid Rehman
Associate Director
Government Relations at Honeywell

AEROSPACE ENGINEERING AND DESIGN WILL TAKE SOME TIME FOR THE INDIAN ECOSYSTEM

Osamazaid Rehman, Associate Director, Government Relations at Honeywell, tells Education Post's **Tanay Kumar** that the Avionics sector in India is important field for engineers to focus on and how they should go about getting a job in this industry,

Q What motivated you to pursue an MBA in International Business from IIFT, after doing your post-graduation in history?

There are many considerations. First, due to the requirement of the industry and sector I am in. Working in the corporate world with a post-graduation in history does not take one very far. Second, and most foremost, it's the desire to acquire adequate knowledge of business administration and management. Third, the institution, getting an MBA degree from IIFT, is much respected in industry circles. Fourth, the degree itself – if one looks at the course structure of the MBA in International Business, it provides a holistic composition of the ideal course for someone in the area of government relations and public policy. We had papers on international trade that touched upon geopolitics and economic relations. There are papers on economics and economic modeling which are elements of national and international trade trajectory. And lastly, one gets some of the finest teachers who are able to impart difficult subjects into absolutely naïve minds.

Q MBA in many institutions, especially private ones, is not even half as good as it is in IIMs or other good private institutions. Why is it so?

I think the answer lies in the way in which selection of students are done in many of the private MBA institutions. It is important to have a robust selection process to get the best minds. Second, the way faculties are recruited. Again, the rigors of the selections process in IIMs need to be followed in many private institutions.

Q You had quite a good stint in the book publishing industry, and we all know that reading time of the young generation has reduced drastically. In your view, should the youth read more e-books or printed ones? What do you prefer and why?

Printed and e-books are just a medium through which one reads books. One should see how the printed book, in its present form, came into being. From papyrus to codex to handwritten to printed books, there has always been advancement in the way knowledge has been transmitted. E-books are currently the most advance form of distribution of knowledge. Thus, it makes little difference how one reads books.

Personally, I prefer printed books, but that is primarily because of the generation I am born. Again, it doesn't mean I do not prefer e-books. It's just that what one is reading. Like for instance, I prefer reading novels on tabs, but I prefer reading dense content through printed books. For the young generation, it's more important to encourage them to read rather than how they read.

Q You have been working in the aviation and defense industry for a long time and the sector of drone aviation is gradually rising in India. How can one go about looking to make a career in drone aviation?

Avionics is an important field for Indian engineers to focus on. However, aviation is a multi-dimensional area and students can focus on various specialization started from aerodynamics to aircraft design, to aeronautics to fluid mechanics to aircraft propulsion, etc. What is more important to understand the aerospace market in India and what aspects the aerospace

manufacturing is in demand in India.

If one looks at the global aerospace manufacturing market, engineering services is an area where a number of big players have established operations. MRO will be an area that the government is looking to expand, and this segment will see a rise in demand for skilled resources. High-end engineering and aerospace design will take some time for the Indian ecosystem; however, there are a number of Indian companies providing aerospace structures to global players which again will require quality students.

In the area of defense, the government of India is encouraging indigenous manufacturing though various policies, such as the positive indigenization list that will stop imports of various defense components. In addition, 64% of the defense budget is earmarked towards procurement from indigenous sources. These will enable the Indian aerospace and defense industry to expand, leading to demand for different jobs within this segment.

Q The study of aerospace engineering is not easy to find in India because of which, manufacturing in this sector majorly depends on other nations. How can the Indian academia help the aerospace sector?

Industry-academia linkage will be important for the aerospace engineering segment to firstly design the right courses for the industry and secondly to enable students to find exposure and jobs in the sector. Some of the industry associations, like FICCI (Federation of Indian Chambers of Commerce and Industry) and CII (Confederation of Indian Industry) have been focusing on industry-academia linkages. Universities and academic institutions should be open to partner with industry. It will help in designing and tailor make courses that are suited for specific job roles in the industry as well as helping student get the right exposure.

Second, tie-up with global institutes will give credibility to the courses offered. This will help in getting the right faculty for the course, not only to teach specific subjects but design the structure of the curriculum entirely.

The Indian aerospace industry has its own uniqueness and subtleties, which is both different and distinct from the global aerospace industry. Universities and academic institutions should do a survey of the aerospace industry in India in order to understand the segment under which courses need to be designed as per the market expectations. In all these, close collaboration with industry associations and companies is a key requirement.

Q You have edited many eminent books, including one of former RBI Governor. What are the three crucial skills one must have if one is willing to enter the book publishing domain?

Book publishing is an art which requires specific skills. It also depends on the kind of role one aspires in the publishing industry. When it comes to editorial skills that are again areas to look for before entering the publishing working. I was part of the higher academic segment, but there is an entirely different editorial requirement for the school publishing segment. Again, when it comes to text book and competition books, the requirement of an editor is very different from that of higher academic books that goes into the libraries and institutions. If one tries to find three crucial skills as must have for someone intending to enter the book publishing domain, I think, these are:

Command over language:

No matter which language you are publishing in, the command over language is a must have skill, without which it is difficult to survive. This goes beyond just being grammatically correct. It is the style of expression that matters.

Eye for details:

One must have a niche for details. At times, this goes beyond the errors in the text to errors of design in the book. Eye for details is not just having the right references or the correct citation. These details are at time hidden in the way an argument is presentation in a book.

Understanding the author for the reader:

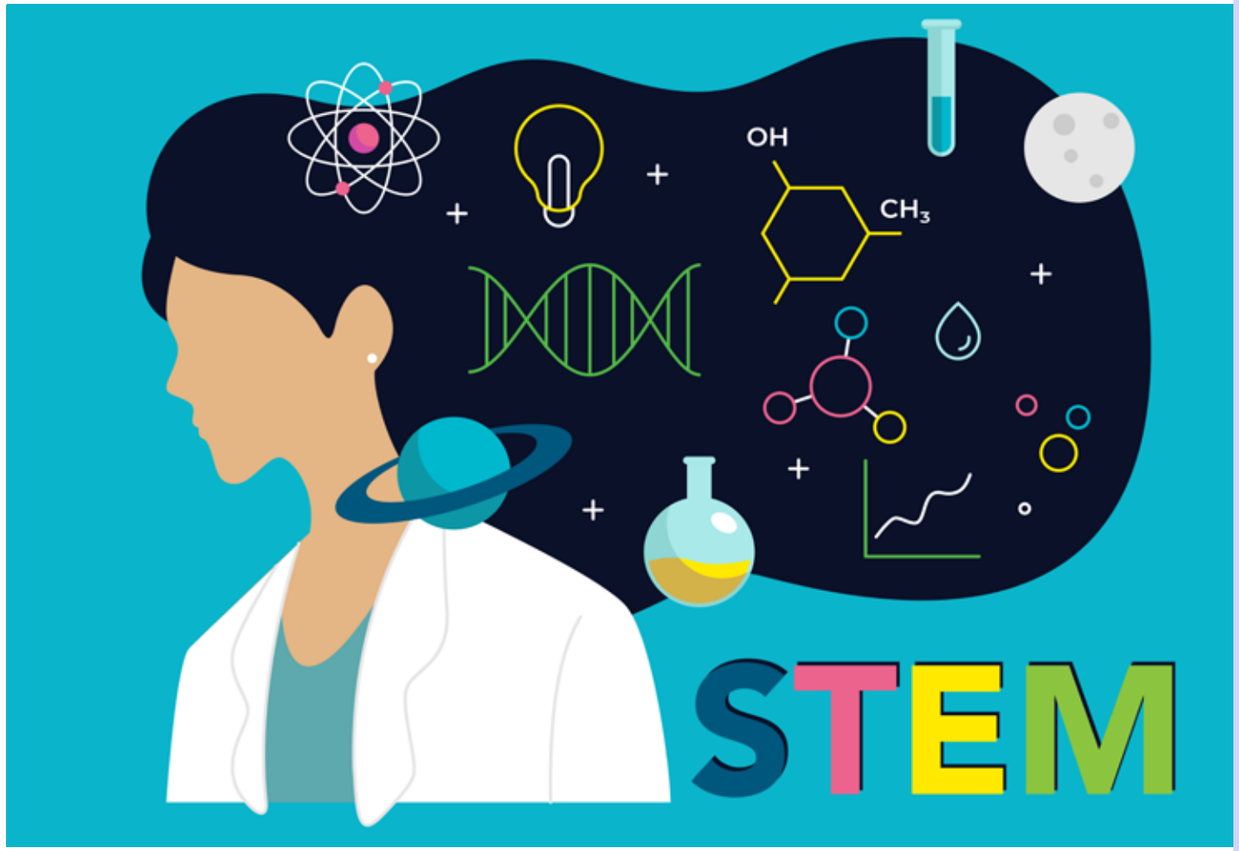
One should understand what the author intends to convey. Also, the editor should forecast how it could be understood by the reader. The art is to be the channel through which the expressions of the author are conveyed correctly to the audience or the readers. It's a difficult task as it requires minimum interference in the text of the author, but ensuring its correctness and brevity. EP

Ritika Amit Kumar
Co-founder & CEO
STEM Metaverse

WOMEN IN STEM: YOU CAN DO IT, YOU DESERVE IT, YOU ARE NEEDED!

Indian education is undergoing a sea change. And it's new-age edtech companies like STEM Metaverse, a Gurugram-based experiential learning platform, that are driving this much-needed change to bridge the gap between traditional school teaching methods and the rapid global shift in technology and innovation. Launched in 2020, STEM Metaverse provides multiple intelligence-based STREAMM (Science, Technology, Reading, Engineering, Art, Math, and Mental Health) learning journeys for students right from early years to class 12.

The firm's co-founder and CEO **Ritika Amit Kumar** spoke to Education Post's **Rohit Wadhwaney** about the direction Indian education is headed in and how women entrepreneurs are becoming a force to reckon with in the education arena.



Q More and more women are now entering the EdTech space, and entrepreneurship in general. What do you think has brought about this change?

Women have always held a prominent position in the education sector, particularly in Tier 1 cities where they predominate over men. In the sphere of education, women have historically held positions of leadership, demonstrating their pervasive influence. However, the fight for gender equality and women's empowerment has picked up steam recently.

Support for diversity in leadership is rising as software businesses increasingly acknowledge the distinctive ideas and views that women bring to the industry. While women have historically occupied executive roles in the education sector, an increasing number of women are now working in tech as managers and entrepreneurs.

Women are now more able to pursue their entrepreneurial ambitions and work in historically male-dominated industries like edtech, thanks to increased access to education, resources, and support.

A key factor has been the existence of groups and networks of support for female entrepreneurs. These networks offer mentorship, direction, and resources to assist women in overcoming the obstacles of entrepreneurship and creating prosperous edtech businesses. More women are entering the edtech sector and pursuing entrepreneurial endeavors as a result of societal shifts, technical development, support networks, and a growing appreciation for the benefits of diversity. Women are making vital contributions to the STEM (science, technology, engineering and mathematics) field of education, and it is crucial to recognize this because their advancement to leadership roles is an important step in advancing diversity.

But there is no denying that fewer girls opt for STEM fields as compared to boys, at least in India. Why is this so?

There are a number of reasons why there are fewer women studying STEM fields than there are male students. The lack of early exposure to STEM subjects is one of the causes. According to studies, boys are more likely than girls to engage in STEM-related activities at home or at school. In addition, cultural biases and assumptions about gender roles have a big impact on the decision of girls to choose STEM careers.

The STEM fields are frequently perceived as being male-dominated and unsuitable for or appealing to women, which could be one cause due to cultural and societal prejudices and biases. Girls may become discouraged from studying these fields at an early age and encounter obstacles to accessing the same possibilities as boys as a result.

Unconscious gender bias in the workplace and in the educational system, as well as the perception that STEM fields demand intense competition and long hours, which can run counter to traditional ideas of women's roles and responsibilities, are additional factors that may be at play.

Surely, some cultural and social biases are not helping in this regard. So, any solution comes to your mind?

A deliberate effort to eradicate gender prejudice in society and education is necessary to address this issue. In order to encourage girls to pursue STEM fields, friendly and inclusive learning environments must be created. In order to introduce females to female role models in STEM professions, schools, and colleges can offer mentorship programs, internships, and learning opportunities.

Parents and guardians should also encourage their girls to pursue careers in STEM fields. Girls' confidence and enthusiasm in STEM disciplines can be increased by encouraging them to take part in after-school STEM programs and projects. In conclusion, eliminating gender prejudices and preconceptions and providing chances and resources to support their interests and talents are necessary if we want to encourage girls to pursue STEM fields.

What are the unique perspectives and experiences women can bring to the edtech space?

First and foremost, it is crucial to recognize that encouraging diversity and inclusion in executive positions benefits the tech industry as a whole. Companies may encourage innovation, creativity, and problem-solving by embracing a variety of experiences and perspectives. Men and women both play important roles in determining the direction of STEM education and motivating the following generation of leaders, inventors, and innovators.

STEM Metaverse is a remarkable woman-led enterprise that was established by a group of accomplished people who are graduates of prestigious schools like IIT, IIM, and MICA. Our team is made up of a variety of seasoned mothers with considerable teaching expertise and youthful inventors full of new ideas. We are adamant that diversity in leadership is essential if the edtech sector is to create inclusive technologies and solutions that meet the different requirements of people.

Please tell us about the STEM Metaverse.

Simply put, STEM Metaverse transforms education by offering a futuristic method of instruction. As a comprehensive platform, STEM Metaverse offers a thorough STEM (science, technology, engineering, and math) learning experience to students from kindergarten through Grade 12. Our main goal is to close the gap between conventional classroom instruction and the fast-changing global environment of innovation and technology.

We create STREAMM learning journeys that cover a variety of intelligence, including science, technology, reading, engineering, art, math, and mental health, with the help of our marketplace of courses, products, and teachers. We enable students to gain strategic abilities through our platform, including design thinking, problem-solving, and pattern detection. We support children in identifying and developing their gifts and potential at a young age. We use cutting-edge technology to build individualised and immersive learning experiences, including Metaverse, Virtual Reality (VR), Web3, and Non-Fungible Tokens (NFTs). Our strategy combines interesting lessons, enlightening reading material, practical kits, instructional toys, and insightful books, all supported by cutting-edge analytics.

Students can use our platform to research a variety of career options in areas like creative writing, robotics, coding, data science, entrepreneurship, music/drama, apparel design, diplomacy, and art. We think it's important to give children the tools they need to succeed in these various fields and prepare them for the future.

Basically, STEM Metaverse is a platform that sets itself apart with its cutting-edge method of instruction. Beyond the limitations of a conventional classroom, it offers a comprehensive educational experience that develops young brains and fosters creativity.

How did the idea of STEM Metaverse come about?

The Young Chronicle, a newspaper created particularly for children, served as the starting point of our adventure. We engaged students in participatory workshops to increase their involvement, which let us learn a lot about their perspectives and ideas. Due to the enormous popularity of these workshops, we decided to dedicate a vertical to them. We formed alliances with organizations that shared our values along the road, which helped us create a market for STEM education.

In order to provide individualised attention, our courses are led by specialists in smaller groups and are created with specific aims in mind. However, responses indicated that people thought the courses were a little pricey. As a result, we decided to design a scholarship system that would be supported by blockchain and NFT technology. With the help of this invention, students can demonstrate their talents on our platform and receive scholarships in return. We are dedicated to continually identifying methods to increase affordability and accessibility so that our platform is open to all students. Our constant goal is to make interesting, high-quality education available to all students. We work hard to foster an atmosphere where talent may flourish and where learning has a purpose. We want to offer a platform that empowers students and fosters their achievement. To do this, we will make use of cutting-edge technologies and pay close attention to the demands of our users.

STEM Metaverse has now started organizing summer camps for school kids. Please tell us about that.

Summer breaks offer teachers a fantastic opportunity to take a break and develop curriculum and classes, in addition to giving kids access to specialised activities outside of the classroom. Parents are actively looking for fun and informative activities for their kids after a year of online study because of the epidemic. Fortunately, innovative solutions are being provided to satisfy this demand through edtech platforms, both online and offline.

This exposure greatly benefits from STEM-focused experiential learning activities like robotics, programming, and art. These programs not only give kids interesting and informative experiences, but they also give schools a chance to evaluate how well they might fit into the curriculum. To include these activities in their curricula, several schools are working with active platforms and summer camps.

We provide STEM-focused programs that give kids access to a variety of fun activities through platforms like STEM Metaverse and Zoodle. With the help of Zoodle, schools may easily integrate summer camps into their curricula, whether they are delivered online or offline. Schools can improve their students' learning opportunities and encourage a greater engagement with STEM courses by embracing such platforms.

Through interactive games, workshops, and augmented reality experiences, the summer camp blends the greatest elements of online and offline worlds with the goal of introducing children – ages 8 to 18 – to the exciting field of STEM. More pupils are able to learn specialized computer skills because of

the different viewpoints and STEM-oriented mindset that both men and women bring to the field. People of all genders have a significant impact on students' empowerment to realise their creative potential and embrace STEM education.

Q In just about three years since you launched STEM Metaverse, the company has already got quite a bit of international exposure. How?

We are able to offer a variety of STEM courses, content, and products because the core team at STEM Metaverse has built partnerships with more than 25 national and international organisations. Our alliances cut across geographical boundaries, from Vizag to Geneva, and include illustrious organisations like the United Nations Institute of Training and Research (UNITAR), as well as outstanding people like former robotics engineers who have moved back to their Indian hometowns. The guiding idea for us is the conviction that anyone with extraordinary subject knowledge can instruct and motivate students from different parts of the world. We seek to offer top-notch educational experiences that cross boundaries and empower students worldwide by utilising our network and various collaborations.

Q Please take us through your personal academic journey.

Writing instructional screenplays was the beginning of my career in education, and it finally led me to launch my own company that produces content for websites, corporate training programs, and television. I became more and more interested in researching the intersection of parenting and education as I accumulated more expertise in these fields. In 2009, as I worked towards my MBA at MICA (Mudra Institute of Communications, Ahmedabad), I used this as motivation to start Young Chronicle and AchaBacha.co.in, a social networking site for parents. These platforms were incredibly popular, and they helped me launch STEM Metaverse.

I've always been interested in developing a cutting-edge and interesting method of instruction that engages and motivates young students. Because of this, I firmly support the "Traffic Light Ideology," which emphasizes giving kids the tools they need to think sequentially and discover their strengths. At first, explaining the idea of STEM Metaverse was difficult because many people were unfamiliar with it. But my team and I worked hard to raise awareness and foster trust among the stakeholders because we believed in the technology's ability to change the game.

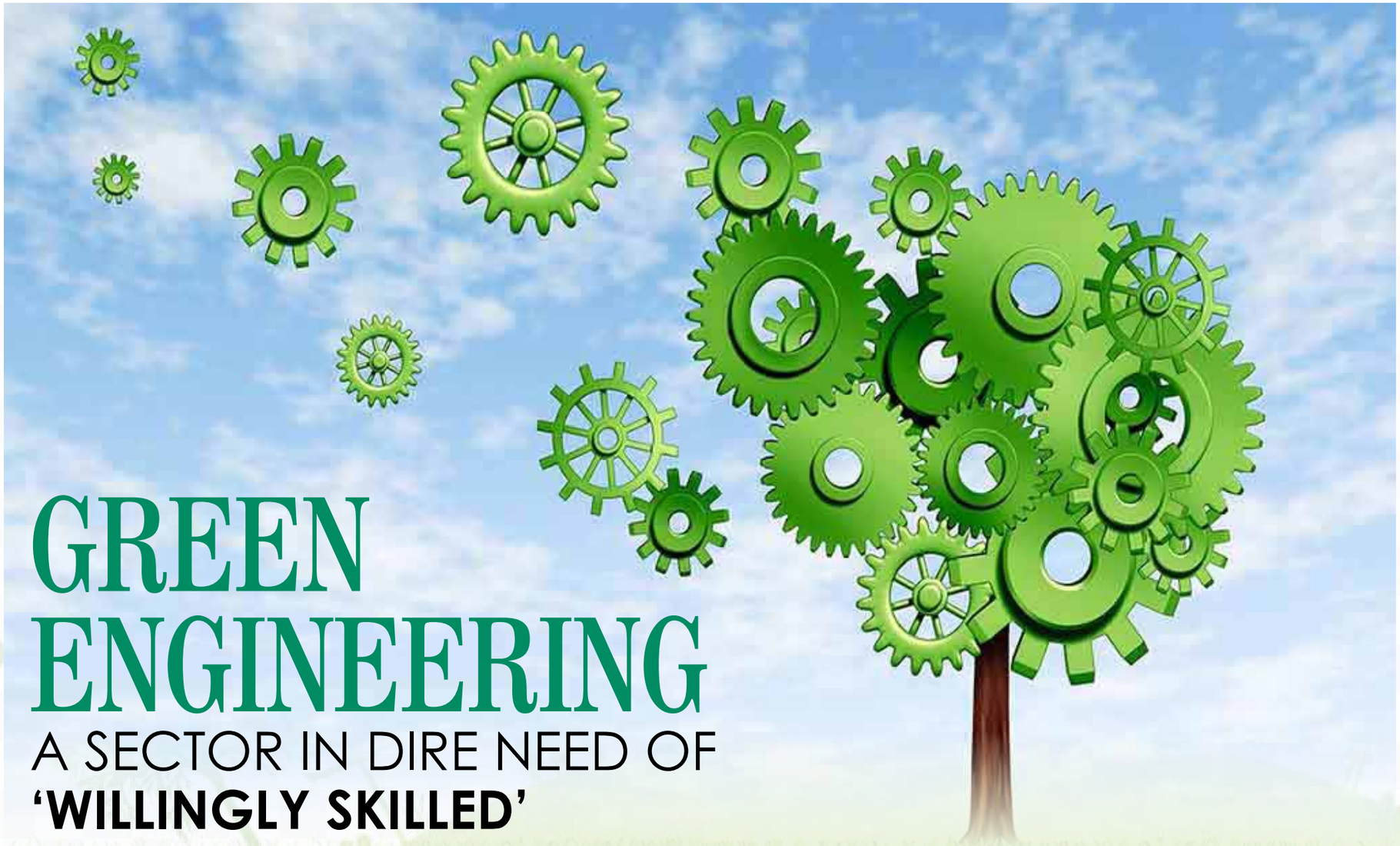
Despite the difficulties, we understood that only some were instantly prepared to join the STEM Metaverse. As a result, we introduced a variety of tangible products on our STEM Marketplace to accommodate various learner types who were more at ease using conventional teaching methods. However, we are still enthusiastic about pioneering the educational revolution and dedicated to assisting everyone in comprehending the advantages and opportunities that the STEM Metaverse provides students.

Q Any message for women who may want to get into the STEM stream?

My message to all the women out there who want to learn more about and pursue a career in STEM is this: You can do it, you deserve it, and you are needed. Although traditionally, men have predominated in the fields of science, technology, engineering, and maths, this does not imply that women do not belong there. In reality, research has shown that diverse teams perform better, and increasing the number of women in STEM disciplines can promote innovation and advancement.

Therefore, don't let prejudice, discrimination, or a lack of representation stop you from pursuing your goals and ambitions. Believe in yourself, put in a lot of effort, and look for the advice and mentorship of other women in STEM who can help you along the way. The opportunities in STEM are limitless, so never lose sight of the fact that you can make a difference and pave the way for more women to pursue careers in these subjects. So go forth and demonstrate your abilities to the world! EP

INSIGHT



GREEN ENGINEERING

A SECTOR IN DIRE NEED OF **'WILLINGLY SKILLED'** WORKFORCE

Not only the students in higher education but also in the higher secondary class, need awareness about the engineering jobs in the green sector, Education Post's **Tanay Kumar** finds out.

Consumers may soon get a facility that they can ask electricity distribution companies to have local power supply from green and renewable energy sources. For their consumption of green power, they will be facilitated with Green Certificates and they may be facilitated to pay lower power tariffs as they will consume green power.

These are some of the provisions of the Green Energy Open Access Rules (GEOAR), which was released last year in July by the Ministry of Power, to promote and incentivize green energy among common households. India has set a target to generate 50% of its energy requirements from renewable resources and having non-fossil energy capacity up to 500 GW by 2030.

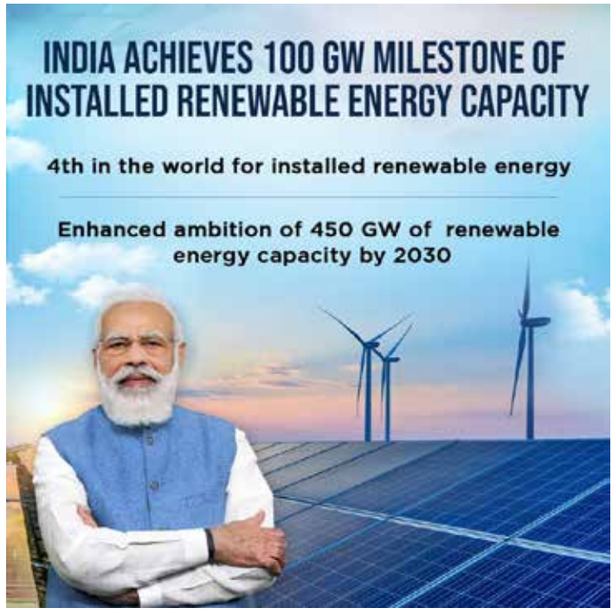
Experts in the energy corners are calling GEOAR a good policy by the Power and New & Renewable Energy Ministries as it will incentivize the household consumers for their participation in sustainable energy. GEOAR might create a demand which will further lead to supply by power generation and discoms.

In a meeting held in May, Union Minister for Power & New and Renewable Energy, R.K. Singh requested industry leaders and other stakeholders to set targets for going green and take advantage of the provisions of Green Energy Open Access Rules (GEOAR). Under the same GEOAR rules, the power ministry set a target to cut emissions by 45% by 2030.

But there is a predicament that the industry in itself has been facing a huge shortage of skilled labor force, as without intense skilled force, no industry will have adequate growth rate. Skilled workforce definitely will speed up India's efforts in green energy.

In May, Education Post attended a conference of a week-long India Energy Storage Week 2023, held in New Delhi's Pragati Maidan. The international conference was organized by India Energy Storage Alliance, promoted by four union ministries, including New & Renewable Energy and Heavy Industries. Almost every dignitary who was present at the conference lamented over the dearth of skilled, or "willingly skilled" workforce.

Thanks to the new National Education Policy (NEP) 2020, which emphasizes on bridging the industry-academia gap that India has faced for long. Engineering courses get the



lion's share of this gap as Wheebox Skill report states that more than half of engineers in India are not skilled at par with the current or even future industry's needs.

To achieve 50% of energy requirements from renewable and unconventional sources, India is bound to have a skilled workforce in green engineering as well.

What is Green Engineering?

The US Environmental Protection Agency (EPA) website states that green engineering is the design, commercialization, and use of processes and products in a way that reduces pollution, promotes sustainability, and minimizes risk to human health and the environment without sacrificing economic viability and efficiency.

Unfortunately, India doesn't have an adequate workforce in green engineering as well. It is one of those sectors that have been registering growth for almost a decade, even during the lockdowns of the COVID-19 pandemic.

Wind turbine engineering, solar energy, environmental engineering, bio-physics, sustainable engineering, urban engineering, waste management, geo-environmental engineering, environmental chemistry are some example courses that are taught under this category around the world. Alas, a big number of colleges in India don't offer these kinds of courses, as neither a majority of students are interested nor adequate academic expertise is available for them.

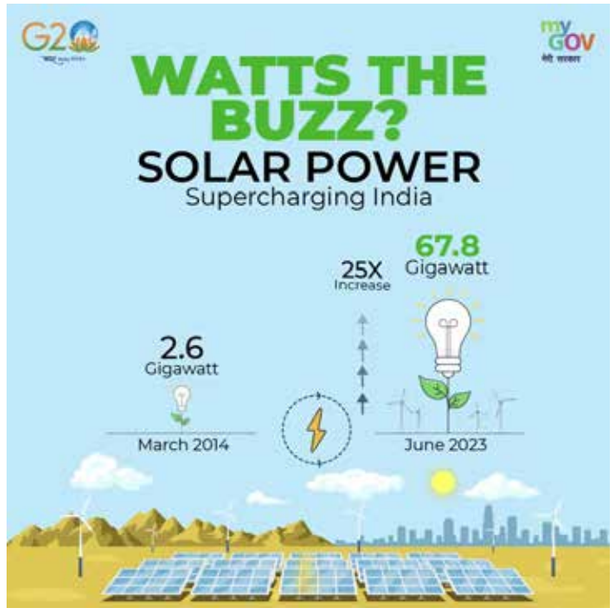
Former IIT Delhi director V Ramgopal Rao felt sorry last year in his tweet which states, "Colleges are hardly able to fill even one-third of the available seats in branches other than Computer Science and IT. No one wants to do even Electronics. The situation is worse in civil, mechanical, etc."

If a majority of students are not interested in non-CS/IT branches like civil or chemical, what more could be said for branches in the green engineering?

Plight of the Sector

To assess if the students are even keen about it, Education Post met students of class 12th of science stream at two private schools of New Delhi. Despite so much information available over the internet, none of the students has heard of the term green engineering and the job roles offered in this category. After explaining the importance of this sunrise sector, many of them got some idea. When asked about if they would choose their career in this growth-registered sector, they said they would consider it as a "secondary option" if they don't get admissions in popular engineering branches.

"Willing Skill is the need of this industry as a majority of students of class 12th are more inclined towards CS or IT or, other popular streams like electronics. The industry in the green and sustainability sector needs a willingly skilled workforce. Scarcity of right and determined talent is the biggest challenge we have been facing. Their availability is not on par with the industry's requirement. Many of them feel this sector as a secondary option, if they



don't make big in the software industry. This industry registers good attrition rate at the moment many employees find an opportunity in the software or other popular industry, they jump," says Naveen Goudar, Managing Director of a chemical technology brand working in the consumer electronics, communication infrastructure, and the organization has been contributing big in the sustainability.

When asked about the salary offered and training of the entry-level employees in this sector, Goudar said, "Funding of this sector is eventually fantastic and that's why offered salaries are also handsome for a skilled person as we also have to retain them. Only thing any organization in the green engineering sector is facing is the dearth of the willingly skilled talent. I mean, if they really are willing to work in this sector. And yes, we have to train those who are new in this sector, further costing not only time, but the resources as well. Sometimes we have to train even those who have 10 years of academic and work experience combined in other sectors."

With a good hope because of the encouragements by both the central and state governments, Goudar

added, “It’s not that there is a blank in this sector as some institutions are making great efforts, but yes, this sector definitely needs acceleration when it comes to personnel. I am an IT industry quitter and joined the chemical sector to contribute to sustainability as I wanted to be a part of the green revolution which is more of a necessity right now.”

Geetika Chauhan, an Indian green finance expert, working in Hesse, Germany, completed her post-graduation in Energy and Environmental Management in Developing Countries from Europa-Universität Flensburg, Germany. “In Germany, companies started in sourcing sustainability expertise since much earlier – using external consultancies for validation and market standard updates, rather than building strategy from scratch. In India, independent job roles within core sectors (like energy) were still a new concept until the last decade. We could probably say this about literally any sector,” she said.

“India has very strong advocacy at the central government level for green job building. This impacts the structure of education as a very low number of universities offer specialization, like RE engineering, Waste Management, probably because unique courses were not attracting enough companies visiting for campus placements. Many small solar companies, for example, wanted a superman kind of hired employee who can do everything from sales to final project implementation. This person would actually best come from a multi-disciplinary program, not a solar PV engineering course,” she added.

Question stands – does the current higher education system, at both the government and private institutions, seem to be doing enough to prepare the required workforce in green engineering?

Lavessh Bhandari, an economist, entrepreneur, environment evangelist and President and Senior Fellow at the Centre for Social and Economic Progress replied, “No, but then no one really knows the skill sets required, in such a situation best to continue with basic engineering skills until technologies get more crystallized.”

Way Forward

Availability of the skilled workforce needs to be addressed if any country wants to achieve any ambition lying within the ambit of sustainable development sector, and the same stands true for green engineering as well. Vocational courses or industry-driven course must be offered in great magnitude so that there should be an enough number of available seats for such type of courses,

with an eye towards the industries and organization working in the green sector.

“Please have a healthy communication with us, listen to the demands that the future requires in this sector and let the students save their good time, which goes in training them after their college. We also like to contribute to the academics.” Goudar replied to a question if any industry person in this sector wants to pass any message to the academics.

On the popularity of the jobs in the green engineering as compared to those in IT or other sectors, Bhandari said, “The probability of getting a well-paying job is higher with IT, finance and CS, so they are more popular. The market is working as it should, the green jobs skills required can easily be accessed through add on courses as those technologies and businesses get more traction.”

Chouhan said: “Universities in Germany offer a huge variety of courses in this stream: pure sustainability centric courses connected to specific sectors, e.g. built environment, roads and transport, energy, environmental, urban/circularity, and most recently integrated with data analytics and data science electives, etc. Indian academia also needs to build one like that.”

Skill Council for Green Jobs

Launched by the Government of India and created in 2015, the Skill Council for Green Jobs (SCGJ) is one organization where both the universities/colleges and industries come together on this platform to help the students and institutions not only in green engineering sector but also in the other sister fields of the sustainable development. The organization has built over 400 training centers around the country and accelerating further in the same. In addition, the organization has collaborated with over 110 associates from over 100 companies that are working in solar, wind, waste management engineering, bio-gas, thermal, carbon advisory and only adding more associates with time.

SCGJ keeps disseminating information about the existing and futuristic areas where students can look, e.g. Green Hydrogen Energy, Floating Solar Power Plants, Off Shore Wind Power Plants, Hybrid Solar Wind and other Renewable Energy Systems, Biomass/Biofuels/ Bio CNG Production and Supply Chain, Large Size Energy Storage, Pollution Prevention and Control Network, E-waste Management and many more.

It would definitely be nectar for India, if the country achieves 50% of its energy from renewable resources, and this can happen only if the country can produce and deploy willful skilled workforce to help in achieving this target. EP

INSIGHT

STEMming Gender Gap of Engineering in India

It's not a secret that the engineering sector in India is still predominantly male-dominated. When you step into an engineering firm, it is evident that the representation of women is significantly low. It's a most underrated question, "Why is it so?" ***Prabhav Anand****, Correspondent, Education Post, delved into the underlying reasons as to why more girls are not pursuing careers in engineering in India to tackle this issue.*

Recognizing the importance of a diverse and inclusive workforce that represents society, it becomes crucial to address the lack of gender balance in engineering. Understanding and addressing these factors is essential not only for the sake of achieving gender equality but also for the future of the engineering sector itself. A diverse and inclusive workforce brings a range of perspectives and ideas, enabling us to effectively tackle the challenges of the built environment that lie ahead. By exploring the barriers that discourage girls from pursuing engineering and identifying ways to overcome them, we can create a more inclusive and equitable educational and professional landscape in India.

During an educational event at India Expo Mart Ltd, Education Post took a survey and asked more than 200 girl students in which most of them have completed their 12th board or appearing for the board. Asking about why most of the girls don't choose engineering as their first choice, and almost everyone there had the similar answer. One said, "This sector is a male dominated and even their parents don't allow them to opt for engineering as their career field. And even if parents agree to let them go for engineering, they try to compel their kids to choose computer science or Electronics and communication engineering." Another girl said, "It's a stereotype that only male can go for engineering and it's not made for the girls."

The field of engineering is considered to be one of the most lucrative and prestigious professions in India. However, when it comes to gender diversity, it is a well-known fact that women are underrepresented in this field. Despite concerted efforts to improve the situation, the number of girls in engineering in India remains low.

The data is quite stark. According to the All India Survey on Higher Education (AISHE) 2020-21, only 19.2% of engineering students in India are women. This is a dismally low figure, especially considering that women make up nearly half of the country's population. The problem is not limited to India alone. Gender disparities in STEM fields are a global phenomenon. However, the situation is particularly dire in India, where social and cultural norms continue to

hinder the progress of women in many spheres of life, including education and employment.

Several factors contribute to the low number of girls in engineering in India. First and foremost, there is a lack of encouragement and support for girls to pursue STEM subjects. From a young age, girls are often discouraged from pursuing technical fields, and instead, they are encouraged to focus on more "feminine" pursuits. This societal conditioning leads to a lack of interest among girls in STEM subjects, and many of them do not even consider engineering as a viable career option.

Secondly, there is a significant gender bias in STEM education, especially at the undergraduate level. Female students in engineering colleges often report feeling isolated and unsupported, which can lead to lower academic performance and higher dropout rates. Many female students face a hostile environment in engineering colleges, where they are subjected to ridicule and harassment by their male peers. The lack of female faculty and mentors exacerbates the problem, as female students have few role models to look up to and learn from.

Thirdly, there are several structural barriers that prevent girls from pursuing engineering. For instance, many girls come from conservative families that are hesitant to send their daughters away from home for higher education. Engineering colleges are often located in urban areas, far away from rural and semi-urban areas where many girls come from. The high cost of engineering education is also a major hurdle, as many families cannot afford to pay for their daughters' education in a field that is still perceived as male-dominated and unwelcoming.

Anubha Goel, an Associate Professor of Civil Engineering at IIT, Kanpur, gave a major reason behind the lower ratio of women in core engineering branches.

"It seems it is the parents who discourage women from getting into civil and mechanical engineering, because they presume the girls will have to be involved in work such as highway construction and will have to deal with a lot of men, who may not be as accommodating or decent," she told Education Post.

Anubha Goel
Associate Professor, Civil Engineering
Indian Institute of Technology, Kanpur

So, what can be done to address the problem of the low number of girls in engineering in India?

First of all, there needs to be a concerted effort to change societal attitudes towards girls and STEM education. Parents, educators, and policymakers need to work together to create a more supportive and encouraging environment for girls to pursue technical fields. This can include initiatives such as mentorship programs, career counseling, and scholarships for girls in STEM subjects.

Second, engineering colleges need to address the gender bias that exists in their institutions. They need to create a more inclusive and supportive environment for female students, which includes hiring more female faculty, providing mentorship and support programs, and ensuring a safe and harassment-free campus environment.

And at Last, there needs to be a concerted effort to make engineering education more accessible and affordable for girls. This can include initiatives such as setting up engineering colleges in rural and

semi-urban areas, providing scholarships and financial aid to girls from low-income families, and creating awareness campaigns to inform parents and students about the opportunities available in engineering.

Several initiatives have been undertaken in recent years to address the gender gap in engineering in India. The government has launched various programs such as the Beti Bachao, Beti Padhao (Save the girl child, educate the girl child) campaign and the Udaan scheme, which aims to increase the enrollment of girls in technical education. However, these initiatives have had limited success, and much more needs to be done to address the root causes of the problem.

IIT Delhi has aimed up to make it a 50-50% gender ratio for their upcoming in the IITs. So what do you think? All IITs should do that?

Well, I think that's a good idea. It'll be good to get more women involved. But I think at the end of the day, getting into the IIT or any educational institute, it should be based on merit. It should not be based on somebody's gender. I think that is not fair.

One potential solution is to focus on promoting engineering as a viable career option for girls from an early age. This can involve creating awareness campaigns that target young girls and their parents, highlighting the benefits and opportunities of pursuing engineering. Additionally, schools can work towards creating a more gender-inclusive environment in their classrooms, where girls are encouraged to participate in STEM subjects and are provided with the necessary resources and support to do so.

Another solution is to increase the representation of women in leadership positions in STEM fields. This can be done by promoting and recognizing the contributions of women in STEM, creating mentorship and networking opportunities for women, and ensuring that gender diversity is a key consideration in hiring and promotion decisions.

The underrepresentation of girls in engineering in India is a multifaceted problem that requires a concerted effort from various stakeholders to address. While progress has been made in recent years, there is still a long way to go before we can achieve gender parity in this field. By addressing the root causes of the problem and implementing targeted interventions, we can create a more inclusive and diverse STEM workforce, which will benefit not only women but also society as a whole.

The gender disparity in the engineering sector within the field of education in India is a concerning

issue that demands attention. Data collected from various sources shed light on the factors contributing to this imbalance and the consequences it entails.

The National Sample Survey (NSS) reveals that the representation of women in engineering has shown minimal progress over the past decade. In 2011-12, women accounted for just 14.6% of all engineering students, and this figure has only slightly increased to 19.2% in 2020-21. Moreover, the gender gap is more prominent in specific branches of engineering. For instance, women constitute merely 8.4% of civil engineering students, 16.7% of mechanical engineering students, and 21.5% of electrical engineering students, according to the AISHE data.

A significant concern is the high dropout rate among female engineering students, as highlighted by a study conducted by the Indian Society for Technical Education. In some states, the dropout rate for female students in engineering colleges reaches a staggering 60%. This attrition exacerbates the gender gap within the field.

The underrepresentation of female faculty in engineering colleges poses a substantial obstacle to achieving gender diversity. Merely 15.4% of engineering college faculty are women, as reported by the AISHE. The lack of female mentors and role models in the field hinders the progress and aspirations of female students.

The challenges persist for women who do pursue engineering careers. A study by the World Economic Forum reveals that women in India are significantly underrepresented in senior leadership roles within STEM fields. Only 15% of senior STEM positions in the country are held by women, in contrast to the global average of 28%.

The gender gap in engineering is not unique to India, as it is a global phenomenon. UNESCO reports that women comprise only 35% of all STEM students enrolled in higher education worldwide, with even lower representation in countries like Japan, where women make up only 14% of STEM graduates.

The lack of female representation in STEM fields is not merely a social justice concern but also represents an economic missed opportunity. A report by the McKinsey Global Institute suggests that achieving gender parity in the workforce could contribute a staggering $12 trillion to the global GDP by 2025.

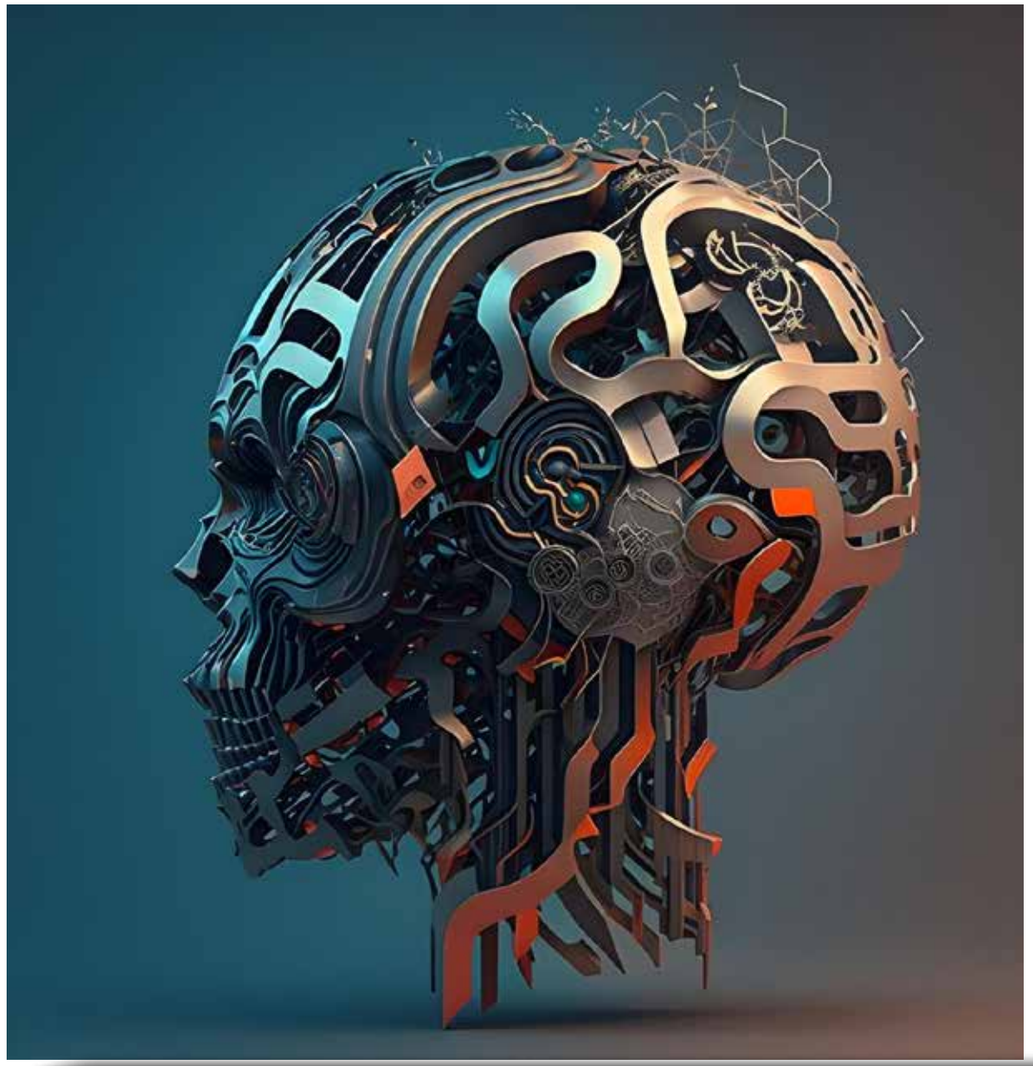
Several factors contribute to the gender gap in engineering. Persistent stereotypes labeling engineering as a “masculine” field discourage many women from pursuing careers in STEM. A survey conducted by the International Labor Organization reveals that 38% of women who did not pursue STEM careers cited the perception of these fields as “male-oriented” as a significant barrier.

Insufficient support for women in STEM further perpetuates the gender gap. According to a study by the National Science Foundation, women are less likely to have mentors or receive research funding compared to their male counterparts.

The COVID-19 pandemic has added additional hurdles for women in STEM. Research published in Nature indicates that women in academia have been submitting fewer papers, publishing less, and receiving fewer citations during the pandemic. These setbacks may have long-term consequences for their careers and further exacerbate the underrepresentation of women in STEM.

Addressing the gender gap in the engineering sector requires a comprehensive approach. Encouraging young girls to pursue STEM education, challenging stereotypes, providing mentorship opportunities, and promoting gender-inclusive policies are essential steps toward achieving greater gender diversity in engineering and unlocking the untapped potential of women in the field.

By fostering a more inclusive environment, we can strive to create a future where women are equally represented in the engineering sector, contributing their skills and expertise to drive innovation and shape the technological landscape of India and the world. EP



ARTIFICIAL INTELLIGENCE
BOON OR BANE?

Ameen Jauhar

Mr. Amit Kapoor
Co-founder, Eupheus Learning

All signs point toward a future dependent on artificial intelligence (AI). And, make no mistake, the education sector is at the forefront of this new-age revolution that is bound to eat up some jobs while, at the same time, creating new ones. We are witnessing technological history in the making. Naturally, such a revolutionary change has ruffled some feathers, much like the emergence of the internet in India in the 1990s, when the postmaster thought that he might lose his job to the email. Education Post's **Prabhav Anand** goes deep to understand the actual impact of AI going forward.

Let's face it. This time last year, no one was talking about it. Then suddenly, one fine day, sometime late last October, it exploded like a ripe tomato under a stiletto heel. Artificial Intelligence (AI) had burst onto the scene, and how! Now, as this new toy begins to slowly, but surely, grow on us, experts are predicting a "profound impact" on the future of education and of course, jobs. But the impact isn't necessarily negative.

"The potential applications of AI in education are sure to bring some changes," says Amit Kapoor, who co-founded Delhi-based EdTech firm Eupheus Learning.

"AI can currently manage administrative processes efficiently, and its adoption will only accelerate this trend. For instance, it can customize learning experiences, streamline classroom management, and improve student learning outcomes," he tells Education Post.

"Prioritizing AI literacy is crucial to ensure that both students and teachers have access to necessary training and resources to integrate these technologies into the ecosystem optimally. Additionally, it's essential to evaluate practices that could challenge the social and ethical fabric of the educator-learner relationship and consider banning them," Kapoor adds.

Indian EdTech companies like Byju's and Unacademy have already adopted AI to personalize learning, automate administrative tasks, and develop new teaching and learning methods.

"By using AI, educators can tailor their teaching methods to suit the individual learning style of each student. This is a significant shift from the traditional

one-size-fits-all approach to education that has been prevalent for so long," Kapoor says.

But one question remains: Is AI hampering the competence of students? The answer is more nuanced than a simple yes or no, according to academicians.

"While AI is helping students to complete assignments more quickly and easily, it is not quite replacing the critical thinking and problem-solving skills that are essential for success at the workplace," opines Ameen Jauhar, a senior fellow at the Vidhi Centre for Legal Policy.

"AI currently operates without critical thinking abilities and relies solely on the data available within its system," says Jauhar, who is also a member of the expert panel of AgriStack, a central government initiative to provide a uniform platform for farmers to deliver end-to-end services throughout the agriculture food value chain.

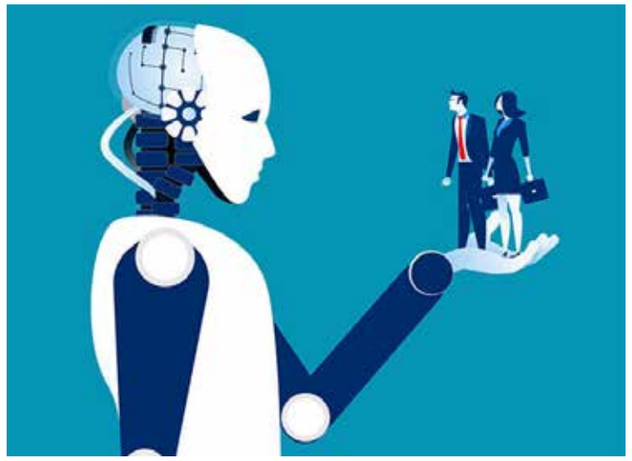
But there's, obviously, a flip side.

"There is something called legal drafting, which is one of the core responsibilities of any fresh law graduate or any lawyer who is in their first, second or third year of legal practice. While you can say AI tools are helping them do this job better, law firms that typically want better efficiency and better cost productivity for their clients may consider completely removing this whole rank of first to third year associates, and instead, say that we don't really need humans to do this job," says Jauhar.

The real concern, he says, is how automation is going to impact human productivity. "It's a double-edged sword. To put it simply, are you writing the essay or is Chat GPT writing it for you, with a very likely chance of plagiarism?"

"In my personal opinion, it is acceptable to utilize AI tools such as Chat GPT for assistance purposes, but becoming overly reliant on such tools, such as complete dependence could lead to potential problems," Jauhar says.

AI implementation has been most prominent in highly digitized industries like IT, financial services, telecommunications, media, and retail. However, the rate and extent of AI adoption can vary by industry. Businesses operating in sectors with lower AI adoption, including healthcare and pharma, energy and natural resources, and manufacturing, can gain a competitive advantage by being early adopters and building economic moats.



The advent of AI has led to many people worrying about the disappearance of jobs. However, according to experts, AI can create many job opportunities and has space for everyone to grow.

"AI is expected to eliminate existing jobs while creating new ones, with the short-term impact likely to result in more job losses than gains in India's services exports sector. To cope with AI-driven changes, students are advised to acquire blue-collar skills and prioritize trades over low-skilled administrative roles and routine coding," Dr. Debashis Guha, Director of the Master of Artificial Intelligence in Business program at S.P. Jain School of Global Management, tells Education Post.

"The call center and software services sectors in India are anticipated to be significantly impacted by AI," he warns.

He envisions a transformed education sector, with AI providing personalized instruction akin to the ancient Indian system of guru-shishya parampara (student-teacher custom).

"While new job opportunities will emerge, ethical concerns must be addressed, particularly in terms of equitable distribution of AI's benefits. Urgent investments in AI systems, research, and education are crucial to ensure a positive and inclusive impact," says Guha.

"New technology may create 97 million jobs by 2025," Radhika Shrivastava, Executive Director of FIIB, says. "With AI integration across multiple industries, AI and automation jobs will grow in demand. These include data detectives or engineers, robotics engineers, machine managers, AI product managers, AI strategy managers, AI consultants & analysts, and programmers.

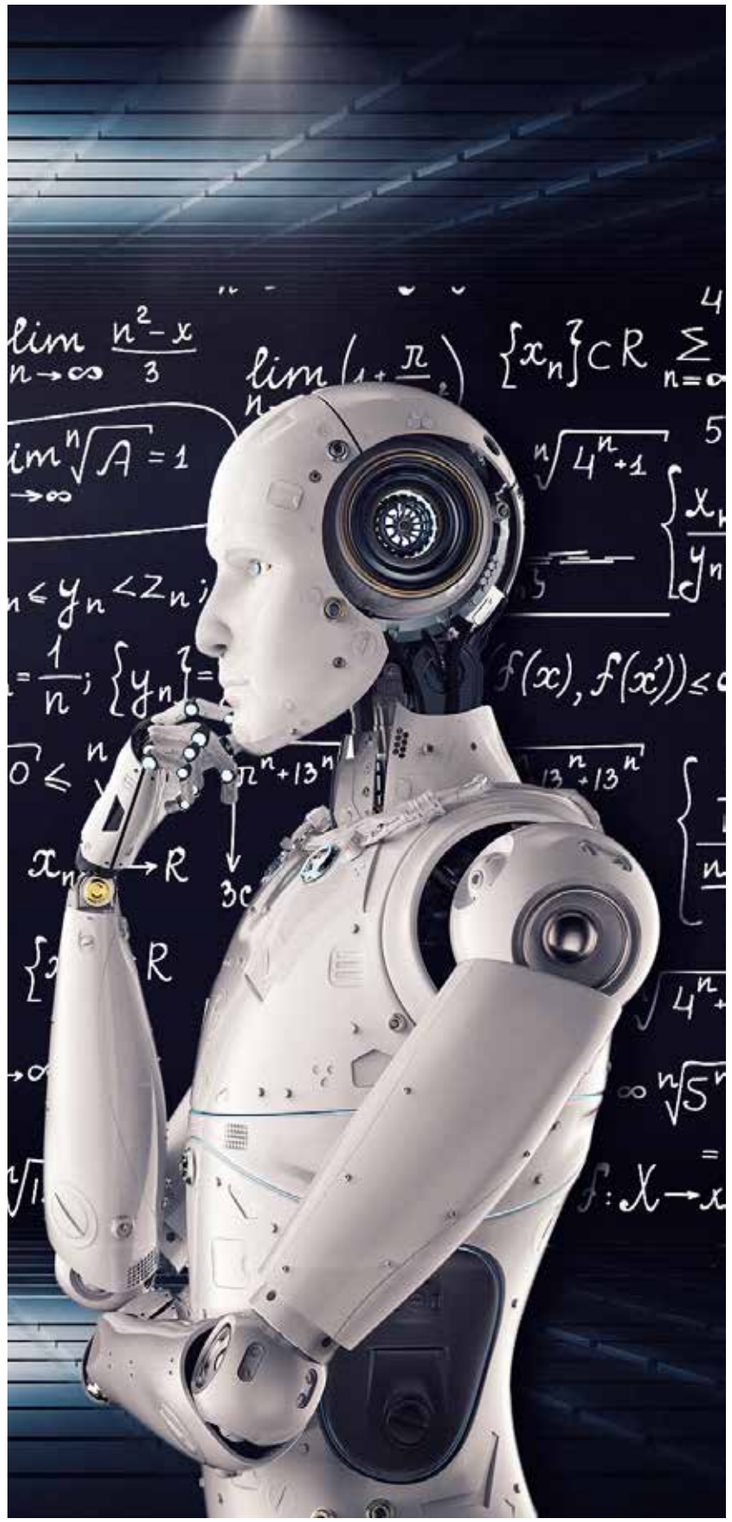
"Those who can code Python, which is crucial for machine learning, will be particularly sought-after. Additionally, AI trainers and those with skills related to modeling, computational intelligence, machine learning, mathematics, psychology, linguistics etc., will be in demand. MBA students should prepare for the AI revolution. The jobs they hold won't disappear as AI will redefine them."

A major booster for AI in India has been the incredible government impetus in recent years. From pro-digital infrastructure and the National Strategy for Artificial Intelligence India commission to the emphasis on technology growth in the Union Budgets – India has set up a favorable framework to augment AI.

NITI Aayog, a policy think tank of the Indian government, has set up Rs. 7,500 crore investment towards Centers of Research, funding for startups, and partnerships with hyperscalers including AWS. This has created a conducive ecosystem for AI startups to thrive in India.

Campaigns like 'AI for India' and computing platforms like AIRAWAT are also propelling India towards an AI revolution. AIRAWAT, a national AI platform, aims to democratize AI and make it accessible to everyone, including small and medium-sized businesses. This platform has been instrumental in bridging the gap between AI research and industry applications in India.

With the right infrastructure, investment, and policy support, India has the potential to become a global leader in AI. The government's initiatives towards AI are a step in the right direction, and the country must continue to invest in research and development to stay ahead in the



game. As AI continues to shape the future of technology, India's AI talent pool and innovative ecosystem will play a crucial role in driving this transformation.

However, the pros and cons of AI in education are not so black and white. There are advantages to both sides, but there are disadvantages to each side as well. AI is replacing humans in an increasing number of fields, including education. It's not just teaching but also grading papers, writing essays, and making recommendations to students about what they should study next. The question is: should it be or not?

Artificial Intelligence in education is a very controversial topic right now. People are torn on whether or not AI should be used to educate students. Many people argue that it will replace teachers and take away the human element of education. However, there are many advantages to AI in education. It can grade papers and essays much faster than a human can. This will give teachers more time to work with students on critical thinking skills and critical analysis skills. This would also allow teachers to focus on individual students who would benefit from their guidance. It can also augment human teachers by providing insights about student learning styles and giving hands-on feedback for students who need more practice with specific topics or skills. AI doesn't get tiring, doesn't have mood swings, and doesn't have a life outside of education.

However, there are some negative aspects to Artificial Intelligence in education as well. A robot might not be as good a teacher as a human can be. The disadvantage of AI in education is that technology may not always be successful in teaching. It does not experience emotions. Students don't feel that they are being cared for by the AI when they are being lectured to or when they have a question, and when they do not get a response from the AI. This is an emerging field, and it's being studied at universities worldwide where professors are working on developing AI technologies that improve our lives. Artificial Intelligence can also be used to provide students with adaptive learning where it adjusts the pace of instruction based on how each student is performing. On the flip side, some people worry about AI's impact where human interaction is receding.

THE NEAR FUTURE
Jobs to watch out for

AI developers and programmers
The demand for artificial intelligence applications and systems is expected to continue to rise, which will result in an increased demand for skilled developers and programmers. These professionals will be in charge of designing, developing, and maintaining applications and systems that are based on AI.

Data scientists and analysts
Artificial intelligence is heavily reliant on data, and the contributions of data scientists and analysts are essential to the success of AI projects. They will be responsible for the collection, analysis, and interpretation of data in order to train AI systems and to assist organizations in making decisions based on the data.

AI trainers
Learning and improvement are both dependent on training for AI systems. Trainers for artificial intelligence will be responsible for teaching AI systems and algorithms how to recognize patterns, process data, and make predictions.

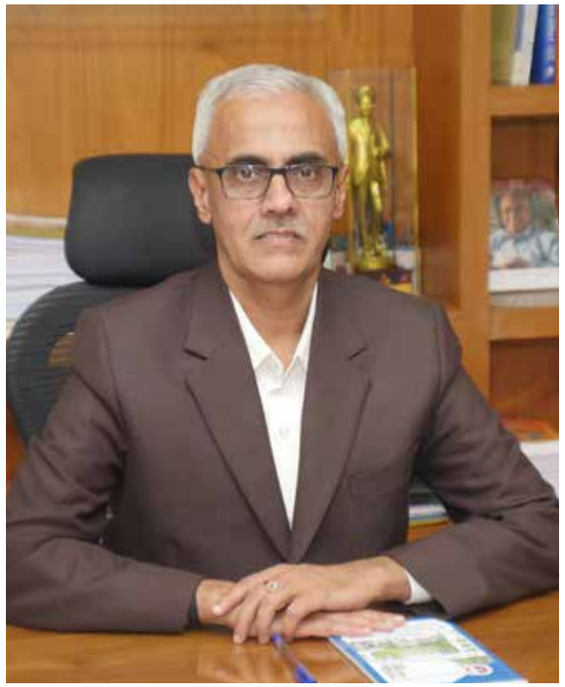
Robotics engineers
As a result of the increasing incorporation of AI into robotics and automation systems, there will be an increased demand for robotics engineers who are proficient in the creation of both hardware and software.

AI ethicists
As artificial intelligence (AI) becomes more pervasive in our culture, there will be an increased demand for professionals who are able to address ethical concerns associated with AI, such as bias, privacy, and accountability.

Customer experience designers
It is possible to use AI to create personalized customer experiences, and customer experience designers will be responsible for designing and implementing the systems used to create these personalized customer experiences.

Cybersecurity analysts
AI systems may be susceptible to cyber-attacks, and it will be the responsibility of cybersecurity analysts to protect these systems from potential dangers and ensure that they are properly secured.

RV COLLEGE OF ENGINEERING (RVCE)



RV College of Engineering (RVCE) established in 1963 is one of the earliest self-financing engineering colleges in the country. The institution is run by Rashtreeya Sikshana Samithi Trust (RSST) a not-for-profit Trust. RVCE is an Autonomous college. Currently, the institution offers 15 Bachelor, 14 Master Programs and all the departments have Research Centres, affiliated to Visvesvaraya Technological University (VTU) Belagavi. The institution has set itself a Vision "Leadership in Quality Technical Education, Interdisciplinary Research & Innovation, With a Focus on Sustainable and Inclusive Technology".

Recent awards and achievements include - Ranked 96th in the Country by National Institutional Ranking Framework (NIRF Rankings 2023), QS-IGUAGE -Diamond University Rating (2021-2024), EduFuture Excellence Award -Best Private Engineering University (South) by Zee Digital, "Engineering College of the Year-2022" by the Higher Education Review Magazine, Ranked 13th in the country & 2nd in Karnataka - IIRF Ranking (2022), Ranked 6th among the top 10 of 100 Pvt. Engg. Colleges in the Country by Education World Magazine-22. Ranked 1501+ in Times Higher Education World University Rankings-2023. Ranked 801+ in Computer Science and 1001+ Rank in Engineering category in THE World University Rankings-2023, Ranked 1001+ in Impact Ranking in THE World University Rankings-2023, and NPTEL (Local Chapter) "AAA" Rating.

The institution has to its credit over 1600 National and International Journal publications, filed over 50 patents, 48 published patents, 19 granted patents, completed sponsored research and consultancy projects worth Rs. 20.0 crores in the last three years. The institution has

established Incubation Centre, Centre of Excellence in Macroelectronics, Cisco sponsored Centre of Excellence in Internet of Things, RVCE-Mercedes Benz Centre for Automotive Mechatronics, Toyota Kirloskar Motors sponsored Automotive workshop, Centre for Smart Antenna Systems, Centre for Computational Genomics, RV-Bosch Rexroth Centre for Automation, Centre of Excellence in Autonomous Vehicles (collaborative effort with IISc and WIPRO), Greaves Cotton sponsored Centre for e-Mobility, IBM Sponsored Centre for Quantum Information and Technology, Centre for Hydrogen & Green Technology Research and Center for Artificial Intelligence, Machine Learning & Data Science, HPCC Systems - HPCC Systems CoE in Cognitive Intelligent Systems for Sustainable Solutions, Visual Computing, Advanced Automotive Systems. The students have won awards and accolades in national and international competitions.

Dr. Vikram Bali
Director

IN QUEST OF AN IDEAL DESTINATION @ FOR B.TECH. ASPIRANTS

It has been witnessed for more than two decades that IMS Engineering College has been extremely successful in executing disruptive modifications and thus emerged as one of the most prominent chosen few academic destinations by the fraternity of engineering aspirants at large. Over the years, IMSEC is being highly instrumental in undertaking diversified proactive and crucial steps for the growth of engineering education, maintenance of standards, and to sustain the curricula and its relevancy as per the industry fulfillment. It is a matter of pride that much has been accomplished as per the continuously changing expectations of the industry, global society and vast stakeholder community and the appetite to excel, inspire us to welcome and embrace technology disruptions, globalization and do required changes from time to time accordingly and may be that is the reason that today IMS Engineering College needs no introduction and stands tall among the rest.

It bestows me immense pleasure to disseminate a few latest statistics about the institution which are certainly landmarks for us and thrives us to contribute much better in future to conquer remaining milestones to uplift academics and humanity simultaneously for

establishing a better community, a much better nation and an enchanting, sustainable and enduring world, that's too within a stipulated time frame.

"By Times Engineering Institute Ranking Survey 2023", IMS Engineering College Ghaziabad has been ranked 4th in North Region, stands at position 13th among Top 70 Private Institutes in context to Placements, holds 16th pedestal among Top Private Engineering Institutes, consolidated at 18th among Top 170 Engineering Institutes and bagged 19th place among the Top 30 Institutes in Research Capability.

Yet in another survey conducted by "Competition Success Review Engineering College Survey 2023", we are ranked at 4th position among Top Engineering Colleges in Uttar Pradesh, plinth at position 10th among Top Emerging Engineering Colleges of Super Excellence. I am sure that with this sort of clarity and vision, we can even achieve the impossible and transform our dreams into reality.

We are NAAC & NBA accredited for maintaining world-class quality in education & infrastructure. Highly experienced and dedicated faculty team, state-of-art laboratories, computer centres, learning resource centres and wholesome pedagogic skills/ pedagogical techniques provide the students highly exciting and gainful opportunities to acquire knowledge and technical expertise necessary for grooming and orienting their creative young minds. IMSEC Ghaziabad is a TCS accredited college for Placements & Project Activities.

In context to Patents, It is a matter of immense pride and privilege that B.Tech. Ist year students have been successful in publishing "12 Patents" to their credit. The objective of this B.Tech course is to foster curiosity, creativity, and imagination in young energetic and ignited minds to inculcate skills such as design mindset, computational thinking, adaptive learning and physical computing with many more comprehensive and lucrative tributaries. We can easily estimate that if the students can add laurels in this rudimentary stage of their leaning, i.e. in B.Tech. Ist year, then by their time of completion of B.Tech we all can imagine the career heights they can conquer to beat their competitors seamlessly.

When we talk about signing of MoUs, I am very much affirmative about factors like technology and globalization have navigated the seeds in communities to motivate and transform themselves into knowledge–driven thinkers and operators. Thus, to develop a strong technology driven and innovative mindset to pursue a successful engineering career and simultaneously train the students to apply engineering prompted principles and concepts in real world situations to solve complex problems, collaborations with training organizations having expertise in core fields is indeed a logical move.

Singing of MoUs with the training organizations of repute is the only prudent and strategic decision to elevate students' academic horizon to the next level so that they can be guided, rekindle and reignite their thought processes to answer their inquisitiveness and quench their thirst for their engineering appetite, decoded in making them unstoppable to architect a robust, sustainable and evergreen career.

Therefore, professional associations with highly specific acumen of "Expert Centres" cultivate a cushion or wall and function as an insulating halo that prevent our students from the phobia of remaining unemployable and generates a high octane level of confidence to encounter this highly competitive world and inspires them to pave a path of success in redefining and catapulting their career goals with immense optimism.

If we talk about Training and Placements, we all know that there is a huge gulf between the expectations of the industry and the end products in academia. Of course, there are several challenges because we least pay heed to the industry demands and innovative research-based ideology. We have to cope up with the rapid changes in the global business environment with the advent of advanced technological developments. Distinguished tools and techniques have been summarized to connect the temperament of higher educational institutions and corporate world. We are encouraging industry interactions for students by strengthening our Training and Placement Division and creating a robust alumni network infrastructure. Emphasis must be on experiential education by involving students in real life projects. The time demands to formulate some strategies to bridge this vacuum earnestly and with immediate effect.

Nevertheless, amalgamation of both hard and soft skills judiciously in the adequate ratio to yield result-oriented achievements is the buzz word of today. We have to encourage finishing schools to enhance employability. This can be achieved by execution of the concept of Learning Factories, which is of paramount importance. Combine didactical approaches and existing concepts with emerging topics of the industry is the need of the hour. In nutshell, we have to ensure seamless coordination between academia and industry.

IMSEC endeavors to provide the best placements in respect to Brand, Salary package and Future Growth Prospects. Under graduating & Post graduating students are exposed to preparatory sessions on self-grooming, CV drafting, Interview skills, Presentation skills, and Personal rejuvenation & Branding. An

ecosystem is cultivated for students' engagements with career specialists, HR from organizations, and resource persons pertaining to specific domain expertise.

The Training & Placement Cell assists students in analyzing their Strengths, Weaknesses and Interests that fosters inquisitive ness in identification and thus amplifying their career goals. This strategy spurs momentum to plan the career in such a way that encompasses one's strengths, values and hobbies to architect a resilient career in accordance with their aptitude to earn Name, Fame and caters fiscal consolidation too. The students are provided with ample of opportunities for cementing professional relationships with the business communities through strong Alumni and Social networks& links. The Cell accelerates and dedicatedly caters the need for organizing Seminars, Industrial & Corporate Workshops and Project Work for the students.

The Institute has partnered with firms to provide the best platforms in the industry to our students. The Institute has tied-up with learning centres & bodies, to improve the students' communication & soft skills. The Institute has also in-house training experts to train the students in Aptitude, Critical Reasoning, Spoken English, Group Discussions, Technical and HR Interview skills.

The T&P Cell has also worked as a catalyst in launching of the Industry Institute Partnership Cell and Entrepreneurship Cell with a mission to create awareness regarding start-ups and facilities these organizations provide for establishing and converting their dreams into reality.

Recreational, co-curricular and extra curricular activities are a part and parcel of our IMS culture. Adequate emphasis is also being provided to sports activities and indoor games to rejuvenate mind, body and soul of all students.

IMSEC also understands its responsibility towards the environment and the society. It has taken small steps towards conservation of the environment by gradually adopting Green Technology. It has its own wastewater treatment plant in which wastewater is treated and recycled for use in gardening and cleaning purposes. College has installed solar panels on its roof which fulfils a substantial portion of its electricity requirement without tarnishing the sanctity of the environment.

Therefore, on the basis of above discussions, I consider IMS Engineering College an ideal institution because of its Unique Selling Proposition (USP) of thriving and creating a niche through technology driven thought processes and known for its quality technical and management education, centres of excellence, innovative teaching pedagogy, placements and other creative efforts.

Last but not least, I can foresee the consistent growth and illuminating bright future of the institution. It is asserted that IMSEC will leave no stone unturned to transform today's youth to an epitome of success and a refined human being. We are committed as a team to add laurels to the ongoing legacy." It has been proved several times and will provide our testimony again, that, if proper strategies & polices are implemented with a vision and blended with devotion, then anything and everything can be achieved within a stipulated time horizon.

Thus, decoding IMSEC in one line--- "A committed institution envisioned for having a growth and development trajectory throughout for its students and the society at large". EP

Dr. S.N. Sridhara
Vice Chancellor
Hindustan Institute of Technology and Science, Chennai

SHOULD RESEARCH RESULTS BE PUBLISHED DURING PHD STUDIES?

Ph.D. registration comes with the intention of carrying out research in an unexplored area and contributing to the scientific repository with new results and outlook on the identified topic. The very first stage of research is the identification of the need for research on defined topics. This is established through literature survey and review. In a typical scenario, research articles published in reputable journals and conference proceedings will be of paramount importance in documentary research. While few thesis titles are also included in the search results provided by the search engines, the availability of a complete research thesis will be a distant prospect. It sets a foundation for why the results of a PhD should be published. In order to frame the research problem, the researcher embarks on a literature hunt and it is therefore necessary to publish the results of the research and make them accessible to the scientific community for continued research by others.

ADVANTAGES OF PUBLISHING THE RESEARCH OUTCOME DURING PH.D. STUDIES

Let's list some benefits of publishing research results in open fields such as journals and conference proceedings, before submitting the thesis for the award of the PhD.

The opportunity to collaborate and build networks: The main advantage of the presentation of research papers at national and international conferences is the possibility of networking and collaboration. Research supervisors should encourage their research scholars to present research findings at reputable conferences, where researchers from all over the world meet and share the knowledge base. This could lead to collaboration in research work, so that the knowledge base and research infrastructure across the globe can be shared. The second benefit is the legitimate use of resources and efforts to achieve a combined result, thereby avoiding 're-inventing the wheel' by many and in many places.

Critical feedback: Whether it is a conference report or a journal publication, the paper gathers critical feedback during the review process. Peer review in the publication process provides valuable input from subject matter experts. This feedback enhances the quality and rigour of research, promotes critical thinking, and contributes to the growth and development of the researcher.

Increased citations to the research work: Another advantage of publishing in reputable journals is the ability to increase research citations and wide recognition. Publications in reputable journals increase the visibility of research, which may result in more citations. This will be reinforced as researchers from around the world publish collaborative papers.

Bright career opportunities: Publishing research findings during doctoral studies can improve career prospects. It demonstrates the candidate's ability to carry out independent research, communicate results effectively and contribute to the academic field. Publications are often seen as valuable for academic applications, post- doctoral positions and funding applications.

Gain of credibility: Finally, an unpublished research work that goes only into the dissertation loses its credibility and ends its life on the shelves of libraries.

Institutional credits: The rating and accreditation agencies of institutions around the world assess institutional merit with weightings of 30% to 40% in the overall rating system. Research publications and their citations are praiseworthy applause for this institution. As a result, the institution prides itself on helping the researcher to publish the results of the research in reputable journals and conferences.

PH.D. BY PUBLICATION

Few universities accept the thesis with just the compendium of published research papers by the scholars on the research topic instead of detailed thesis. These documents should generally constitute a coherent body of research, with methodical structure such as introduction, problem solving, conclusion and synthesis linking them.

Some universities have adopted variations of the dissertation by publication model or permit the inclusion of published articles in the dissertation. Few examples are: University of Adelaide, Monash University, University College London, University of Cambridge, University of Oxford, Alborg University, University of Southampton and a few others.

CHALLENGES AND LIMITATIONS OF PUBLISHING THE RESEARCH OUTCOME DURING PH.D. STUDIES

Although there are many advantages to publishing research results in doctoral studies, there are also limitations and potential disadvantages to consider:

The time limit for the researcher: Researching, analyzing data and preparing a research document for publication may take a long time. Doctoral students often have a limited deadline for completing their studies. The extra time and effort required for publication can result in delays in the completion of other essential elements of their doctoral program, such as courses, experiments or thesis writing.

The possibility of continued rejections: The peer review process can be challenging, and there is always the possibility of facing rejection when submitting research papers for publication. Several refusals or setbacks in the publication process may lead to demoralisation and might lead to negative impact on motivation and confidence of research scholar.

Difficulty of publishing contrasting results: The publication process may be biased in favour of positive and quantitative results. Qualitative results and discussions can be discouraged by journal reviewers, even if they are important for the type of research. This will lead to publication bias towards published findings in the literature.

Ethical and confidential substances of research: Some research projects may involve sensitive data or information that needs to be kept confidential. Such a situation occurs when a researcher is working on defence-related problems or for a private company that requires confidentiality of findings.

The protection of Intellectual property rights: Few findings of research might lead to highly valued patent. The research publication in such cases may be delayed to help the researcher to gain the intellectual property rights.

Lack of cooperation by co-authors: In some instances, collaborative research projects may involve several authors, including supervisors or other researchers. The cooperation by the contributors is essential to publish without conflicts on issues related to the determination of author order and identification of corresponding author.

It is important to note that the publication process may be laborious and that not all research conducted during a doctorate can lead to publications. However, it is always useful to aim for publication wherever possible in order to contribute to the scientific community and to highlight the research achievements. Healthy discussion with advisors and Peers will help balance the publication of research and the effective advancement of the PhD program. EP

TECHNICAL GRADUATES MUST KEEP UP WITH THE MOST RECENT HIRING TRENDS

Rohit Pandey, head of the Training & Placement cell of GNIOT Group of Institutions, Noida, shares what the recent technical graduate should do in the volatile job market.

Technical graduates have played a critical role in advancing innovation and technology across numerous industries since humanity began its journey towards creativity. As technology continues to advance quickly, it is essential for ambitious technical professionals to stay current with the most recent hiring trends. This article will examine current placement patterns for technical graduates while highlighting the most in-demand talents and promising career paths.

Importance of Core Technical Skills

While having a strong foundation in fundamental technical abilities has always been necessary, it has recently become much more crucial. Candidates with knowledge of topics including artificial intelligence (AI), machine learning, data analytics, cloud computing, cybersecurity, blockchain, and the Internet of Things (IoT) are in demand from employers. Technical graduates who possess a thorough understanding of these fields are more employable.

Industry-Driven Specializations

There is a rising need for technical graduates who can collaborate across disciplines in addition to their core technical talents. It is highly recognized to be able to connect technology with other fields including business, design, marketing, and communication. Employers are looking for applicants who can work well in diverse teams and have a deep understanding of how technology affects various environments.

Personal Skills and Emotional Quotient

Employers are increasingly emphasizing the value of soft skills and emotional intelligence in the workplace, even though technical abilities are still crucial. In technical graduates, skills including effective communication, teamwork, problem-solving, adaptability, and leadership are desired. Candidates that can effectively interact, explain complicated concepts, and adapt to quickly changing work situations are sought after by employers.

Entrepreneurs and Start-ups

Technical graduates have access to intriguing prospects thanks to the thriving start-up ecosystem. The need for innovation, autonomy, and quick growth is motivating many graduates to join start-ups or even launch their own businesses. In this field, it is highly valued to be able to think creatively, take calculated risks, and show entrepreneurial qualities.

Pandemic and the Remote Work

The adoption of remote work has intensified because of the COVID-19 pandemic, which is anticipated to have a long-lasting effect on the labor market. Technical graduates who can collaborate digitally, operate remotely, and adjust to digital tools and platforms are at an advantage. For technological experts, flexibility and adaptability in remote work contexts have become crucial abilities.

Way-forward

Technical graduates must keep up with the most recent hiring trends as the technology landscape develops in order to maximize their employment chances. Key areas to concentrate on include core technical abilities, trans-disciplinary competencies, industry-specific specializations, soft skills, entrepreneurial attitudes, and flexibility for remote work. Technical graduates can position themselves for success in today's competitive job market by matching their skill sets to the requirements of the market. EP

QUANTUM COMPUTING

THE EMERGING TECHNOLOGY FRONTIER OR JUST A TECH-BUBBLE?

Quantum computing is a multidisciplinary field consisting of new breed of computer science along with physics, and mathematics. It is an offspring of Quantum Mechanics which is the field of science dealing with the behaviour of matter and light on the atomic and subatomic scale. It utilizes the principles of quantum mechanics such as superposition, entanglement and decoherence to solve complex problems faster than the classical computers.

If we look at the market size of some of the emerging technologies we find that by 2025, Internet of Things (IoT) is expected to be the biggest industry of about 1.5 trillion USD, followed by artificial intelligence, robotics and big data jointly pegged at about 850 billion USD. All these fields are likely to be totally revolutionized by quantum computers. Apart from above the two new emerging fields, cyber security and communication technology may have altogether new orientation.

In quantum computing, quantum supremacy is the goal of demonstrating that a programmable quantum computer can solve a problem that no classical computer can solve in any feasible amount of time. On September 20, 2019, the Financial Times reported that "Google claims to have reached quantum supremacy with an array of 53 functional qubits to perform a series of operations in 200 seconds that would take a supercomputer about 10,000 years to complete". On October 23, Google officially confirmed the claims. IBM responded by suggesting that some of the claims are excessive and suggested that it could take 2.5 days instead of 10,000 years, listing techniques that a classical supercomputer may use to maximize computing speed. IBM's response was relevant as the most powerful supercomputer at that time, Summit, a new kind of super computer was designed and developed by IBM. In the year 2022, Xanadu Quantum Technologies a Canadian Quantum Computing company in Toronto, Ontario claimed that quantum computer has become millions of times faster than the fastest superfast computers of the day.

Another technology called Quantum Communication appears to be something like telepathy. It has been observed that in the two entangled particles; an information given to one is instantaneously available on the other irrespective of the distance between the two particles. That indicates that present day radio communication may soon be replaced with quantum communication, especially for the very large distance, interplanetary communication for which radio communication is inadequate.

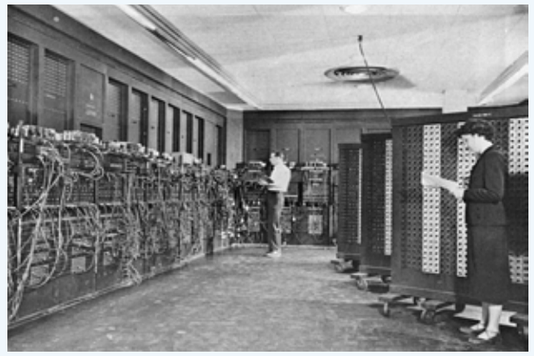
The claims and counters-claims continue. However, critics claim that the excitement around quantum computing is exaggerated and resembles a bubble more than a genuine technological advancement. They highlight that despite years of research, practical uses of quantum computing are limited and scarce, indicating the need for further improvement.

It is an established fact that advances in science and technology are time consuming and take time to stabilize before these could be gainfully employed. Nevertheless, considering the amount of research that was necessary, scientists have made incredible progress since the first mention of quantum computing. Today, it seems that we are on the verge of achieving incredible computing power. But the pertinent question is how far have we have come exactly?

Classical Computer	Quantum Computer
• Basic Information Unit: Bit	• Basic Information Unit: Qubit
• States: 0 & 1	• Computational basis States:
• Physical Representatiton:	• Quantum State of a Qubit:
• Voltage Level	• Vector in a 2-D Complex Vector space
• Magnetic Domain	• Real World Realization
• Light	• Atoms, Electrons, Photons

Continued research in quantum computing is important because, it can be used to solve problems that are difficult or impossible for classical computers to solve. For example, quantum computers can be used to factor large numbers, search large databases, and simulate quantum systems, have the capacity to decrypt highly encrypted messages.

Quantum computing is still in its nascent stage. Looking at the size of today's quantum computer at IBM Berkley Lab, one could safely say these are somewhat in the stage of what digital computer of 1943 (like the ENIAC- Electronic Numerical Integrator and Calculator with 20000 valves tubes, 70,000 resistors, 10,000 capacitors, 1500 relays, weighing about 27 tons, needing 200 KW of power and a space of about 1800 square feet). Most of the quantum computers being built are for research purposes. However, there are few commercial quantum computers available, and quantum computing is expected to become more widely used in the near future. They have the tremendous potential of a disruptive technology specially in machine learning, general artificial intelligence and cybersecurity.



Glen Beck (background) and Betty Snyder (foreground) program ENIAC in BRL building 328. (U.S. Army photo)

IBM's Quantum Computing Center at the Thomas J. Watson Research Center in Yorktown Heights, New York, holds Quantum Computers in large cryogenic tanks (far right) that are cooled to a fraction of a degree above absolute zero

Inside one of the IBM's cryostats wired Quantum System.

Quantum computing algorithms

Some of the popular quantum computing algorithms are, Bernstein-Vazirani algorithm for machine learning applications, Grover's algorithm for unsorted database search, Quantum Approximate Optimization Algorithm (QAOA), Shor's algorithm for decrypting the encrypted messages and many more.

Applications for Quantum Computing

Quantum computing is expected to find its extensive use in the fields of Complex Problem Optimization, Machine Learning, Artificial Intelligence, Robotics and Automation, Quantum Communication, Quantum Cryptography, Financial Modeling, Weather Forecasting, Molecular Modeling, drug discovery Particle Physics etc.

INDUSTRY-READINESS IS THE NEED OF THE HOUR

EXPLAINS **DR. A GARG**, KIET GROUP OF INSTITUTIONS

Market readiness is the key to surviving and thriving in the competitive corporate world. That is why, it is always said that your graduate or post graduate degree is useless, until that theoretical knowledge helps you to solve a real-world problem in an instant. Frankly speaking, putting your skills into practice in the real world takes time and that is completely okay. But, does that mean we are not producing market-ready engineers or professionals?

The answer to this is YES…

Holding a degree definitely paves the way to your dream career, but solely a degree cannot promise good

growth and better salary packages. Employers today, want to hire people who get to work from Day 1. The major reason behind this is the 'cut-throat competition' and the changing dynamics of the business world.

Thereby, it is very important for every student to enroll in some kind of vocational courses that prepare them for the desired job with the desired skills required in the job role/profile.

To my knowledge, some of the major benefits of vocational courses include hands-on training on practical skills, personalized learning experience, increased job opportunities, motivation for self-employment, and obviously increased earning potential.

Every private or government institute must motivate the students to take up any vocational course as per his/her preference, so that employability increases and so does the overall economic growth of the nation.

Since inception, KIET Group of Institutions, Delhi-NCR Ghaziabad has been working on creating individuals who work for the betterment of self and the society as a whole. An organization grows on the basis of the skills and performance of the workforce. The better the employee performs, the better the organization performs in the marketplace and eventually becomes able to contribute to the economic status of the nation. We want our country to be among the highest paying nations in the world. Thereby, we equip our students with knowledge and added expertise that helps them become productive right from the very initial stages of their career.

To ensure this, several measures have been taken. One

of them is offering skill-development based courses. In collaboration with Mercedes-Benz India Pvt. Ltd., KIET offers Advanced Diploma in Automotive Mechatronics (ADAM) that involves study of sensors, actuators, microcontrollers, etc. As per our observation, what the industry expects – in terms of instant ROI - and what is offered by the academia are two different poles. Therefore, we introduced ADAM course to bridge this gap in the automotive sector and make the students good-to-go for the industry.

Similarly, we have short-terms courses for the students, like woodworking and skill development course for two-wheelers. Like ADAM, these programs are also offered in collaboration with recognized organizations.

In the changing world of technology, coding has become a pre-requisite in the job profiles that involve core engineering branches as well. Therefore, with the collaborative efforts of our proficient faculty members, we introduced a vertical, called 'Skill Development & Finishing School' that emphasizes on industry-based projects, coding and soft skills.

To put in very simple words, we have been preparing our students with the right skills, since a long time now.

We will surely continue this legacy in the coming years as well and come up with new ideas that will make the employers want to hire each and every gem of our institute at a very high salary package. Such is the quality of students we aim to produce.

Hopefully, in few months, we shall be turning into an Autonomous Institution, after which we shall be bringing more of such opportunities for the students. As of now, we have planned to create a Centre of Excellence for Vocational Courses, in collaboration with MSME. The idea behind this CoE is very clear, i.e. to impart practical knowledge to students that make them employable and productive. Children from economically weaker sections will also be motivated to enroll in the courses offered under this CoE. In addition, we are also planning to create Departmental Industry Advisory Boards who will work along with respective sector Skill Councils by NSDC.

I believe we will be able to give back to our society this way and our vision to make the KIETians shine globally and grow economically will be fulfilled for sure. If I have to give one advice to the younger generation, I would certainly ask them to look for different short-term vocational courses. If you want to be among the leading professionals and a 6-figure salary, you got to have a different streak, and that would come through industry-readiness.

The Futuristic Rise of Artificial Intelligence in India

JSS ACADEMY OF TECHNICAL EDUCATION
NOIDA

JSS Academy Of Technical Education, Noida

India, a nation eminent for its wealthy social legacy and different population, is rising as a frontrunner within the worldwide race towards saddling the control of manufactured insights (AI). With a idealize amalgamation of gifted ability, vigorous innovative foundation, and a favorable arrangement biological system, India has seen an exponential rise in AI selection in later a long time. This article investigates the critical advancements and transformative effect of AI in different divisions of the Indian economy.

The economic potential of the sending of Counterfeit Insights (AI) has been broadly highlighted by policymakers, technologists, scholastics, and gracious society around the world. Counterfeit Insights innovations are on course to end up the foremost effective operators of change in human history. AI is being grasped by an expanding number of businesses, people and even governments to boost efficiency and raise proficiency. It will not just reshape the worldwide financial and innovative scene but too every aspect of our everyday lives. For India, the fifth-largest economy within the world and a youthful country, it is basic to be arranged to reply to the challenges of AI, use it to fathom social issues, and move towards more noteworthy financial thriving.

AI is anticipated to include USD 967 billion to the Indian economy by 2035 and USD 450-500 billion to India's GDP by 2025, accounting for 10 per cent of the country's USD 5 trillion GDP target.

India's AI travel gained momentum with the entrepreneurial wanders centered foundation of investigate educate, academia-industry collaborations, and on AI advancement. Organizations just like the Indian Organizing of Innovation (IITs), Indian Organizing of Data Innovation (IIITs), and the Indian Measurable Organizations have played a essential part in sustaining AI ability. Moreover, driving Indian innovation companies and new businesses have committed critical assets for AI to inquire about and improvement and making a flourishing biological system that cultivates advancement.

Government Activities

Recognizing the transformative potential of AI, the Government of India has actualized different activities to advance its selection. The National Procedure for Manufactured Insights, discharged in 2018, traces a comprehensive guide for India's AI advancement. The procedure points to use AI to address societal challenges, advance comprehensive development, and build up India as a worldwide AI advancement center. The government has too built up Centers of Fabulousness (CoEs) in AI over the nation to energize collaboration between the scholarly world, industry, and new companies, in this way cultivating an environment conducive to AI inquire about and improvement.

AI in Healthcare

The healthcare division in India has grasped AI to progress persistent care, conclusion, and treatment results. AI-powered therapeutic imaging frameworks can distinguish illnesses like cancer at an early arrange, empowering convenient intercession and progressing survival rates. Moreover, AI calculations can analyze endless sums of understanding information to foresee illness patterns, encourage personalized treatment plans, and optimize healthcare asset assignment. Tele - pharmaceutical stages prepared with AI chatbots

have too played a vital part in conveying healthcare administrations, particularly in rustic and remote zones, subsequently bridging the healthcare availability crevice.

AI in Instruction

The instruction segment in India is experiencing a advanced change fueled by AI. Shrewdly mentoring frameworks give personalized learning encounters, adjusting to person understudy needs and improving instructive results. AI-powered evaluation instruments can assess understudy execution, recognize regions of enhancement, and give focused on criticism. Also, AI-enabled dialect handling advances encourage effective substance creation, interpretation, and dialect learning, making instruction more available and comprehensive.

AI in Horticulture

With a noteworthy parcel of the Indian populace locked in in agribusiness, the application of AI in this division has the potential to drive rural efficiency and guarantee nourishment security. AI-based frameworks can analyze soil health, weather designs, and trim information to optimize cultivating hones, coming about in higher yields and diminished asset wastage. Besides, AI-powered stages give ranchers with real-time market data, empowering them to create educated decisions regarding edit estimating and promoting.

Challenges and the Way Forward

Whereas the exponential rise of AI in India presents monstrous openings, it moreover brings certain challenges. Moral considerations, privacy concerns, and have to upskill the workforce to adjust to the advancing AI scene are a few key ranges that require consideration. Moreover, guaranteeing capable AI arrangement and tending to inclinations inside AI calculations are vital to avoid unintended negative results.

To overcome these challenges, continued collaboration between the scholarly community, industry, and the government is fundamental. Ventures in AI inquire about, advancement, and instruction, coupled with vigorous administrative systems, will offer assistance in India to use AI to its full potential whereas guaranteeing inclusivity and moral hones.

AI employments in India

Counterfeit Insights in India is tending to societal needs in zones such as healthcare, instruction, agribusiness, keen cities, and framework, counting keen versatility and transportation. It is making a difference thrust innovation wildernesses through the creation of modern information and in creating and sending applications. As per a NASSCOM report, India ranks first in terms of Counterfeit Insights expertise infiltration and AI ability concentration, which is additionally the most elevated among all G20 and OECD nations.

A pioneer within the sending of advanced open foundation India is set to suit AI into its folds to surrender more noteworthy benefit brilliance. In horticulture, AI is being utilized through procedures such as climate design demonstrating and geospatial imaging to optimize crop yields. The therapeutic field is making strides in therapeutic picture examination to distinguish life-threatening ailments prior and empower more successful treatment plans. Within the instruction segment, unused AI-powered innovations are making a difference in the recognizable proof of at-risk students, fore- casting enrollment, and prognosticating results.

The Government of India has been at the bleeding edge of applying a few of these cutting-edge AI innovations in regions from e-Governance, horticulture, healthcare, instruction, back, and keeping money to law authorization. AI-powered instruments like MyGov Crown Helpdesk, Aarogya Setu, Digi Locker, Digi Yatra and Co-Win are a few cases of how the Government is leveraging AI and information to address huge challenges. Nearby arrangement, the Government has too centered on evangelizing and laying the establishment for building a solid AI-ready future era.

Capable AI for all

The Government of India has taken concrete steps to empower the selection of AI dependably and construct open believe in utilizing this innovation, putting the thought of 'AI for All' at the center of our National Technique for AI. The Government of India organized AI for Social Strengthening (RAISE) in 2020, a first-of-its-kind worldwide assembly of minds on Counterfeit Insights to drive India's vision and guide for social change, consideration and strengthening through capable AI. It was gone to by over 79,000 partners from the scholarly community, to inquire about industry and government agents from 147 interested nations.

Government steps to advance AI

The Indian Government has moreover been strong of the development of the AI division. The Government's National Informatics Center (NIC) gives cloud-based stages to encourage AI administrations such as AI- Manthan which practices in profound learning models, AI-Vani which is suited for chatbots and voice administrations, and AI-Satyapi- kaanan which is upgraded for biometric innovations like confront

acknowledgment. The National Manufactured Insights Entry and the National AI Mission have been created to empower the advancement and appropriation of AI all throughout the country. The MeitY Startup Hub and the National e-Government plan are situated to assist the cause of data innovation.

Assist, INDIAai (the National AI Entry of India), a joint wander by MeitY, NEGD and NASSCOM, has been set up to plan the country for an AI future. It is the single central information center on fake insights and partnered areas for trying business visionaries, students, experts, scholastics, and everybody else. India has curated a booklet as a essential presentation to AI that a individual of any age and foundation can comprehend the essentials.

FutureSkills PRIME is another B2C system by the Government for re-skilling/ up-skilling IT experts in 10 rising ranges counting Manufactured Insights.

The Government has moreover started the 'Visvesvaraya PhD Scheme' which promotes investigation in areas counting Artificial Intelligence and Machine Learning. To cultivate advancement through research, the Government has made a few 'Centres of Excellence' on different Developing technology. This will permit driving industry players to accomplice in conducting indisciplinary research and create cutting-edge applications and versatile issue arrangements in ranges of agribusiness, wellbeing, and feasible cities. To empower government school students with fitting modern age tech attitude, pertinent ability- sets and get to required instrument sets, Responsible AI for Youth Program has been propelled and over 11,000 Government school children were conferred preparing in AI. India has too joined the association of driving economies counting the USA, UK, EU, Australia, Canada, France, Germany, Italy, Japan, Mexico, Unused Zealand, Republic of Korea, and Singapore as a establishing part of the Global Partnership on Artificial Intelligence(GPAI), which is an universal and multi-stakeholder initiative to direct the capable improvement and utilize of AI, grounded in human rights, consideration, differing qualities, advancement, and financial development.

India has accepted the Chair of the Global Partnership on Artificial Intelligence (GPAI). GPAI could be a assemblage of 25 part nations, counting the US, the UK, the EU, Australia, Canada, France, Germany, Italy, Japan, Mexico, Unused Zealand, the Republic of Korea, and Singapore. In 2020 India had joined the group as a founding member. It is a first-of-its-type activity for evolving a better and improved understanding of challenges and opportunities around AI.

For Research and advancement in AI, Defense Research Development Organization (DRDO) has two dedicated research facilities, Centre for Artificial Intelligence and Robotics (CAIR), Bengaluru and DRDO Young Scientist Laboratory (DYSL)-AI, Bengaluru for application oriented research in AI.

Government adoption of AI

AI adoption in India is at an enunciation point. India has been positioned 1st for 'AI adoption by Organisations' and 7th for 'Number of recently financed AI companies' (2013-21) by the Stanford AI Index 2022. The same List places India 3rd for 'No. of AI Journal Publications' and 'No. of AI Conferences'. Further, India has been ranked 1st in all 5 pillars of Peak AI's decision intelligence maturity Scale, which evaluates a business's commercial AI readiness.

Utilizing the power of AI, India is on a way to create applications that unlock value for citizens and improve public service delivery.

Digital India BHASHINI

Digital India BHASHINI, as India's Artificial Intelligence (AI)- led language transition platform, will enable enormous citizen engagement to construct multilingual datasets through a crowd-sourcing activity called Bhasha Daan. It points to construct a National Public Digital Platform for languages and seeks to enable easy access to the internet and digital services in Indian languages, including voice-based access and help the creation of substance in Indian language. The stage will catalyse the complete digital eco-system and could be a giant step towards figuring it out the objective of Digital Government.

AI enabled Chatbots

The Government is independently embracing the utilization of AI- empowered chatbots for different Services. These chatbots work as conversational interfacing that imitate human interaction with clients. Indian Railroads has AskDisha chatbot for the advantage of the clients of the ticketing site www.irctc.co.in and tourism site www.irctctourism.com, where clients can inquire inquiries by voice as well as text.

MyGov Helpdesk, an AI- enabled chatbot on WhatsApp, empowered individuals with COVID- related data and vaccination and presently gives access to to Digilocker documents. At CogX 2020, which may be a prestigious Global Leardership Summit and Festival of AI & Developing Innovation held yearly in London, MyGov Crown Helpdesk packed away two grants beneath 'Best Innovation for COVID-19- Society' and 'People's

Choice COVID-19 By and overall Winner' categories.

UMANG app of the Government has also launched its voice-based chatbot that permits clients to inquire questions in Hindi and English, and through voice or content, almost various Government administrations. National Payment Corporation of India's DigiSaathi also uses artificial intelligence to provide assistance to clients with digital payment product and service inquiries.

Indian Railways

Indian Railways has presented the 'Ideal Train Profile', an AI-enabled framework, to expand the capacity use and income era in saved mail express trains by routinely dissecting the request design of every single trains. Created by the Centre of Railways information system (CRIS), the AI program takes into consideration various factors such as train origin and destination, timings, class of accommodation, and availablity of alternate trains to automate the best excellent conceivable ticket assignment and decrease waiting list records. The framework will also help zonal railroads to conduct periodic review of the train quotas to address the changing demand mix on account of holidays, celebrations, seasons, etc.

City Commute

In November 2022, Bengaluru Metro Rail Corporation Ltd introduced QR-ticketing service powered by AI automation. It is an automated text platform on WhatsApp which offers ticket and metro rail pass booking. Clients can enquire about routes and ticket costs, and register their unified Payment Interface (UPI)-linked bank accounts to purchase tickets and passes for journeys.

iRASTE for Road Security

In arrange to form Indian roads more secure and reduce accidents, predictive AI is being utilized to recognize dangers on the road and to provide a collision alert system to communicate timely alert to drivers. started as a pilot project in Nagpur City of Maharashtra has seen the usage of Government's project iRASTE (Intelligent Solution For Road Safety Through Technology And Engineering).

This system recognizes potential accident-causing scenarios whereas driving a vehicle and cautions drivers almost the same with the assistance of the Advanced Driver Assistance System (ADAS), with features such Collision Warning System (CWS), Driver Drowsiness System (DDS), and Lane Depature Warning (LDW). The System recognizes 'greyspots' by data analysis and mobility analysis by continuosly checking dynamic risk on the whole road network. The system too conducts nonstop observing of roads and designs engineering fixes to redress existing road blackspots for preventive upkeep and improved road infrastructure.

Traffic Management

States like Goa, Kerala, Karnataka, and Delhi have or are planning to utilize Artificial Ingelligence for Traffic management and Road security. Intelligent Traffic Management Systems (ITMS) helps the traffic police in security, Signal Management, and upholding Traffic rules successfully and send auto-generated challans to the violators with least human mediations. A few of these frameworks are anticipated to incorporate high resolution cameras with sensor-based real-time traffic volume count Technology.

Agriculture

Artificial Intelligence in farming is helping a detection of pests and weeds, precision farming with the help of predictive analytics, crop health assessment through drones, soil checking system, cost determining of crops based on authentic information, and climate estimate to foresee ominous climate conditions.

Artificial Intelligence is rapidly growing with a wide range of career openings. In India, the demand for AI professionals is anticipated to develop altogether within the coming a long time owing to the expanding selection of AI businesses over variety of industries including healthcare, finance, Manufacturing, and retail. A few of the foremost in-demand AI occupations in India includes data scientist, machine learning engineer, robotics engineer, Natural Language processing Engineer (NLP), computer vision Engineer, AI Researcher, AI Product manager, AI Consultant and AI Entreprenuer. The aptitudes required to work with AI vary depending on the particular roles, but there are some general skills that are basic for anybody who needs to work in this field, such as programming, arithmetic and data science.

Conclusion

India's exponential rise in AI selection is changing different segments, counting healthcare, instruction, farming, and more. With a flourishing environment, government back, and a gifted workforce, India is balanced to gotten to be a worldwide AI development center. As the nation proceeds to saddle the power of AI, it is vital to address challenges and focus on capable and comprehensive AI advancement. With the correct approach, India can cement its position as a pioneer within the digital age, driving feasible development and societal advancement through counterfeit insights.

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1	IIT Bombay - Indian Institute of Technology	Govt.	Mumbai	Maharashtra	1	West	1		133.14	134.28	128.57	131.85	134.49	125.85	121.02	909.20	920.00
2	IIT Delhi - Indian Institute of Technology	Govt.	Delhi	Delhi	1	North	1		132.14	135.42	127.99	133.28	133.71	121.28	120.71	904.53	918.58
3	IIT Madras - Indian Institute of Technology	Govt.	Chennai	Tamil Nadu	1	South	1		129.56	133.99	127.71	134.56	133.85	123.28	122.85	905.81	914.70
4	IIT Kharagpur - Indian Institute of Technology	Govt.	Kharagpur	West Bengal	1	East	1		129.42	132.85	127.57	133.85	132.56	122.85	122.85	901.95	910.84
5	IIT Guwahati - Indian Institute of Technology	Govt.	Guwahati	Assam	1	North-East	1		131.71	125.71	127.14	135.71	137.14	124.28	119.99	901.67	907.33
6	IIT Kanpur - Indian Institute of Technology	Govt.	Kanpur	Uttar Pradesh	1	North	2		129.14	132.85	126.85	131.42	131.99	123.14	121.14	896.53	905.83
7	IIT Roorkee - Indian Institute of Technology	Govt.	Roorkee	Uttarakhand	1	North	3		129.56	130.56	125.99	134.28	126.42	119.14	129.56	895.53	903.18
8	IIT BHU-Indian Institute of Technology (BHU)	Govt.	Varanasi	Uttar Pradesh	2	North	4		129.99	128.57	125.14	129.71	128.57	128.57	131.42	901.95	899.72
9	IIT Hyderabad - Indian Institute of Technology	Govt.	Hyderabad	Telangana	1	South	2		128.57	132.85	124.85	123.42	127.14	131.42	125.71	893.96	894.94
10	Institute of Chemical Technology	Govt.	Mumbai	Maharashtra	2	West	2		131.42	131.99	124.28	117.57	131.42	118.57	128.57	883.81	888.15
11	IIT Indore - Indian Institute of Technology	Govt.	Indore	Madhya Pradesh	1	Central	1		126.85	133.99	124.28	122.85	122.85	117.57	127.14	875.53	884.82
12	Indian Institute of Space Science and Technology (IISST)	Govt.	Thiruvananthapuram	Kerala	1	South	3		129.71	122.57	124.14	126.85	124.28	122.71	126.28	876.53	879.20
13	HBTU-Harcourt Butler Technical University	Govt.	Kanpur	Uttar Pradesh	3	North	5		124.28	124.28	123.99	129.14	115.71	126.71	126.57	870.67	872.80
14	IIT Ropar - Indian Institute of Technology	Govt.	Ropar	Punjab	1	North	6		122.85	129.99	123.71	120.28	118.57	127.14	122.85	865.39	868.80
15	NSUT-Netaji Subhas University of Technology	Govt.	New Delhi	Delhi	2	North	7		127.14	116.28	122.57	127.14	119.85	126.42	126.42	865.81	862.77
16	Anna University	Govt.	Chennai	Tamil Nadu	2	South	4		121.71	127.14	122.42	117.14	119.99	122.85	128.57	859.81	857.44
17	Central Institute of Plastic Engineering & Technology	Govt.	Ahmedabad	Gujarat	1	West	3		124.28	121.42	122.42	117.71	124.28	125.71	121.42	857.24	854.94

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18	IIT Mandi - Indian Institute of Technology	Govt.	Mandi	Himachal Pradesh	1	North	8		127.14	121.71	122.42	114.71	114.57	127.42	125.71	853.67	853.77
19	Jadavpur University - Faculty of Engineering and Technology	Govt.	KolKata	West Bengal	2	East	2		119.00	128.57	122.42	118.85	113.99	118.57	119.99	841.39	849.99
20	CoEP - College of Engineering	Govt.	Pune	Maharashtra	3	West	4		118.57	122.28	122.42	124.28	115.71	115.57	121.14	839.96	845.94
21	IIIT Hyderabad-International Institute of Information Technology	Govt.	Hyderabad	Telangana	2	South	5		119.99	122.42	122.42	115.14	119.28	121.28	122.28	842.82	842.15
22	Delhi Technological University	Govt.	Delhi	Delhi	3	North	9		120.85	122.85	122.42	110.28	124.28	121.42	122.42	844.53	841.02
23	Indian Institute of Technology (IIT-ISM)	Govt.	Dhanbad	Jharkhand	1	East	3		120.57	123.14	122.49	109.14	119.28	122.85	122.42	839.89	837.87
24	Indian Institute of Information Technology	Govt.	Allahabad	Uttar Pradesh	4	North	10		122.85	121.42	122.49	107.14	119.14	121.28	121.42	835.74	835.68
25	IIT Gandhinagar - Indian Institute of Technology	Govt.	Gandhinagar	Gujarat	2	West	5		120.14	124.28	122.49	107.14	118.99	119.99	119.99	833.03	834.51
26	ABV Indian Institute of Information Technology & Management	Govt.	Gwalior	Madhya Pradesh	2	Central	2		119.99	121.42	122.49	106.28	125.71	123.14	119.99	839.03	833.46
27	NIT Delhi- National Institute of Technology	Govt.	Delhi	Delhi	4	North	11		124.28	122.28	122.49	103.85	117.14	120.28	115.28	825.60	832.37
28	IIEST-Indian Institute of Engineering Science & Technology	Govt.	Shivpur	West Bengal	3	East	4		120.28	119.99	122.49	112.99	119.99	114.28	112.85	822.89	831.21
29	Zakir Husain College of Engineering and Technology, AMU	Govt.	Aligarh	Uttar Pradesh	5	North	12		125.71	121.42	122.28	105.71	112.85	114.57	112.85	815.39	830.18
30	NIT Calicut- National Institute of Technology	Govt.	Calicut	Kerala	2	South	6		122.85	117.14	122.21	109.99	118.85	119.42	113.42	823.89	828.92
31	NIT Srathkal- National Institute of Technology	Govt.	Surathkal	Karnataka	1	South	7		119.99	117.14	122.21	110.14	119.99	119.99	121.42	830.89	827.33
32	NIT-National Institute of Technology	Govt.	Tiruchirappalli	Tamil Nadu	3	South	8		118.57	120.28	122.21	105.99	119.42	124.28	121.14	831.89	826.28
33	MNNIT - Motilal Nehru National Institute of Technology	Govt.	Allahabad	Uttar Pradesh	6	North	13		114.28	117.14	122.14	115.85	122.85	119.57	119.99	831.82	825.25
34	G. B. Pant University of Agriculture and Technology (College of Technology)	Govt.	Pantnagar	Uttarakhand	2	North	14		120.42	122.85	122.07	102.85	117.14	119.99	112.85	818.17	824.18
34	Indian Institute of Technology	Govt.	Jodhpur	Rajasthan	1	North	14		121.42	120.71	121.99	102.85	117.14	117.42	122.85	824.39	824.18

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35	National Institute of Food Technology Enterpreneurship and Management (NIFTEM)	Govt.	Sonipat	Haryana	1	North	15		116.85	123.71	121.99	105.71	117.35	117.78	117.14	820.53	823.17
36	Central Institute of Plastic Engineering & Technology	Govt.	Bhubaneswar	Odisha	1	East	5		120.28	120.99	121.42	102.85	118.57	121.42	115.14	820.67	822.12
36	Jamia Millia Islamia	Govt.	New Delhi	Delhi	5	North	16		119.57	120.28	121.71	103.57	118.57	120.68	119.99	824.36	822.12
37	Guru Gobind Singh Indraprastha University	Govt.	New Delhi	Delhi	6	North	17		115.71	122.42	121.71	108.85	118.57	114.99	113.85	816.10	821.12
38	Central Institute of Plastic Engineering & Technology	Govt.	Lucknow	Uttar Pradesh	7	North	18		119.42	120.14	120.92	103.42	118.57	119.99	119.99	822.46	820.10
38	NIT Hamirpur- National Institute of Technology	Govt.	Hamirpur	Himachal Pradesh	2	North	18		119.57	120.28	121.28	102.57	118.57	119.28	121.28	822.82	820.10
39	G. B. Pant Engineering College	Govt.	Pauri	Uttarakhand	3	North	19		119.42	120.28	121.14	102.85	118.57	120.42	116.34	819.02	819.10
40	VNIT-Visvesvaraya National Institute of Technology	Govt.	Nagpur	Maharashtra	4	West	6		119.99	117.14	120.92	101.42	125.71	116.28	127.14	828.60	818.00
41	National Institute of Technology	Govt.	Rourkela	Odisha	2	East	6		119.42	119.99	120.85	102.85	120.28	117.71	112.85	813.96	816.98
42	Indian Institute of Technology	Govt.	Bhubaneswar	Odisha	3	East	7		117.14	121.28	121.42	102.85	115.71	117.14	121.42	816.96	815.84
42	National Institute of Technology	Govt.	Durgapur	West Bengal	4	East	7		119.57	120.28	121.28	102.99	115.42	116.71	113.59	809.85	815.84
43	National Institute of Technology	Govt.	Warangal	Telangana	3	South	9		119.99	117.14	121.57	107.14	114.28	112.19	114.28	806.59	814.78
43	College of Engineering	Govt.	Trivandrum	Kerala	3	South	9		119.99	120.42	121.57	102.85	114.28	112.57	113.85	805.53	814.78
44	National Power Training Institute-Northern Region	Govt.	New Delhi	Delhi	7	North	20		117.14	120.28	119.99	107.14	114.28	115.71	112.85	807.39	813.70
45	National Institute of Technology	Govt.	Srinagar	Uttarakhand	4	North	21		119.28	119.99	120.85	100.71	118.85	112.85	117.14	809.67	812.65
46	National Institute of Technology	Govt.	Raipur	Chhatisgarh	1	Central	3		119.57	120.28	121.28	100.00	114.28	117.42	113.85	806.67	812.08
46	National Institute of Industrial Engineering	Govt.	Mumbai	Maharashtra	5	West	7		117.14	117.14	121.42	103.57	118.71	120.71	117.14	815.82	812.08
47	National Institute of Foundry & Forge Technology	Govt.	Ranchi	Jharkhand	2	East	8		118.57	119.99	120.85	102.85	114.28	116.71	109.99	803.25	811.38
48	Indian Institute of Technology	Govt.	Patna	Bihar	1	East	9		117.14	119.99	120.85	103.28	118.28	112.85	112.85	805.25	810.63
49	Indian Institute of Information Technology Design & Manufacturing	Govt.	Jabalpur	Madhya Pradesh	3	Central	4		118.28	118.57	121.28	101.42	117.85	115.71	113.57	806.67	809.93

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50	Indian Institute of Information Technology Design & Manufacturing	Govt.	Kancheepuram	Tamil Nadu	4	South	10		111.71	108.85	119.42	120.57	117.85	126.99	115.14	820.53	809.29
50	JNTU College of Engineering	Govt.	Hyderabad	Telangana	4	South	10		115.71	110.14	120.85	118.28	114.57	112.97	113.42	805.93	809.29
51	University College of Engineering Osmania University	Govt.	Hyderabad	Telangana	5	South	11		119.57	117.14	121.42	100.00	118.14	115.71	114.28	806.25	808.73
52	Defence Institute of Advanced Technology	Govt.	Pune	Maharashtra	6	West	8		117.14	117.14	121.28	101.42	118.35	115.71	120.21	811.25	807.91
53	National Institute of Technology	Govt.	Kurukshetra	Haryana	2	North	22		119.42	115.71	121.28	101.99	115.71	112.85	117.14	804.10	806.88
53	Visvesvaraya Technological University	Govt.	Belgaum	Karnataka	2	South	12		119.57	117.14	121.42	100.00	117.42	112.14	114.28	801.96	806.88
54	Indian Institute of Technology, Tirupati	Govt.	Yerpedu	Andhra Pradesh	1	South	13		110.57	118.71	117.71	113.28	115.71	123.42	105.99	805.39	806.37
55	Indian Institute of Information Technology, Design & Manafacturing	Govt.	Chennai	Tamil Nadu	5	South	14		114.28	114.99	117.42	111.85	112.85	124.99	111.42	807.82	805.57
56	Dr. B. R. Ambedkar National Institute of Technology	Govt.	Jalandhar	Punjab	2	North	23		112.57	108.57	117.42	122.28	123.14	110.71	114.71	809.39	805.16
57	National Power Training Institute	Govt.	Durgapur	West Bengal	5	East	10		109.42	120.85	117.14	114.28	104.57	117.99	115.14	799.39	802.96
58	Indraprastha Institute of Information Technology	Govt.	New Delhi	Delhi	8	North	24		115.28	111.99	120.85	105.71	115.71	114.28	113.14	796.96	797.50
59	Rajkiya Engineering College	Govt.	Sonbhadra	Maharashtra	7	West	9		109.99	112.85	116.85	114.99	114.57	115.71	115.71	800.67	796.15
60	Army Institute of Technology	Govt.	Pune	Maharashtra	8	West	10		108.57	114.28	116.71	112.71	122.57	111.14	106.99	792.96	792.59
61	Sardar Vallabhbhai National Institute of Technology	Govt.	Surat	Gujarat	3	West	11		107.14	111.14	116.57	114.71	113.85	115.85	117.14	796.39	788.08
62	National Institute of Technology	Govt.	Jamshedpur	Jharkhand	3	East	11		112.57	105.99	116.57	107.14	123.14	120.71	113.99	800.10	785.98
63	National Institute of Technology	Govt.	Goa	Goa	1	West	12		109.99	103.14	116.28	113.71	115.35	119.28	124.28	802.03	783.15
64	College of Agricultural Engineering and Technology- Punjab Agricultural University	Govt.	Ludhiana	Punjab	3	North	25		105.99	109.14	116.28	114.42	113.14	114.57	113.71	787.25	780.49
65	Malaviya National Institute of Technology	Govt.	Jaipur	Rajasthan	2	North	26		108.57	104.85	116.14	115.71	117.42	111.42	106.57	780.68	778.32
65	Dr. APJ Abdul Kalam Institute of Technology	Govt.	Tanakpur	Uttarakhand	5	North	26		104.14	108.42	115.99	120.14	106.78	110.28	115.71	781.46	778.32

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									Placement Performance (PP)	Teaching Learning Resources & Pedagogy (TLRP)	Research (Volume, Income & Reputation)	Industry Income and Integration (III)	Placement Strategies & Support (PSS)	Future Orientation \(FO)	External Perception & International Outlook (EPIO)		
66	Jorhat Engineering College	Govt.	Jorhat	Assam	2	North-East	2		107.42	107.42	115.99	111.71	115.71	108.57	109.99	776.82	774.32
67	National Institute of Technology	Govt.	Silchar	Assam	3	North-East	3		105.14	107.14	115.92	113.42	111.71	114.42	110.42	778.18	772.60
68	Maulana Azad National Institute of Technology	Govt.	Bhopal	Madhya Pradesh	4	Central	5		112.00	102.28	112.28	103.42	121.99	122.42	117.99	792.39	770.17
69	Panjab University	Govt.	Chandigarh	Punjab	4	North	27		103.99	105.14	115.71	112.85	114.57	110.28	112.85	775.39	766.96
70	National Institute of Technology	Govt.	Arunachal Pradesh	Arunachal Pradesh	1	North-East	4		103.99	108.28	115.71	112.28	113.71	98.71	99.57	752.25	762.12
71	National Institute of Science & Technology	Govt.	Berhampur	Odisha	4	East	12		96.00	111.71	112.85	111.71	117.14	116.57	103.42	769.39	759.54
72	University School of Information & Communication Technology (GGSIPU)	Govt.	New Delhi	Delhi	9	North	28		101.42	104.28	112.57	113.71	106.71	115.71	114.57	768.96	756.85
72	Don Bosco University (Don Bosco College of Engineering & Technology)	Govt.	Guwahati	Assam	4	North-East	5		106.57	98.57	111.92	115.71	103.71	114.14	117.45	768.06	756.85
73	Mizoram University - School of Engineering and Technology	Govt.	Aizawl	Mizoram	1	North-East	6		102.85	114.57	111.71	104.28	101.99	103.57	108.85	747.82	753.66
74	National Institute of Technology	Govt.	Manipur	Manipur	1	North-East	7		106.42	99.71	111.42	101.57	116.28	121.28	107.42	764.10	747.19
75	Rajiv Gandhi Institute of Petroleum Technology	Govt.	Raibareli	Uttar Pradesh	8	North	29		105.14	93.28	109.99	113.71	109.14	118.14	108.85	758.25	743.16
76	College of Engineering	Govt.	Bhubaneswar	Odisha	5	East	13		100.42	102.99	109.28	100.35	126.28	115.14	113.99	768.46	741.89
77	Orissa School of Mining Engineering	Govt.	Kendujhar	Odisha	6	East	14		98.00	104.71	108.85	113.42	105.28	109.28	100.28	739.82	738.81
78	University School of Chemical Technology	Govt.	New Delhi	Delhi	10	North	30		99.14	104.85	108.57	112.28	105.28	106.42	97.42	733.96	737.19
79	Govt. College of Engineering	Govt.	Kannur	Kerala	4	South	15		103.57	95.71	108.57	111.71	101.42	113.57	113.99	748.53	735.62
80	College of Engineering	Govt.	Thiruvananthapuram	Kerala	5	South	16		94.00	104.57	107.14	108.85	112.92	112.42	113.57	753.46	732.82
81	Rajiv Gandhi Institute of Technology	Govt.	Kottayam	Kerala	6	South	17		100.57	91.14	107.14	114.07	114.71	114.14	114.85	756.61	731.34
82	Odisha Universit of Technology & Research	Govt.	Bhubaneswar	Odisha	7	East	15		93.57	106.57	107.14	111.71	103.78	109.71	105.99	738.46	730.84
82	University Institute of Chemical Technology, North Maharashtra University	Govt.	Jalgaon	Maharashtra	9	West	13		98.14	105.99	107.14	106.49	105.99	109.28	100.64	733.68	730.84

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83	National Power Training Institute	Govt.	Nagpur	Maharashtra	10	West	14		99.14	104.57	106.57	107.42	105.28	107.85	100.28	731.11	729.57
84	National Institute of Technology	Govt.	Agartala	Tripura	1	North-East	8		98.71	104.28	106.57	100.28	120.28	107.85	104.71	742.68	728.50
85	National Institute of Technology	Govt.	Meghalaya	Meghalaya	1	North-East	9		93.28	106.57	106.28	111.71	102.85	108.85	102.85	732.39	727.46
86	Govt. College of Technology	Govt.	Coimbatore	Tamil Nadu	6	South	18		100.85	105.99	105.99	100.28	105.99	103.57	109.14	731.82	726.38
87	International Institute of Information Technology	Govt.	Bengaluru	Karnataka	3	South	19		94.71	101.85	105.71	113.14	105.85	108.14	102.57	731.96	724.59
88	National Institute of Technology	Govt.	Mizoram	Mizoram	2	North-East	10		103.14	103.14	105.71	94.28	115.14	106.71	107.14	735.25	723.52
89	National Institute of Technology	Govt.	Patna	Bihar	2	East	16		101.71	97.42	105.71	102.85	112.85	110.71	105.71	736.96	722.68
90	University School of Bio-technology (GGSIPU)	Govt.	New Delhi	Delhi	11	North	31		100.42	103.14	105.71	96.00	117.14	107.42	105.99	735.82	721.96
91	Institute of Engineering & Technology	Govt.	Lucknow	Uttar Pradesh	9	North	32		104.57	93.14	105.71	100.42	111.71	112.14	105.99	733.68	718.11
91	University College of Engineering, Punjab Technical University	Govt.	Patiala	Punjab	5	North	32		100.28	100.00	105.71	98.57	112.85	112.07	100.00	729.46	718.11
92	JNTU College of Engineering	Govt.	Kakinada	Andhra Pradesh	2	South	20		103.14	94.28	105.71	97.42	115.99	110.71	110.28	737.53	716.60
93	University College of Engineering BIT Campus, Anna University	Govt.	Tiruchirappalli	Tamil Nadu	7	South	21		103.14	89.00	104.99	114.28	96.00	108.21	101.42	717.04	714.19
94	National Institute of Technology	Govt.	Sikkim	Sikkim	1	North-East	11		102.42	100.28	104.57	100.28	111.99	92.14	97.42	709.11	713.08
95	Bengal Engineering and Science University	Govt.	Shibpur	West Bengal	6	East	17		101.14	97.14	104.57	103.14	113.14	92.14	97.14	708.39	709.96
96	Pandit Dwarka Prasad Mishra Indian Institute of Information Technology, Design and Manufacturing (IIITDM) Jabalpur	Govt.	Jabalpur	Madhya Pradesh	5	Central	6		98.85	107.42	104.28	88.57	104.28	112.49	95.28	711.18	707.91
97	Indian Institute of Carpet Technology	Govt.	Bhadohi	Uttar Pradesh	10	North	33		97.71	107.71	104.28	97.42	102.28	89.71	93.14	692.25	705.82
98	Sant Longowal Institute of Engineering and Technology	Govt.	Sangrur	Punjab	6	North	34		109.57	97.28	104.28	90.42	98.85	103.28	91.42	695.11	704.89

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									Placement Performance (PP)	Teaching Learning Resources & Pedagogy (TLRP)	Research (Volume, Income & Reputation)	Industry Income and Integration (III)	Placement Strategies & Support (PSS)	Future Orientation \(FO)	External Perception & International Outlook (EPIO)		
98	Madan Mohan Malaviya University of Technology	Govt.	Gorakhpur	Uttar Pradesh	11	North	34		103.71	94.85	104.28	92.28	110.49	109.14	102.85	717.61	704.89
99	University Department of Chemical Technology, Sant Gadge Baba Amravati University	Govt.	Amrawati	Maharashtra	11	West	15		100.28	99.14	103.71	91.42	104.57	108.42	109.57	717.11	702.58
100	Mahatma Gandhi Institute of Technology	Govt.	Hyderabad	Telangana	6	South	22		98.85	101.42	103.71	96.00	107.42	91.42	95.71	694.54	699.53
101	JIET School of Engineering and Technology for Girls	Govt.	Jodhpur	Rajasthan	3	North	35		94.57	97.14	103.57	97.14	107.42	112.14	100.00	711.96	696.79
102	Govt. College of Engineering, GCoE-Amrawati	Govt.	Amrawati	Maharashtra	12	West	16		97.28	92.85	103.57	96.00	103.14	113.57	103.28	709.68	692.81
103	Rajasthan Technical University - University College of Engineering	Govt.	Kota	Rajasthan	4	North	36		97.42	101.42	102.85	94.57	101.85	89.28	92.42	679.82	689.68
104	Assam University - Triguna Sen School of Technology	Govt.	Silchar	Assam	5	North-East	12		98.57	91.00	102.85	96.00	101.71	104.99	100.28	695.39	685.97
105	University Institute of Engineering and Technology, Kurukshetra University	Govt.	Kurukshetra	Haryana	3	North	37		97.42	96.00	102.85	98.85	97.42	86.42	94.57	673.54	683.65
106	JNTU University College of Engineering	Govt.	Vizianagaram	Andhra Pradesh	3	South	23		101.71	94.57	102.85	88.85	93.14	106.42	90.28	677.82	681.85
107	Indira Gandhi Institute of Technology	Govt.	New Delhi	Delhi	12	North	38		100.28	94.42	102.85	87.42	98.85	103.57	96.00	683.39	680.73
108	Tezpur University - School of Engineering	Govt.	Sonitpur	Assam	6	North-East	13		97.42	90.28	102.85	88.85	104.57	109.28	95.14	688.39	676.21
109	Haldia Institute of Technology	Govt.	Haldia	West Bengal	7	East	18		94.57	90.28	102.85	90.28	108.85	108.85	95.42	691.11	675.11
109	Institute of Engineering & Management, IEM	Govt.	Kolkata	West Bengal	7	East	18		90.28	100.28	102.85	94.42	101.85	88.57	91.21	669.47	675.11
110	Govt. Engineering College, Barton Hill	Govt.	Thiruvananthapuram	Kerala	7	South	24		94.57	92.42	102.71	84.57	107.42	110.71	97.42	689.82	672.05
111	Thanthai Periyar Govt. Institute of Technology	Govt.	Vellore	Tamil Nadu	8	South	25		104.85	95.71	102.57	78.85	98.85	85.00	88.85	654.68	669.99
112	Pondicherry Engineering College	Govt.	Pondicherry	Puducherry	1	South	26		93.14	91.71	102.57	96.28	100.00	89.28	93.14	666.11	668.45
113	University Science Instrumentation Centre, University of Kalyani	Govt.	Nadia	West Bengal	8	East	19		86.00	90.57	102.28	95.28	107.28	110.71	97.42	689.54	666.87
114	Indira Gandhi Institute of Technology	Govt.	Sarang	Odisha	8	East	20		100.28	88.85	102.14	91.85	100.28	77.85	90.28	651.54	664.72

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115	JNTU College of Engineering	Govt.	Anantpur	Andhra Pradesh	4	South	27		93.71	89.57	101.99	76.28	107.42	125.42	100.28	694.68	662.33
116	Central Food Technological Research Institute	Govt.	Mysuru	Karnataka	4	South	28		88.85	98.28	101.42	80.28	107.28	106.42	90.28	672.82	660.70
117	Ambedkar Institute of Advance Communication Technologies & Research	Govt.	New Delhi	Delhi	13	North	39		101.99	86.00	101.42	91.57	97.00	75.14	89.42	642.54	658.87
118	Jodhpur National University	Govt.	Jaipur	Rajasthan	5	North	40		96.00	83.14	101.42	90.28	105.71	99.28	91.57	667.40	657.87
119	Guru Jambheshwar University of Science and Technology - Dept of Computer Science and Engineering	Govt.	Hisar	Haryana	4	North	41		90.57	87.14	101.42	88.85	108.85	100.71	90.00	667.54	654.91
120	Rajasthan College of Engineering For Women	Govt.	Jaipur	Rajasthan	6	North	42		94.28	91.42	101.42	85.14	98.85	88.57	86.00	645.68	652.21
121	Pandit Deendayal Petroleum University	Govt.	Gandhinagar	Gujarat	4	West	17		97.71	93.42	100.71	77.14	98.85	85.00	88.85	641.68	649.83
122	Govt. College of Engineering and Ceramic Technology	Govt.	Kolkata	West Bengal	9	East	21		96.28	91.42	100.71	82.14	93.14	85.71	84.28	633.68	646.52
123	North Eastern Regional Institute of Science & Technology	Govt.	Itanagar	Arunachal Pradesh	2	North-East	14		91.42	91.71	99.71	80.00	95.42	97.85	90.00	646.11	642.67
124	Uttar Pradesh Textile Technology Institute	Govt.	Kanpur	Uttar Pradesh	12	North	43		94.57	82.85	100.00	87.14	100.85	85.71	91.42	642.54	641.17
125	University institute of Chemical Engineering and Technology	Govt.	Chandigarh	Punjab	7	North	44		97.28	94.28	98.85	74.57	90.28	80.00	87.14	622.40	637.99
126	Faculty of Technology and Engineering, The Maharaja Sayajirao University of Baroda	Govt.	Vadodara	Gujarat	5	West	18		88.85	91.42	98.57	77.42	98.85	93.57	98.85	647.54	635.61
127	JNTU Hyderabad, University College of Engineering, Science & Technology	Govt.	Karimnagar	Telangana	7	South	29		93.14	96.00	98.00	80.00	88.00	76.71	75.57	607.40	633.19
127	University Institute of Engineering and Technology, maharshi Dayananda University	Govt.	Rohtak	Haryana	5	North	45		91.71	95.71	98.57	78.57	90.28	78.07	82.85	615.75	633.18
128	Dr. Baba Saheb Ambedkar Technological University	Govt.	Raigad	Maharashtra	13	West	19		90.28	97.42	98.57	76.00	93.14	80.71	80.00	616.11	632.07
129	Vishwakarma Govt. Engineering College	Govt.	Chand Kheda	Gujarat	6	West	20		90.28	88.71	96.57	82.85	88.57	91.42	96.42	634.83	630.87
130	College of Agricultural Engineering and Technology- CCS Haryana Agricultural University	Govt.	Hisar	Haryana	6	North	46		90.28	95.00	97.14	81.42	87.85	76.57	82.42	610.68	629.14

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130	Indira Gandhi Engineering College	Govt.	Sagar	Madhya Pradesh	6	Central	7		89.57	95.57	96.71	82.57	86.64	78.57	80.00	609.61	629.14
131	University College of Engineering	Govt.	Villupuram	Tamil Nadu	9	South	30		87.42	89.14	97.14	76.00	96.00	103.57	95.57	644.82	627.87
132	University College of Engineering	Govt.	Arni	Tamil Nadu	10	South	31		89.28	95.85	95.85	82.85	87.85	76.57	75.57	603.83	626.76
133	West Bengal University of Technology	Govt.	KolKata	West Bengal	10	East	22		90.71	88.57	95.42	85.71	87.71	80.00	82.85	610.97	624.15
134	The National Institute of Engineering	Govt.	Bengaluru	Karnataka	5	South	32		90.42	89.28	95.00	84.71	88.85	76.85	84.28	609.40	622.62
135	Dr. Bhimrao Ambedkar Engineering College of Information Technology	Govt.	Banda	Uttar Pradesh	13	North	47		89.57	91.00	94.42	78.57	91.42	90.57	77.42	612.97	620.81
136	University College of Engineering	Govt.	Tindivanam	Tamil Nadu	11	South	33		88.57	85.71	94.28	84.28	90.71	87.85	87.14	618.54	618.82
137	JNTUA College of Engineering	Govt.	Cuddapah	Andhra Pradesh	5	South	34		89.14	91.28	94.28	77.14	90.00	85.28	79.71	606.83	616.35
137	College of Technology and Engineering, Maharana Pratap University of Agriculture and Technology	Govt.	Udaipur	Rajasthan	7	North	48		92.28	86.00	94.14	84.28	88.17	77.14	75.71	597.71	616.35
138	Mysuru Royal Institute of Technology	Govt.	Mysuru	Karnataka	6	South	35		89.14	85.57	94.00	82.00	92.85	84.57	84.28	612.40	615.31
139	Govt. College of Engineering Textile Technology	Govt.	Kolkata	West Bengal	11	East	23		94.14	81.00	94.57	84.28	88.85	77.14	80.00	599.97	613.91
140	Maharaja Sayajirao University of Baroda	Govt.	Vadodara	Gujarat	7	West	21		87.14	85.71	93.71	82.85	90.00	87.14	84.28	610.83	612.47
141	Govt. College of Engineering and Research	Govt.	Pune	Maharashtra	14	West	22		91.42	84.28	90.85	87.14	87.14	76.28	80.00	597.11	611.41
142	West Bengal University of Animal and Fishery Sciences	Govt.	Kolkata	West Bengal	12	East	24		86.71	85.71	93.21	83.14	88.57	85.71	85.14	608.18	610.33
142	National Institute of Technology	Govt.	Nagaland	Nagaland	1	North-East	15		89.42	90.00	93.28	77.42	90.28	78.22	77.42	596.06	610.33
143	College of Engineering (University Department, Anna University)	Govt.	Chennai	Tamil Nadu	12	South	36		86.71	85.71	92.85	81.71	92.85	84.28	84.28	608.40	609.39
144	Gurukula Kangri Vishwavidyalaya (Faculty of Engineering)	Govt.	Haridwar	Uttarakhand	6	North	49		91.71	89.14	93.21	77.14	84.71	77.14	75.71	588.76	608.74
145	Ch. Devi Lal Memorial Govt. Engineering College	Govt.	Sirsa	Haryana	7	North	50		88.57	84.28	90.85	84.28	98.57	77.14	75.71	599.40	607.97
145	Sree Venkateswara University College of Engineering	Govt.	Tirupati	Andhra Pradesh	6	South	37		91.42	86.00	93.14	82.85	84.28	72.51	75.71	585.91	607.97

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146	Govt. College of Engineering and Textile Technology	Govt.	Berhampore	West Bengal	13	East	25		89.42	85.57	93.14	84.28	85.71	77.14	73.42	588.68	607.65
147	Maharaja Institute of Technology	Govt.	Thandavapura	Karnataka	7	South	38		86.71	85.71	93.14	81.42	90.00	82.85	84.28	604.11	607.45
147	Guru Nanak Dev University - Faculty of Engineering	Govt.	Amritsar	Punjab	8	North	51		88.57	85.71	92.85	84.28	90.57	74.28	74.28	590.54	607.45
148	Kamla Nehru Institute of Technology	Govt.	Sultanpur	Uttar Pradesh	14	North	52		90.00	86.14	92.85	82.85	84.85	74.57	77.14	588.40	606.93
149	Dibrugarh University - Institute of Engineering & Technology	Govt.	Dibrugarh	Assam	7	North-East	16		89.42	85.71	93.21	84.28	84.28	75.42	72.85	585.19	606.39
150	Mahatma Jyoti Rao Phule University	Govt.	Jaipur	Rajasthan	8	North	53		91.42	84.28	92.85	81.14	85.71	75.71	78.28	589.40	605.65
151	Institute of Mass Communication and Media Technology, Kurukshetra University	Govt.	Kurukshetra	Haryana	8	North	54		91.42	84.28	93.14	81.14	84.28	75.71	76.57	586.54	604.87
152	Deenbandhu Chhotu ram University of Science and Technology	Govt.	Murthal	Haryana	9	North	55		91.42	84.28	92.85	81.14	85.42	75.71	74.28	585.11	604.39
152	Kalyani Govt. Engineering College	Govt.	Nadia	West Bengal	14	East	26		89.42	84.28	92.85	84.28	83.42	77.14	74.28	585.69	604.39
153	Mahatma Gandhi Mission's Jawaharlal Nehru Engineering College	Govt.	Aurangabad	Maharashtra	15	West	23		91.42	84.28	92.85	81.14	85.71	74.28	74.00	583.69	603.85
154	Institute of Engineering & Technology, MJP Rohilkhand University	Govt.	Bareilly	Uttar Pradesh	15	North	56		88.57	87.14	88.57	84.28	88.57	74.28	76.00	587.40	603.15
155	Rajeev Gandhi Memorial College of Engineering and Technology	Govt.	Kurnool	Andhra Pradesh	7	South	39		88.57	84.28	90.57	84.28	90.57	75.50	74.28	588.04	602.56
155	Shri Guru Govind Singhji Institute of Engineering and Technology	Govt.	Vishnupuri	Maharashtra	16	West	24		88.57	84.28	90.85	83.85	88.57	74.28	80.00	590.40	602.56
156	Mahatma Gandhi Mission's College of Engineering and Technology	Govt.	Mumbai	Maharashtra	17	West	25		91.42	84.28	90.85	81.14	84.28	77.14	75.71	584.83	602.03
157	Maulana Abul Kalam Azad University of Technology	Govt.	Nadia	West Bengal	15	East	27		91.42	85.14	88.57	81.14	87.71	75.71	75.71	585.40	601.23
158	Manyawar Kansi Ram Engineering College of Information Technology	Govt.	Ambedkar Nagar	Uttar Pradesh	16	North	57		88.57	82.85	88.57	85.71	90.00	74.28	82.85	592.83	600.87
159	University College of Engineering	Govt.	Kariavattom	Kerala	8	South	40		87.14	84.28	92.85	84.28	86.28	74.28	72.85	581.97	600.35
160	USTM, University of Science & Technology Meghalaya	Govt.	Ri- Bhoi	Meghalaya	2	North-East	17		88.57	82.85	88.57	85.71	90.00	72.85	77.14	585.69	598.67

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									Placement Performance (PP)	Teaching Learning Resources & Pedagogy (TLRP)	Research (Volume, Income & Reputation)	Industry Income and Integration (III)	Placement Strategies & Support (PSS)	Future Orientation \(FO)	External Perception & International Outlook (EPIO)		
160	University Institute of Technology	Govt.	Burdwan	West Bengal	16	East	28		88.57	84.57	90.57	83.42	85.71	73.28	74.28	580.40	598.67
161	Jalpaiguri Govt. Engineering College	Govt.	Jalpaiguri	West Bengal	17	East	29		91.42	84.28	88.57	81.42	82.85	76.28	74.28	579.11	597.71
162	Dr.Ram Manohar Lohia Awadh University - Institute of Engineering Technology	Govt.	Faizabad	Uttar Pradesh	17	North	58		91.42	84.28	88.57	81.00	82.85	74.85	75.71	578.69	597.00
162	Rajiv Gandhi University - Faculty of Engineering and Technology	Govt.	Papum pare	Arunachal Pradesh	3	North-East	18		88.57	85.71	87.14	82.85	86.18	75.71	77.14	583.30	597.00
163	University Institute of Technology, Barkatullah University	Govt.	Bhopal	Madhya Pradesh	7	Central	8		88.57	85.71	87.00	83.57	86.14	74.28	75.71	580.97	596.63
164	University Institute of Engineering & technology, Panjab University SSG Regional Center	Govt.	Hoshiarpur	Punjab	9	North	59		89.14	84.28	88.14	81.42	88.57	76.28	75.71	583.54	596.47
165	Feroze Gandhi Institute of Engineering & Technology	Govt.	Raebareli	Uttar Pradesh	18	North	60		89.57	78.57	85.71	84.28	90.57	78.57	82.85	590.11	592.33
166	Institute of Technology, Guru Ghasidas Vishwavidyalaya	Govt.	Bilaspur	Chhatisgarh	2	Central	9		88.57	79.00	85.71	84.28	90.57	77.14	85.71	590.97	591.51
167	University Institute of Engineering and Technology	Govt.	Chandigarh	Punjab	10	North	61		88.57	78.85	87.14	83.42	90.57	75.71	82.85	587.11	590.87
167	University Institute of Technology-Rajiv Gandhi Proudyogiki Vishwavidyalaya	Govt.	Bhopal	Madhya Pradesh	8	Central	10		85.71	81.42	85.71	85.71	91.71	75.71	81.28	587.26	590.87
168	Nagaland University - School of Engineering and Technology and Management	Govt.	Lumami	Nagaland	2	North-East	19		88.57	79.14	85.71	84.28	90.57	74.28	85.71	588.26	590.53
169	University College of Engineering	Govt.	Thodupuzha	Kerala	9	South	41		87.14	79.57	85.71	85.71	90.57	74.28	85.14	588.11	590.33
170	Ujjain Engineering College	Govt.	Ujjain	Madhya Pradesh	9	Central	11		88.57	80.00	85.71	82.85	90.64	77.14	81.42	586.33	590.19

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									Placement Performance (PP)	Teaching Learning Resources & Pedagogy (TLRP)	Research (Volume, Income & Reputation)	Industry Income and Integration (III)	Placement Strategies & Support (PSS)	Future Orientation \(FO)	External Perception & International Outlook (EPIO)		
1	Birla Institute of Technology and Science (BITS Pilani)	Private	Pilani	Rajasthan	1	North	1		127.14	120.28	122.85	125.71	124.57	127.85	127.99	876.38	**870.98**
2	Thapar Institute of Engineering & Technology	Private	Patiala	Punjab	1	North	2		121.71	122.85	121.28	127.14	122.57	128.57	127.14	871.24	**864.40**
3	Dhirubhai Ambani Institute of Information and Communication Technology, DA-IICT	Private	Gandhinagar	Gujarat	1	West	1		120.28	127.42	120.99	118.42	123.99	127.14	124.28	862.53	**857.57**
4	Vellore Institute of Technology	Private	Vellore	Tamil Nadu	1	South	1		124.57	114.28	119.85	125.71	128.57	125.71	125.71	864.39	**853.64**
5	Manipal Academy of Higher Education	Private	Manipal	Karnataka	1	South	2		120.85	122.85	119.99	119.99	121.14	126.14	127.14	858.10	**850.94**
5	Siksha 'O' Anusandhan (Institute of Technical Education and Research)	Private	Bhubaneswar	Odisha	1	East	1		124.28	122.57	120.71	115.71	120.15	127.14	122.99	853.54	**850.93**
6	Birla Institute of Technology (Mesra)	Private	Mesra	Jharkhand	1	East	2		120.85	118.85	119.71	122.28	122.57	127.42	125.71	857.39	**847.94**
7	Amrita Vishwa Vidyapeetham	Private	Coimbatore	Tamil Nadu	2	South	3		124.57	125.71	119.71	114.28	120.85	112.14	117.14	834.39	**845.56**
8	PEC University of Technology	Private	Chandigarh	Punjab	2	North	3		118.71	125.99	119.57	118.57	118.57	115.57	121.14	838.10	**842.50**
9	PSG College of Technology	Private	Coimbatore	Tamil Nadu	3	South	4		117.14	119.71	119.99	122.42	120.28	122.85	122.28	844.67	**839.59**
10	RV College of Engineering	Private	Bengaluru	Karnataka	2	South	5		122.85	117.14	119.71	115.71	122.57	121.42	122.42	841.82	**837.40**
11	SRM Institute of Science & Technology	Private	Chennai	Tamil Nadu	4	South	6		118.28	120.28	119.57	115.99	117.14	124.28	127.14	842.67	**834.56**
12	BMS College of Engineering	Private	Bengaluru	Karnataka	3	South	7		122.85	119.99	119.99	105.71	124.28	121.42	119.99	834.24	**830.46**
13	Malnad College of Engineering	Private	Hassan	Karnataka	4	South	8		120.28	118.85	119.85	109.85	117.14	119.99	121.42	827.39	**825.41**
13	Dayananda Sagar University	Private	Bengaluru	Karnataka	4	South	8		122.85	119.42	119.99	105.71	115.85	122.85	117.71	824.39	**825.41**
14	Ramaiah Institute of Technology	Private	Bengaluru	Karnataka	5	South	9		117.57	121.71	120.28	106.85	118.28	120.28	115.71	820.67	**821.36**
15	Coimbatore Institute of Technology	Private	Coimbatore	Tamil Nadu	5	South	10		121.71	115.71	119.85	108.14	117.14	115.71	117.14	815.39	**817.93**
16	Faculty of Engineering, Bharath Institute of Higher Education and Research (BIHER)	Private	Chennai	Tamil Nadu	6	South	11		117.71	117.42	119.99	111.14	109.99	118.85	114.14	809.25	**814.60**

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									Placement Performance (PP)	Teaching Learning Resources & Pedagogy (TLRP)	Research (Volume, Income & Reputation)	Industry Income and Integration (III)	Placement Strategies & Support (PSS)	Future Orientation \(FO)	External Perception & International Outlook (EPIO)		
17	Bharati Vidyapeeth (Deemed to be University) College of Engineering	Private	Pune	Maharashtra	1	West	2		121.42	116.71	117.14	104.28	115.28	121.42	112.85	809.10	**810.89**
18	K.S.Rangasamy College of Technology	Private	Namakkal	Tamil Nadu	7	South	12		117.85	120.28	119.28	101.14	116.85	117.14	115.71	808.25	**809.42**
19	ICFAI Tech Hyderabad	Private	Hyderabad	Telangana	1	South	13		119.00	117.14	115.71	107.14	114.28	116.99	114.28	804.54	**806.93**
20	Kamaraj College of Engineering and Technology	Private	Madurai	Tamil Nadu	8	South	14		114.28	121.14	118.57	104.28	116.99	114.28	112.85	802.39	**805.55**
21	Krishna Institute of Engineering and Technology (KIET)	Private	Ghaziabad	Uttar Pradesh	1	North	4		115.99	117.71	119.14	104.57	116.99	115.71	111.42	801.53	**804.49**
21	PES Instituite of Technology, Bangalore South Campus (Formerly PES Shcool of Engineering)	Private	Bengaluru	Karnataka	6	South	15		117.99	118.85	119.28	100.57	114.71	117.14	111.28	799.82	**804.49**
22	Muffakham Jah College of Engineering and Technology	Private	Hyderabad	Telangana	2	South	16		115.71	112.42	118.99	108.85	117.14	117.14	118.57	808.82	**803.44**
23	Institute of Technology, Nirma University	Private	Ahmedabad	Gujarat	2	West	3		116.85	117.57	119.14	100.71	115.99	119.14	114.28	803.67	**802.87**
23	Kalinga Institute of Industrial Technology (KIIT)	Private	Bhubaneswar	Odisha	2	East	3		117.42	117.85	119.14	101.28	117.71	112.57	113.71	799.67	**802.87**
24	Bharatiya Vidya Bhawan's Sardar Patel Institute of Technology	Private	Mumbai	Maharashtra	2	West	4		116.99	117.71	119.14	101.42	114.28	116.71	113.59	799.85	**802.13**
25	JSS Science and Technology University	Private	Mysuru	Karnataka	7	South	17		114.57	118.71	118.85	101.28	115.42	117.14	118.57	804.53	**801.15**
26	Sathyabama Institute of Science and Technology	Private	Chennai	Tamil Nadu	9	South	18		116.99	119.99	117.42	100.00	114.28	114.28	113.14	796.10	**800.40**
27	G.H. Raisoni College of Engineering	Private	Nagpur	Maharashtra	3	West	5		115.71	118.57	118.14	102.28	113.14	114.28	112.85	794.96	**799.12**
27	Dayananda Sagar College of Engineering	Private	Bengaluru	Karnataka	8	South	19		119.99	113.71	117.85	102.85	111.42	115.32	114.28	795.43	**799.12**
28	B.S. Abdur Rahman Crescent Institute of Science and Technology	Private	Chennai	Tamil Nadu	10	South	20		116.99	115.71	118.85	101.99	113.64	112.85	113.85	793.89	**797.47**
29	Shanmugha Arts Science Technology & Research Academy, SASTRA	Private	Thanjavur	Tamil Nadu	11	South	21		118.57	118.14	118.57	100.00	100.14	114.28	117.14	786.82	**795.97**
29	PSNA College of Engineering & Technology	Private	Dindigul	Tamil Nadu	11	South	21		117.14	114.57	118.35	99.71	114.28	116.28	119.88	800.20	**795.97**

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30	Thiagarajar College of Engineering	Private	Madurai	Tamil Nadu	12	South	22		116.71	117.42	118.42	99.14	109.99	112.85	115.71	790.25	**794.36**
31	Bharati Vidyapeeth College of Engineering	Private	Navi Mumbai	Maharashtra	4	West	6		112.85	115.99	118.42	107.14	112.85	111.42	107.28	785.96	**793.64**
32	Maharaja Agrasen Institute of Technology	Private	Delhi	Delhi	1	North	5		117.28	114.85	118.99	98.35	114.57	112.14	114.28	790.46	**792.77**
33	RMK Engineering College	Private	Kavaraipettai	Tamil Nadu	13	South	23		114.57	117.71	117.57	101.42	108.57	114.99	112.85	787.67	**792.12**
34	Parul Institute of Engineering & Technology	Private	Vadodara	Gujarat	3	West	7		114.57	117.42	118.42	101.71	112.42	109.99	107.14	781.68	**791.41**
34	Bennett University	Private	Greater Noida	Uttar Pradesh	2	North	6		108.28	116.42	115.28	111.64	111.14	123.42	105.97	792.15	**791.41**
35	Siddaganga Institute of Technology	Private	Tumkur	Karnataka	9	South	24		115.71	114.85	117.14	102.85	109.99	114.28	109.99	784.82	**790.34**
36	M Kumarasamy College of Engineering	Private	Karur	Tamil Nadu	14	South	25		109.99	111.42	114.99	112.28	110.85	125.71	111.99	797.25	**789.46**
37	LNCT University	Private	Bhopal	Madhya Pradesh	1	Central	1		113.42	114.85	118.99	100.00	114.28	112.85	113.42	787.82	**788.16**
38	Periyar Maniammai Institute of Science & Technology	Private	Thanjavur	Tamil Nadu	15	South	26		114.28	112.85	117.71	101.99	110.28	112.85	117.14	787.10	**786.18**
38	Vel Tech Rangarajan Dr. Sagunthala R & D Institute of Science and Technology	Private	Chennai	Tamil Nadu	15	South	26		109.14	106.28	114.28	117.99	113.71	122.85	112.28	796.53	**786.18**
39	Sri Muthukumaran Institute of Technology	Private	Chennai	Tamil Nadu	16	South	27		112.85	113.99	118.85	99.78	115.64	114.28	108.57	783.96	**785.33**
40	REVA University (Faculty of Engineering and Technology)	Private	Bengaluru	Karnataka	10	South	28		113.14	107.57	117.28	114.57	100.71	112.97	113.14	779.36	**784.72**
41	Maharaja Surajmal Institute of Technology	Private	Delhi	Delhi	2	North	7		107.14	118.57	114.71	111.71	100.00	111.42	112.85	776.39	**783.50**
42	Amity University	Private	Noida	Uttar Pradesh	3	North	8		110.28	106.28	114.99	115.71	116.57	110.71	112.99	787.53	**782.88**
43	B.N.M Institute of Technology	Private	Bengaluru	Karnataka	11	South	29		114.85	112.85	118.85	99.85	101.71	112.85	112.85	773.82	**780.79**
44	SDM College of Engineering and Technology	Private	Dharwad	Karnataka	12	South	30		109.28	113.42	118.57	100.35	109.99	112.85	109.99	774.46	**775.77**

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45	Vidyavardhaka College of Engineering	Private	Mysuru	Karnataka	13	South	31		112.85	108.57	118.42	101.42	108.57	111.14	113.14	774.10	**774.82**
46	Shiv Nadar University (SNU)	Private	Dadri	Uttar Pradesh	4	North	9		107.71	110.57	114.42	105.71	115.14	114.28	115.71	783.53	**774.02**
47	BITS Pilani (Hyderabad Campus)	Private	Hyderabad	Telangana	3	South	32		111.99	106.28	114.28	108.57	112.85	111.14	106.99	772.10	**772.94**
47	IMS Engineering College	Private	Ghaziabad	Uttar Pradesh	5	North	10		105.14	108.85	114.14	113.14	111.14	115.71	111.42	779.53	**772.94**
48	Mahindra University	Private	Hyderabad	Andhra Pradesh	1	South	33		107.71	100.85	113.85	112.14	115.71	119.28	124.57	794.10	**770.77**
49	College of Engineering Roorkee, COER	Private	Roorkee	Uttarakhand	1	North	11		110.28	103.71	114.14	105.49	113.99	120.71	113.99	782.32	**768.79**
50	NMIMS University (Mukesh Patel School of Technology Management and Engineering)	Private	Mumbai	Maharashtra	5	West	8		103.71	106.85	113.85	112.78	111.14	114.57	113.71	776.60	**766.80**
51	Channabasaveshwara Institute of Technology	Private	Gubbi	Karnataka	14	South	34		101.85	106.14	113.57	118.49	107.14	110.28	115.71	773.18	**765.78**
52	Chitkara University Institute of Engineering & Technology	Private	Rajpura	Punjab	3	North	12		106.28	102.57	114.28	114.07	111.42	111.42	106.71	766.75	**763.51**
53	Presidency University (School of Engineering)	Private	Bengaluru	Karnataka	15	South	35		105.14	105.14	113.57	110.07	113.99	108.57	110.28	766.75	**760.85**
54	Arulmigu Meenakshi Amman College of Engineering	Private	Kanchipuram	Tamil Nadu	17	South	36		105.71	104.85	113.42	109.99	102.85	115.71	112.85	765.39	**759.34**
54	St. Joseph College of Engineering	Private	Chennai	Tamil Nadu	17	South	36		104.28	102.99	113.19	111.21	112.57	113.71	113.64	771.59	**759.35**
55	Maharishi Markandeshwar University	Private	Mullana	Haryana	1	North	13		109.99	102.85	113.21	109.99	109.99	104.28	100.00	750.32	**758.26**
56	Koneru Lakshmaiah Education Foundation University (K L College of Engineering)	Private	Vaddeswaram	Andhra Pradesh	2	South	37		104.42	100.57	109.49	113.99	113.99	115.71	117.45	775.63	**756.59**
57	Bharti Vidhyapeeth College of Engineering	Private	Delhi	Delhi	3	North	14		105.71	102.14	110.14	111.99	107.14	115.71	114.57	767.39	**755.52**
58	Sanjivani College of Engineering	Private	Kopargaon	Maharashtra	6	West	9		103.42	109.57	110.42	108.42	108.57	108.57	105.71	754.68	**754.49**
59	Shri Vishnu Engineering College for Women	Private	Bhimavaram	Andhra Pradesh	3	South	38		103.57	102.57	111.42	104.28	115.71	122.42	118.57	778.53	**753.34**

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60	Galgotias College of Engineering and Technology	Private	Greater Noida	Uttar Pradesh	6	North	15		104.28	112.42	109.28	104.28	102.85	104.71	109.99	747.82	**750.58**
60	Kumaraguru College of Technology	Private	Coimbatore	Tamil Nadu	18	South	39		109.99	102.71	106.14	110.57	112.85	106.42	98.07	746.75	**750.58**
61	Ajay Kumar Garg Engineering College	Private	Ghaziabad	Uttar Pradesh	7	North	16		112.00	98.57	105.71	108.57	105.71	114.14	114.28	758.97	**748.87**
62	Velalar College of Engineering and Technology	Private	Erode	Tamil Nadu	19	South	40		104.28	101.42	109.99	102.85	113.14	121.28	117.14	770.10	**746.94**
63	Jain University	Private	Bengaluru	Karnataka	16	South	41		104.28	102.57	106.42	111.85	113.42	109.28	100.00	747.82	**744.71**
64	Meenakshi College of Engineering (MCE)	Private	Chennai	Tamil Nadu	20	South	42		107.14	96.00	107.57	111.99	105.71	118.14	108.85	755.39	**743.58**
65	Lovely Professional University	Private	Jalandhar	Punjab	4	North	17		109.42	95.42	106.14	111.42	102.85	113.57	115.71	754.53	**742.46**
66	NIIT University	Private	Neemrana	Rajasthan	2	North	18		105.42	104.28	106.85	98.64	113.99	115.14	113.99	758.32	**740.81**
67	KJ Somaiya College of Engineering	Private	Mumbai	Maharashtra	7	West	10		98.57	104.42	104.71	111.42	113.71	109.71	105.99	748.53	**737.06**
68	Institute of Aeronautical Engineering	Private	Hyderabad	Telangana	4	South	43		101.42	102.85	105.71	104.28	111.42	114.57	114.28	754.53	**735.58**
69	Symbiosis International University	Private	Pune	Maharashtra	8	West	11		98.57	102.42	104.71	107.14	111.99	112.42	115.71	752.96	**731.90**
69	Don Bosco Institute of Technology,	Private	Bengaluru	Karnataka	17	South	44		102.85	103.85	105.14	104.78	105.71	104.28	113.21	739.82	**731.90**
70	Chandigarh University (University Institute of Engineering)	Private	Mohali	Punjab	5	North	19		98.57	104.42	104.28	109.99	103.57	108.85	102.85	732.53	**728.55**
71	CV Raman College of Engineering	Private	Bhubaneswar	Odisha	3	East	4		101.71	109.99	104.14	98.57	100.00	103.57	111.42	729.39	**727.04**
72	ICFAI University (Jaipur)	Private	Jaipur	Rajasthan	3	North	20		101.14	102.14	104.57	101.71	112.28	108.57	108.57	738.96	**725.64**
73	Dr. N. G. P. Institute of Technology	Private	Chennai	Tamil Nadu	21	South	45		98.57	102.85	103.71	109.57	100.57	108.14	104.28	727.68	**723.45**
74	Bapuji Institute of Engineering and Technology	Private	Davangere	Karnataka	18	South	46		100.00	98.57	103.71	108.57	104.99	106.71	114.28	736.82	**722.43**

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									Placement Performance (PP)	Teaching Learning Resources & Pedagogy (TLRP)	Research (Volume, Income & Reputation)	Industry Income and Integration (III)	Placement Strategies & Support (PSS)	Future Orientation \(FO)	External Perception & International Outlook (EPIO)		
75	IES College of Technology	Private	Bhopal	Madhya Pradesh	2	Central	2		102.57	95.42	103.71	104.28	111.42	111.42	111.42	740.25	**721.14**
76	Sikkim Manipal Institute of Technology	Private	Sikkim	Sikkim	1	North-East	1		105.71	101.14	103.71	97.14	103.57	107.42	105.99	724.68	**719.67**
77	Hindustan Institute of Technology and Science	Private	Chennai	Tamil Nadu	22	South	47		102.57	104.28	101.42	98.85	100.00	104.85	104.28	716.25	**714.76**
78	ICFAI University (Dehradun)	Private	Dehradun	Uttarakhand	2	North	21		105.71	101.71	98.57	97.14	104.28	108.57	100.00	715.96	**712.50**
79	PE Society's Modern College of Engineering	Private	Pune	Maharashtra	9	West	12		102.85	94.28	103.71	100.00	104.14	108.57	114.28	727.82	**710.79**
79	Oriental University	Private	Indore	Madhya Pradesh	3	Central	3		101.14	87.14	102.85	112.67	112.71	107.14	101.42	725.06	**710.79**
80	B V Raju Institute of Technology	Private	Narsapur	Telangana	5	South	48		102.85	98.57	100.00	100.00	112.57	98.57	101.42	713.96	**708.52**
81	Acharya Institute of Technology	Private	Bengaluru	Karnataka	19	South	49		99.71	101.42	104.28	97.14	102.85	102.85	100.00	708.25	**706.88**
82	University of Petroleum and Energy Studies (UPES)	Private	Dehradun	Uttarakhand	3	North	22		96.85	105.42	102.28	93.14	112.85	104.28	95.28	710.11	**704.86**
83	G L Bajaj Institute of Technology and Management	Private	Greater Noida	Uttar Pradesh	8	North	23		97.85	105.71	102.85	97.00	105.42	91.42	97.14	697.39	**703.85**
84	Brainware University	Private	Kolkata	West Bengal	1	East	5		107.57	95.28	102.28	90.00	112.57	103.28	94.28	705.25	**702.66**
85	Graphic Era	Private	Dehradun	Uttarakhand	4	North	24		98.28	97.14	101.71	94.28	112.14	108.42	109.57	721.54	**700.45**
86	ADAMAS University (School of Engineering and Technology)	Private	Kolkata	West Bengal	2	East	6		101.71	97.14	100.71	91.42	104.57	111.42	109.14	716.11	**698.85**
87	G Pullaiah College of Engineering and Technology	Private	Kurnool	Andhra Pradesh	4	South	50		98.57	100.00	101.71	95.71	105.07	97.14	100.00	698.18	**696.15**
88	Christ University	Private	Bengaluru	Karnataka	20	South	51		98.57	99.42	100.85	97.85	111.14	89.28	92.42	689.54	**694.18**
89	Jaypee Institute of Information Technology (Main Campus)	Private	Noida	Uttar Pradesh	9	North	25		93.14	97.14	101.57	98.57	104.28	112.85	100.00	707.54	**692.05**
90	Integral University	Private	Lucknow	Uttar Pradesh	10	North	26		95.28	91.42	102.85	100.00	100.14	113.57	105.71	708.96	**690.22**

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91	Kongu Engineering College	Private	Perundurai	Tamil Nadu	23	South	52		98.28	92.42	100.85	94.28	115.71	103.57	98.57	703.68	**688.63**
92	Mody University of Science and Technology (SET)	Private	Lakshmangarh	Rajasthan	4	North	27		100.00	95.71	100.00	100.00	100.00	88.57	94.57	678.82	**687.05**
93	Alliance University	Private	Bengaluru	Karnataka	21	South	53		100.00	91.42	100.85	94.28	104.28	106.42	97.14	694.39	**685.17**
93	St. Ann's College of Engineering & Technology	Private	Chirala	Andhra Pradesh	5	South	53		101.42	98.85	100.71	87.14	98.21	100.00	99.00	685.32	**685.15**
94	Birsa Institute of Technology	Private	Sindri	Jharkhand	2	East	7		102.85	92.85	100.85	93.14	97.14	98.57	95.71	681.11	**683.61**
95	Manav Rachna University	Private	Faridabad	Haryana	2	North	28		95.42	90.00	100.85	98.57	100.00	109.28	100.00	694.11	**680.29**
96	Thangavelu Engineering College	Private	Chennai	Tamil Nadu	24	South	54		90.00	98.57	100.85	95.71	102.85	100.28	101.42	689.68	**678.99**
97	Amity University (Jaipur)	Private	Jaipur	Rajasthan	5	North	29		96.00	90.71	101.42	92.85	99.71	108.85	98.28	687.82	**675.55**
98	BMS Institute of Technology	Private	Bengaluru	Karnataka	22	South	55		103.57	96.57	100.57	81.42	98.28	95.71	91.71	667.82	**674.43**
99	R. C. Patel Institute of Technology	Private	Shirpur	Maharashtra	10	West	13		93.28	93.28	100.71	91.42	98.57	110.71	100.28	688.25	**673.03**
100	Bhilai Institute of Technology	Private	Durg	Chhattisgarh	1	Central	4		94.28	92.71	100.57	97.71	97.14	89.28	96.00	667.68	**670.21**
101	Vignan's Foundation For Science Technology and Research	Private	Guntur	Andhra Pradesh	6	South	56		99.14	91.42	100.14	93.28	97.14	85.71	93.14	659.97	**668.22**
102	Ramco Institute of Technology	Private	Rajapalayam	Tamil Nadu	25	South	57		91.71	91.57	100.28	96.71	94.28	100.00	98.57	673.11	**666.36**
103	University of Engineering and Management	Private	Kolkata	West Bengal	3	East	8		100.85	87.00	100.00	93.00	97.14	87.14	92.28	657.40	**664.10**
103	Ramachandra College of Engineering	Private	Eluru	Andhra Pradesh	7	South	58		92.85	91.71	100.00	91.42	98.71	100.28	98.57	673.54	**664.10**
104	Tulsiramji Gaikwad-Patil College of Engineering and Technology	Private	Nagpur	Maharashtra	11	West	14		87.71	99.28	99.42	87.14	97.14	106.42	93.14	670.25	**661.51**
105	Dhole Patil College of Engineering	Private	Pune	Maharashtra	12	West	15		93.14	92.42	99.42	91.42	104.28	88.57	88.85	658.11	**659.97**

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106	MLR Institute of Technology	Private	Dundigal	Telangana	6	South	59		94.85	87.14	100.00	91.71	96.85	99.28	94.42	664.25	**658.27**
107	Shri Ram Murti Smarak College of Engineering, Technology & Research	Private	Bareilly	Uttar Pradesh	11	North	30		91.42	88.57	100.00	92.28	95.71	100.57	97.14	665.68	**656.13**
108	Shri Sant Gajanan Maharaj College of Engineering	Private	Shegaon	Maharashtra	13	West	16		95.71	94.71	98.28	85.71	92.85	90.28	94.57	652.11	**656.13**
108	Ravindra College of Engineering for Women	Private	Kurnool	Andhra Pradesh	8	South	60		95.14	92.42	98.71	85.71	95.71	94.28	93.57	655.54	**655.05**
109	Nutan Maharashtra Institute of Engineering & Technology	Private	Pune	Maharashtra	14	West	17		90.28	92.71	97.71	90.14	97.14	97.85	92.85	658.68	**653.20**
110	B.G.S Institute of Technology, Adichuchangiri University	Private	B.G. Nagara	Karnataka	23	South	61		95.42	95.28	96.85	84.28	94.28	85.42	94.28	645.82	**651.41**
111	BK Birla Institute of Engineering and Technology	Private	Pilani	Rajasthan	6	North	31		100.00	84.28	98.00	92.85	87.14	90.00	85.71	637.97	**649.97**
112	Bannari Amman Institute of Technology	Private	Sathyamangalam	Tamil Nadu	26	South	62		92.00	97.00	96.00	87.14	91.42	85.42	84.28	633.25	**646.29**
113	Dharmsinh Desai University - Faculty of Technology	Private	Nadiad	Gujarat	4	West	18		90.57	96.71	96.57	85.71	91.14	85.14	85.71	631.54	**642.69**
114	Chaitanya Bharathi Institute of Technology	Private	Hyderabad	Telangana	7	South	63		91.42	89.71	94.57	88.57	88.57	97.14	99.07	649.04	**641.47**
114	Vivekananda College of Engineering and Technology	Private	Puttur	Karnataka	24	South	63		87.71	92.42	96.57	85.71	94.28	97.14	98.57	652.40	**641.47**
115	Sri Krishna College of Engineering and Technology	Private	Coimbatore	Tamil Nadu	27	South	64		90.00	98.42	96.57	82.85	91.14	81.42	82.85	623.25	**638.61**
116	MES College of Engineering	Private	Kuttipuram	Kerala	1	South	65		96.57	88.57	94.57	85.71	88.85	84.28	82.85	621.40	**635.15**
117	Sri Sivasubramaniya Nadar College of Engineering	Private	Kancheepuram	Tamil Nadu	28	South	66		88.00	88.57	92.14	87.14	115.71	85.71	87.14	644.40	**634.01**
118	Sri Venkateswara College of Engineering	Private	Kancheepuram	Tamil Nadu	29	South	67		89.14	95.71	92.85	85.71	87.14	84.28	85.71	620.54	**631.23**
119	Mepco Schlenk Engineering College	Private	Sivakasi	Tamil Nadu	30	South	68		90.00	96.85	93.85	84.28	88.85	76.57	78.42	608.83	**629.69**
120	Anil Neerukonda Institute of Technology and Science	Private	Vishakhapatnam	Andhra Pradesh	9	South	69		91.42	89.57	93.42	87.14	88.85	80.00	85.71	616.11	**627.15**

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121	CVR College of Engineering	Private	Hyderabad	Telangana	8	South	70		87.14	90.14	95.14	77.42	88.85	103.57	98.42	640.68	**625.13**
122	GM Institute of Technology	Private	Davangere	Karnataka	25	South	71		90.00	90.28	93.00	86.14	88.57	77.14	87.14	612.26	**623.12**
122	Dr. DY Patil Institute of Engineering and Technology	Private	Pune	Maharashtra	15	West	19		88.42	92.00	92.57	83.42	88.64	90.47	80.71	616.23	**623.12**
123	Sangam University	Private	Bhilwara	Rajasthan	7	North	32		90.00	86.71	92.42	85.71	88.57	88.57	90.00	621.97	**621.91**
124	Sardar Patel College of Engineering	Private	Mumbai	Maharashtra	16	West	20		91.42	87.00	92.28	86.00	85.71	84.28	84.28	610.97	**620.09**
125	Aditya Engineering College	Private	Surampalem	Andhra Pradesh	10	South	72		88.57	92.28	92.85	80.00	87.14	85.28	84.28	610.40	**618.21**
126	Yeshwantrao Chavan College of Engineering	Private	Nagpur	Maharashtra	17	West	21		93.00	84.28	92.71	85.71	88.28	77.14	82.85	603.97	**616.67**
127	Ballari Institute of Technology and Management	Private	Bellary	Karnataka	26	South	73		90.28	85.71	89.00	88.57	88.28	81.42	85.71	608.97	**615.11**
128	Birla Institute of Technology (Patna)	Private	Patna	Bihar	1	East	9		86.00	88.57	91.85	85.42	87.14	85.71	84.28	608.97	**613.41**
129	Dr. Ambedkar Institute of Technology	Private	Bengaluru	Karnataka	27	South	74		90.57	90.14	91.35	80.00	87.14	78.57	80.00	597.76	**612.15**
130	DY Patil College of Engineering, Akurdi	Private	Pune	Maharashtra	18	West	22		85.57	86.71	91.35	85.71	87.50	85.71	88.00	610.54	**610.68**
131	M S Engineering College, Bangalore	Private	Bengaluru	Karnataka	28	South	75		90.28	87.00	91.28	84.57	87.14	72.51	77.14	589.91	**608.83**
132	Chandigarh College of Engineering and Technology	Private	Chandigarh	Punjab	6	North	33		88.28	90.00	91.42	78.85	87.00	78.57	80.71	594.83	**606.96**
132	Rizvi College of Engineering	Private	Bandra	Maharashtra	19	West	23		88.57	87.14	90.00	84.28	86.14	78.57	80.28	594.97	**606.96**
133	LNM Institute of Information Technology	Private	Jaipur	Rajasthan	8	North	34		88.42	85.42	91.14	85.71	86.21	77.14	77.14	591.18	**605.93**
134	Bipin Tripathi Kumaon Institute of Technology (Formerly Kumaon Engineering College)	Private	Dwarahat	Uttarakhand	5	North	35		85.71	86.85	91.42	82.85	85.71	82.85	85.71	601.11	**605.13**
135	Thadomal Shahani Engineering College	Private	Mumbai	Maharashtra	20	West	24		87.57	86.85	91.00	84.28	84.28	76.07	78.57	588.61	**603.80**
135	TKM College of Engineering	Private	Kollam	Kerala	2	South	76		88.57	85.42	91.14	82.71	86.85	77.71	79.42	591.83	**603.80**
136	Maeer's MIT College	Private	Bengaluru	Karnataka	29	South	77		87.57	88.14	86.71	85.71	85.71	77.14	80.00	590.97	**603.03**
137	Erode Sengunthar Engineering College (Autonomous)	Private	Erode	Tamil Nadu	31	South	78		85.57	86.71	88.57	83.14	87.14	84.28	85.71	601.11	**602.31**

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138	Noida Institute of Engineering and Technology (NIET)	Private	Greater Noida	Uttar Pradesh	12	North	36		87.42	85.28	89.00	85.14	87.28	77.14	78.57	589.83	**601.28**
139	Maturi Venkata Subba Rao Engineering College	Private	Hyderabad	Telangana	9	South	79		90.42	86.28	86.71	82.57	86.00	75.71	76.92	584.61	**599.91**
139	Rajalakshmi Engineering College	Private	Chennai	Tamil Nadu	32	South	79		90.42	85.42	87.14	82.57	85.71	75.71	80.00	586.97	**599.91**
140	MAEER's MIT College of Railway Engineering and Research	Private	Barshi	Maharashtra	21	West	25		87.64	85.71	88.92	84.85	86.00	73.28	77.42	583.83	**599.29**
141	K.S.R Institute for Engineering and Technology	Private	Tiruchengode.	Tamil Nadu	33	South	80		87.14	85.71	88.57	85.28	84.28	75.71	77.14	583.83	**598.56**
142	Guru Nanak Institute of Technology	Private	Secunderabad	Telangana	10	South	81		87.50	84.00	85.71	87.14	86.35	74.28	85.71	590.68	**597.55**
143	SDGI Global University	Private	Ghaziabad	Uttar Pradesh	13	North	37		88.57	85.57	85.71	85.14	84.28	75.71	78.57	583.54	**596.97**
144	Atharva College of Engineering	Private	Malad	Maharashtra	22	West	26		90.42	85.42	85.71	82.42	84.92	74.85	77.57	581.33	**596.32**
145	Bhagwant University	Private	Ajmer	Rajasthan	9	North	38		87.57	86.71	85.42	84.28	84.28	75.71	79.57	583.54	**595.91**
145	Francis Xavier Engineering College	Private	Tirunelveli	Tamil Nadu	34	South	82		85.71	86.85	88.57	82.85	84.85	77.14	77.14	583.11	**595.91**
146	Karunya Institute of Technology and Sciences	Private	Coimbatore	Tamil Nadu	35	South	83		88.57	86.71	85.42	82.85	84.28	74.28	78.85	580.97	**595.09**
147	Heritage Institute of Technology	Private	KolKata	West Bengal	4	East	10		85.71	85.71	88.57	82.85	82.85	77.14	77.14	579.97	**593.17**
148	KCG College of Technology	Private	Karapakkam	Tamil Nadu	36	South	84		87.57	81.42	84.14	85.71	84.00	78.57	88.57	589.97	**591.25**
149	Dr. Mahalingam College of Engineering & Technology	Private	Pollachi	Tamil Nadu	37	South	85		88.57	79.71	83.42	85.71	84.00	81.42	84.28	587.11	**589.29**
150	Sri Sairam Engineering College	Private	Kancheepuram	Tamil Nadu	38	South	86		86.14	81.42	84.28	85.71	84.00	78.57	84.28	584.40	**587.85**
151	Birla Vishvakarma Mahavidyalaya	Private	Anand	Gujarat	5	West	27		87.14	80.00	84.28	83.42	82.57	82.85	85.71	585.97	**586.11**
152	Swami Keshvanand Institute of Technology, Management and Gramothan	Private	Jaipur	Rajasthan	10	North	39		86.14	80.00	84.28	84.28	83.71	80.00	85.71	584.11	**584.81**
153	CGC College of Engineering, Landran Campus	Private	Mohali	Maharashtra	23	West	28		83.28	81.42	82.57	85.71	85.00	82.85	85.71	586.54	**583.34**
154	NITTE Meenakshi Institute of Technology	Private	Bengaluru	Karnataka	30	South	87		84.82	81.42	82.85	85.71	83.14	78.57	81.42	577.94	**582.42**
154	Gandhi Institute of Technology and Management (GITAM)	Private	Vishakhapatnam	Andhra Pradesh	11	South	87		86.25	79.82	82.85	84.28	87.14	77.14	82.85	580.34	**582.42**

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155	Dr. Ambedkar Institute of Technology For Handicapped	Private	Kanpur	Uttar Pradesh	14	North	40		84.57	81.42	84.28	83.57	78.57	81.71	84.57	578.69	**581.40**
156	KJ Somaiya Institute of Engineering and Information Technology	Private	Mumbai	Maharashtra	24	West	29		85.71	81.42	83.85	84.28	77.14	75.71	85.71	573.83	**580.67**
156	Gayatri Vidya Parishad College of Engineering	Private	Vishakhapatnam	Andhra Pradesh	12	South	88		84.85	80.00	88.57	81.42	81.71	74.28	81.42	572.26	**580.67**
157	G Narayanamma Institute of Technology and Science (For Women)	Private	Hyderabad	Telangana	11	South	89		82.71	79.85	86.42	84.28	82.85	78.57	81.42	576.11	**579.61**
158	Shanmuganathan Engineering College	Private	Arasampatti	Tamil Nadu	39	South	90		87.14	77.57	82.71	84.00	82.85	77.14	85.71	577.11	**578.59**
159	Sri Krishna College of Technology	Private	Coimbatore	Tamil Nadu	40	South	91		83.42	78.57	84.14	84.28	82.57	80.00	85.14	578.11	**577.13**
160	Vardhaman College of Engineering	Private	Rangareddy	Telangana	12	South	92		84.85	80.00	84.14	82.85	81.14	74.28	81.42	568.69	**575.89**
161	Vivekananda Institute of Technology	Private	Bengaluru	Karnataka	31	South	93		83.42	78.57	84.28	83.14	81.42	78.92	84.28	574.04	**574.72**
161	KL University (Koneru Lakshmaiah Education Foundation)	Private	Vijaywada	Andhra Pradesh	13	South	93		83.28	78.00	83.14	85.71	78.57	78.57	88.57	575.83	**574.71**
162	Karnatak Law Society's Gogte Institute of Technology (KLS)	Private	Belgaum	Karnataka	32	South	94		85.71	77.14	82.14	84.28	80.00	80.00	81.42	570.69	**573.67**
163	Institute of Information and Communication Technology	Private	Ahemdabad	Gujarat	6	West	30		83.42	76.00	82.71	85.71	81.42	82.85	80.00	572.11	**572.07**
164	Kalasalingam University	Private	Virudhnagar	Tamil Nadu	41	South	95		85.71	75.71	82.85	82.85	78.57	78.57	81.42	565.69	**569.47**
165	Rajshree Institute of Management and Technology	Private	Bareilly	Uttar Pradesh	15	North	41		84.28	75.71	82.71	84.28	78.57	80.00	80.00	565.54	**568.77**
165	Sri Indu College of Engineering & Technology	Private	Hyderabad	Telangana	13	South	96		81.42	75.71	82.85	85.57	83.60	81.42	80.00	570.58	**568.77**
166	Vasantdada Patil Pratishthan's College of Engineering & Visual Arts	Private	Mumbai	Maharashtra	25	West	31		81.42	76.07	82.85	85.71	80.00	79.57	81.57	567.19	**567.38**
166	KU College of Engineering and Technology	Private	Warangal	Telangana	14	South	97		83.42	75.71	82.71	84.28	78.57	80.00	80.17	564.86	**567.38**

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ALL INDIA RANK*	NAME OF INSTITUTES	CITY	STATE	STATE RANK	ZONE	ZONE RANK
1	Birla Institute of Technology and Science (BITS Pilani)	Pilani	Rajasthan	1	North	1
2	Dhirubhai Ambani Institute of Information and Communication Technology	Gandhinagar	Gujarat	1	West	1
3	Vellore Institute of Technology	Vellore	Tamil Nadu	1	South	1
4	Birla Institute of Technology	Mesra	Jharkhand	1	East	1
5	Thapar Institute of Engineering & Technology	Patiala	Punjab	1	North	2
6	RV College of Engineering	Bangalore	Karnataka	1	South	2
7	SRM Institute of Science & Technology	Chennai	Tamil Nadu	2	South	3
8	BMS College of Engineering	Bangalore	Karnataka	2	South	4
9	Manipal Academy of Higher Education	Manipal	Karnataka	3	South	5
10	Amrita Vishwa Vidyapeetham University	Coimbatore	Tamil Nadu	3	South	6
11	PSG College of Technology	Coimbatore	Tamil Nadu	4	South	7
12	PEC University of Technology	Chandigarh	Punjab	2	North	3
13	Dayananda Sagar University	Bangalore	Karnataka	4	South	8
14	Ramaiah Institute of Technology	Bangalore	Karnataka	5	South	9
15	Bharati Vidyapeeth (Deemed to be University), College of Engineering	Pune	Maharashtra	1	West	2
16	Krishna Institute of Engineering and Technology (KIET)	Ghaziabad	Uttar Pradesh	1	North	4
17	JSS Science and Technology University	Mysuru	Karnataka	6	South	10
18	Maharaja Agrasen Institute of Technology	Delhi	Delhi	1	North	5
19	Institute of Technology, Nirma University	Ahmedabad	Gujarat	2	West	3
20	Siksha 'O' Anusandhan (Institute of Technical Education and Research)	Bhubaneswar	Odisha	1	East	2
21	Faculty of Engineering, Bharath Institute of Higher Education and Research (BIHER)	Chennai	Tamil Nadu	5	South	11
22	Malnad College of Engineering	Hassan	Karnataka	7	South	12

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ALL INDIA RANK*	NAME OF INSTITUTES	CITY	STATE	STATE RANK	ZONE	ZONE RANK
23	ICFAI Tech Hyderabad	Hyderabad	Telangana	1	South	13
24	K.S.Rangasamy College of Technology	Namakkal	Tamil Nadu	6	South	14
25	Kamaraj College of Engineering and Technolotgy	Madurai	Tamil Nadu	7	South	15
26	Kalinga Institute of Industrial Technology (KIIT)	Bhubaneswar	Odisha	2	East	3
27	Sathyabama Institute of Science and Technology	Chennai	Tamil Nadu	8	South	16
28	Bharatiya Vidya Bhawan's Sardar Patel Institute of Technology	Mumbai	Maharashtra	2	West	4
29	Bennett University	Greater Noida	Uttar Pradesh	2	North	6
30	PES Instituite of Technology, Bangalore South Campus (Formerly PES Shcool of Engineering)	Bangalore	Karnataka	8	South	17
31	LNCT University	Bhopal	Madhya Pradesh	1	Central	1
31	Thiagarajar College of Engineering	Madurai	Tamil Nadu	9	South	18
32	Mahindra University	Hyderabad	Andhra Pradesh	1	South	19
33	Shiv Nadar University (SNU)	Dadri	Uttar Pradesh	3	North	7
34	Coimbatore Institute of Technology	Coimbatore	Tamil Nadu	10	South	20
35	REVA University (Faculty of Engineering and Technology)	Bangalore	Karnataka	9	South	21
36	Shanmugha Arts Science Technology & Research Academy	Thanjavur	Tamil Nadu	11	South	22
37	Amity University	Noida	Uttar Pradesh	4	North	8
38	COER University	Roorkee	Uttarakhand	1	North	9
39	Maharaja Surajmal Institute of Technology	Delhi	Delhi	2	North	10
40	Chitkara University Institute of Engineering & Technology	Rajpura	Punjab	3	North	11
41	Parul Institute of Engineering & Technology	Vadodara	Gujarat	3	West	5

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ALL INDIA RANK*	NAME OF INSTITUTES	CITY	STATE	STATE RANK	ZONE	ZONE RANK
42	B.S. Abdur Rahman Crescent Institute of Science and Technology	Chennai	Tamil Nadu	12	South	23
43	PSNA College of Engineering & Technology	Dindigul	Tamil Nadu	13	South	24
44	G.H. Raisoni College of Engineering	Nagpur	Maharashtra	3	West	6
45	B.N.M Institute of Technology	Bengaluru	Karnataka	10	South	25
45	Vel Tech Rangarajan Dr. Sagunthala R & D Institute of Science and Technology	Chennai	Tamil Nadu	14	South	26
46	Channabasaveshwara Institute of Technology	Gubbi	Karnataka	11	South	27
47	IMS Engineering College	Ghaziabad	Uttar Pradesh	5	North	12
48	Maharishi Markandeshwar University	Mullana	Haryana	1	North	13
49	Shri Vishnu Engineering College for Women	Bhimavaram	Andhra Pradesh	2	South	28
50	Ajay Kumar Garg Engineering College	Ghaziabad	Uttar Pradesh	6	North	14
51	Bharati Vidyapeeth College of Engineering	Navi Mumbai	Maharashtra	4	West	7
52	Lovely Professional University	Jalandhar	Punjab	4	North	15
52	Chandigarh University (University Institute of Engineering)	Mohali	Punjab	5	North	16
53	NMIMS University (Mukesh Patel School of Technology Management and Engineering)	Mumbai	Maharashtra	5	West	8
54	NIIT University	Neemrana	Rajasthan	2	North	17
55	Dayananda Sagar College of Engineering	Bangalore	Karnataka	12	South	29
56	KJ Somaiya College of Engineering	Mumbai	Maharashtra	6	West	9
57	Oriental University	Indore	Madhya Pradesh	2	Central	2
58	Graphic Era	Dehradun	Uttarakhand	2	North	18
59	University of Petroleum and Energy Studies (UPES)	Dehradun	Uttarakhand	3	North	19
60	Sanjivani College of Engineering	Kopargaon	Maharashtra	7	West	10

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ALL INDIA RANK*	NAME OF INSTITUTES	CITY	STATE	STATE RANK	ZONE	ZONE RANK
61	G L Bajaj Institute of Technology and Management	Greater Noida	Uttar Pradesh	7	North	20
62	Bharti Vidhyapeeth College of Engineering	Delhi	Delhi	3	North	21
63	Brainware University	Kolkata	West Bengal		East	4
64	B V Raju Institute of Technology	Narsapur	Telangana	2	South	30
65	Dr. N. G. P. Institute of Technology	Chennai	Tamil Nadu	15	South	31
66	ADAMAS University (School of Engineering and Technology)	Kolkata	West Bengal	1	East	5
67	Symbiosis International University	Pune	Maharashtra	8	West	11
68	Jain University	Bangalore	Karnataka	13	South	32
69	Galgotias College of Engineering and Technology	Greater Noida	Uttar Pradesh	8	North	22
70	ICFAI University	Dehradun	Uttarakhand	4	North	23
71	SDM College of Engineering and Technology	Dharwad	Karnataka	14	South	33
72	Presidency University (School of Engineering)	Bangalore	Karnataka	15	South	34
72	Arulmigu Meenakshi Amman College of Engineering	Kanchipuram	Tamil Nadu	16	South	35
73	Alliance University	Bangalore	Karnataka	16	South	36
74	Siddaganga Institute of Technology	Tumkur	Karnataka	17	South	37
75	M Kumarasamy College of Engineering	Karur	Tamil Nadu	17	South	38
76	Hindustan Institute of Technology and Science	Chennai	Tamil Nadu	18	South	39
77	Vidyavardhaka College of Engineering	Mysuru	Karnataka	18	South	40
78	Amity University	Jaipur	Rajasthan	3	North	24
78	St. Joseph College of Engineering	Chennai	Tamil Nadu	19	South	41
79	Kumaraguru College of Technology	Coimbatore	Tamil Nadu	20	South	42

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ALL INDIA RANK*	NAME OF INSTITUTES	CITY	STATE	STATE RANK	ZONE	ZONE RANK
80	Meenakshi College of Engineering (MCE)	Chennai	Tamil Nadu	21	South	43
81	Don Bosco Institute of Technology,	Bengaluru	Karnataka	19	South	44
82	CV Raman College of Engineering	Bhubaneswar	Odisha	3	East	6
83	IES College of Technology	Bhopal	Madhya Pradesh	3	Central	3
84	G Pullaiah College of Engineering and Technology	Kurnool	Andhra Pradesh	3	South	45
85	Jaypee Institute of Information Technology (Main Campus)	Noida	Uttar Pradesh	9	North	25
86	Integral University	Lucknow	Uttar Pradesh	10	North	26
87	Manav Rachna University	Faridabad	Haryana	2	North	27
88	Nutan Maharashtra Institute of Engineering & Technology	Pune	Maharashtra	9	West	12
89	Thangavelu Engineering College	Chennai	Tamil Nadu	22	South	46
90	Acharya Institute of Technology	Bangalore	Karnataka	20	South	47
91	Christ University	Bangalore	Karnataka	21	South	48
92	PE Society's Modern College of Engineering	Pune	Maharashtra	10	West	13
93	ICFAI University	Jaipur	Rajasthan	4	North	28
94	Bapuji Institute of Engineering and Technology	Davangere	Karnataka	22	South	49
95	Institute of Aeronautical Engineering	Hyderabad	Telangana	3	South	50
96	Velalar College of Engineering and Technology	Erode	Tamil Nadu	23	South	51
97	Koneru Lakshmaiah Education Foundation University (K L College of Engineering)	Vaddeswaram	Andhra Pradesh	4	South	52
98	BITS Pilani (Hyderabad Campus)	Hyderabad	Telangana	4	South	53
99	Periyar Maniammai Institute of Science & Technology	Thanjavur	Tamil Nadu	24	South	54
100	Sri Muthukumaran Institute of Technology	Chennai	Tamil Nadu	25	South	55

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ALL INDIA RANK*	NAME OF INSTITUTES	CITY	STATE	STATE RANK	ZONE	ZONE RANK
1	Vellore Institute of Technology	Vellore	Tamil Nadu	1	South	1
2	SRM Institute of Science & Technology	Chennai	Tamil Nadu	2	South	2
3	Amrita Vishwa Vidyapeetham University	Coimbatore	Tamil Nadu	3	South	3
4	Birla Institute of Technology and Science (BITS Pilani)	Pilani	Rajasthan	1	North	1
5	Dhirubhai Ambani Institute of Information and Communication Technology	Gandhinagar	Gujarat	1	West	1
5	Bharati Vidyapeeth (Deemed to be University), College of Engineering	Pune	Maharashtra	1	West	2
6	PSNA College of Engineering & Technology	Dindigul	Tamil Nadu	4	South	4
7	Manipal Academy of Higher Education	Manipal	Karnataka	1	South	5
8	Bennett University	Greater Noida	Uttar Pradesh	1	North	2
9	Malnad College of Engineering	Hassan	Karnataka	2	South	6
10	Siksha 'O' Anusandhan (Institute of Technical Education and Research)	Bhubaneswar	Odisha	1	East	1
11	Parul Institute of Engineering & Technology	Vadodara	Gujarat	2	West	3
12	Thapar Institute of Engineering & Technology	Patiala	Punjab	1	North	3
13	Dr. N. G. P. Institute of Technology	Chennai	Tamil Nadu	5	South	7
14	PEC University of Technology	Chandigarh	Punjab	2	North	4
14	PES Instituite of Technology, Bangalore South Campus (Formerly PES Shcool of Engineering)	Bangalore	Karnataka	3	South	8
15	M Kumarasamy College of Engineering	Karur	Tamil Nadu	6	South	9
16	Velalar College of Engineering and Technology	Erode	Tamil Nadu	7	South	10

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ALL INDIA RANK*	NAME OF INSTITUTES	CITY	STATE	STATE RANK	ZONE	ZONE RANK
17	Birla Institute of Technology	Mesra	Jharkhand	1	East	2
18	PSG College of Technology	Coimbatore	Tamil Nadu	8	South	11
19	Maharishi Markandeshwar University	Mullana	Haryana	1	North	5
19	Symbiosis International University	Pune	Maharashtra	2	West	4
20	G.H. Raisoni College of Engineering	Nagpur	Maharashtra	3	West	5
21	Dayananda Sagar University	Bangalore	Karnataka	4	South	12
22	ICFAI Tech Hyderabad	Hyderabad	Telangana	1	South	13
23	Institute of Technology, Nirma University	Ahmedabad	Gujarat	3	West	6
24	Kalinga Institute of Industrial Technology (KIIT)	Bhubaneswar	Odisha	2	East	3
25	JSS Science and Technology University	Mysuru	Karnataka	5	South	14
26	Bharatiya Vidya Bhawan's Sardar Patel Institute of Technology	Mumbai	Maharashtra	4	West	7
27	Faculty of Engineering, Bharath Institute of Higher Education and Research (BIHER)	Chennai	Tamil Nadu	9	South	15
28	Shiv Nadar University (SNU)	Dadri	Uttar Pradesh	2	North	6
29	Chitkara University Institute of Engineering & Technology	Rajpura	Punjab	3	North	7
30	Shri Vishnu Engineering College for Women	Bhimavaram	Andhra Pradesh	1	South	16
31	Don Bosco Institute of Technology,	Bengaluru	Karnataka	6	South	17
32	REVA University (Faculty of Engineering and Technology)	Bangalore	Karnataka	7	South	18
33	Periyar Maniammai Institute of Science & Technology	Thanjavur	Tamil Nadu	10	South	19

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ALL INDIA RANK*	NAME OF INSTITUTES	CITY	STATE	STATE RANK	ZONE	ZONE RANK
34	Sathyabama Institute of Science and Technology	Chennai	Tamil Nadu	11	South	20
35	Ramaiah Institute of Technology	Bangalore	Karnataka	8	South	21
36	Shanmugha Arts Science Technology & Research Academy	Thanjavur	Tamil Nadu	12	South	22
37	LNCT University	Bhopal	Madhya Pradesh	1	Central	1
37	Chandigarh University (University Institute of Engineering)	Mohali	Punjab	4	North	8
38	Presidency University (School of Engineering)	Bangalore	Karnataka	9	South	23
38	Lovely Professional University	Jalandhar	Punjab	5	North	9
39	Dayananda Sagar College of Engineering	Bangalore	Karnataka	10	South	24
40	K.S.Rangasamy College of Technology	Namakkal	Tamil Nadu	13	South	25
41	Kamaraj College of Engineering and Technology	Madurai	Tamil Nadu	14	South	26
42	Thiagarajar College of Engineering	Madurai	Tamil Nadu	15	South	27
43	B.S. Abdur Rahman Crescent Institute of Science and Technology	Chennai	Tamil Nadu	16	South	28
43	Jain University	Bangalore	Karnataka	11	South	29
44	Siddaganga Institute of Technology	Tumkur	Karnataka	12	South	30
45	Vel Tech Rangarajan Dr. Sagunthala R & D Institute of Science and Technology	Chennai	Tamil Nadu	17	South	31
46	Amity University	Noida	Uttar Pradesh	3	North	10
48	B V Raju Institute of Technology	Narsapur	Telangana	2	South	32
49	Manav Rachna University	Faridabad	Haryana	2	North	11
50	Muffakham Jah College of Engineering and Technology	Hyderabad	Telangana	3	South	33

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THE MOTHER TONGUE DILEMMA

The University Grants Commission (UGC), India's higher education regulatory authority, has asked all universities and educational institutes across the country to allow students to write their examinations in their local language even if the course offered is in English.

In the letter, UGC Chairperson M. Jagadesh Kumar says, "Once teaching, learning and assessment are done in the local languages, the student engagement will eventually increase, leading to an increase in success rate. This will significantly strengthen the efforts of achieving the target of enhancing the gross enrolment ratio (GER) in higher education from 27% to 50% by 2035."

Undoubtedly, a progressive move, in line with the new National Education Policy (NEP) 2020. But is it practical? **Tanay Kumar**, Special Correspondent of Education Post, asked a wide cross-section of academics about the pros and cons of this openhearted educational shift.

Dr. Bhimaraya Metri

Director, IIM Nagpur

The biggest advantage of accepting answers in the local language is that we all think naturally in our local language. One is already equipped with all the words in it. On the other hand, a majority of students from tier-2 and tier-3 cities hunt for English words while writing answers. Sometimes they are able to recall the English word, sometimes not. This limitation or inertia is not on par with the local language. I was brought up in a tier-3 city of Karnataka and I totally understand its benefits.

I don't see any downsides to it. Students have a choice to write their exams in their local language or English. If one really wants to write in English, the provision is already there.

Gaurav Narula

Drug Safety Manager, London

First advantage is that the students who are not comfortable in English can write their answers in their local language. Plus, it might save their time in exams as writing in the local language can be easier than English, not to ignore that the students will be able to write exactly what they have eventually understood about that particular topic. Many students only memorize English paragraphs from the books and write in exams, and thus it becomes hard to know if they really have learnt the concept. Another aspect is preserving of local languages as many local languages in India are on the verge of extinction and writing exam answers in the local languages will phenomenally boost steps to preserve them.

If a student, a fresher, who has always answered in the local language, may not grab global opportunities as compared to English-speaking students as it comes with practice. Further, there is an additional cost, as institutions will have to hire translators, if the examiner doesn't speak the local language and evidently that cost may pass on to students in disguise of an increased fee.

Nitin Vijayvargia

Chartered Accountancy coach, Jaipur

Many students from rural background find it difficult to understand English, and they struggle with this language so much that the study's subjects become secondary for them. So, it would be convenient for them if lectures and books are provided in their mother tongue. If taught in their mother tongue, they will definitely understand the subject better.

Literature in the regional languages is very difficult to find as today almost all the content for technical qualifications is in English and some of it is in Hindi. Also, as of today, teachers of technical courses are not trained to provide instructions in the regional language.

Sanket Goel

Research Dean, BITS Pilani, Hyderabad

It will help the student think inherently and naturally in her/his mother tongue to leverage the best out of cognitive abilities. Because of the intrinsic habit to grasp better and deeper in mother language, the overall pedagogical acumen will enhance which will lead to register higher attendance, enthusiasm and increased self-assurance for having a dialogue among peers. Further, there will be enhanced involvement by parents and other family members to impart better emotional and cultural support. This may also bring down the drop-out rate from the colleges in rural and remote areas.

In the current age of globalization, learning English may be necessary to compete and perform. Countries that could lead the knowledge-based system even without English have a singular language throughout. Regional languages have limited audience. So, even a staller thought may remain limited within the region, unless translated. Most of the standards, periodicals, scientific journals are written in English. So, limiting to regional language can be detrimental to keep one updated and contemporary. Further, online education at the tertiary level is mostly in English which further compels one to be deft in English. Availability of the best possible teachers in each language may also be a challenge.

Darshan Chandekar

Design Professor, Ecole Intuit Lab, Delhi

Allowing students to write answers in their local language can be seen as one of the milestones. We should have enough translators in this regard. One of the most prestigious fashion institutes has no alternative for the word "fashion," in any of the Indian languages. We must write डिज़ाइन (for Hindi) for the word, "design," which isn't a Hindi word and it is more comprehensible in common language. This is where we begin. Allowing them could be a boon for students from the rural background from all the states, as they feel more comfortable to write and express in their local language.

If I talk about the design stream, many words of this particular course are not available in the local languages, so it is one limitation. Similarly, we do not have alternatives for many technical and design-based words in the regional languages and when we don't have a system to impart design studies in regional languages. Second challenge is the complete chain i.e., design education (all subjects/modules) to the presentations and juries (this requires jury panel to also be well versed in the language of preference by the candidate) to the industry, considering the job scenario (whether industry also using the preferred language by the candidate).

NEWS WORTH KNOWING

UGC Launches New Website UTSAH, Transforming Higher Education

University Grants Commission (UGC) Chairman, Professor M. Jagadesh Kumar, unveiled on Tuesday the anticipated and redesigned UGC website, UTSAH, acronym for Undertaking Transformative Strategies and Actions in Higher Education. This development marks a significant milestone in the realm of higher education, promising an enhanced and enriching online experience for students, educators, and all stakeholders involved.

NEP SAARTHI: Empowering Students as Ambassadors Transforming Higher Education

The National Education Policy (NEP) 2020 heralds a significant reform in India's education system, prioritizing quality, equity, and access. Recognizing the pivotal role of students in this transformative journey, the University Grants Commission (UGC) has launched the NEP SAARTHI initiative, aimed at enhancing student participation and raising awareness about the reforms outlined in the NEP 2020. More details is available - **https://theeducationpost.in/nep-saarthi/.**

India comes with the US Working Group on Education and Skill Development

Ministry of Education, Government of India and US Department of State on May 22, launched the India-US Working Group on Education and Skill Development in virtual mode, with the aim to enhance cooperation and collaboration between the two countries in the field of education and skill development. Ms. Neeta Prasad, Joint Secretary for International Cooperation, Ministry of Education, Government of India and Mr. Donald Lu, assistant Secretary of State for the Bureau of South and Central Asian Affairs, US Department of State co-chaired the Working Groups from India and US respectively.

Official Link: https://www.education.gov.in/sites/upload_files/mhrd/files/PIB1926472.pdf

GRE General Test will take about half the time from Sept 2023: ETS

GRE General Test will take about half the time of current test from September, 2023. On May 31, 2023, Education Testing services (ETS), educational testing and assessment organization that conducts the test – Graduate Record Examinations, announced the decision. Removal of the "Analyze an Argument" task in the Analytical Writing section, reduced number of questions in the Quantitative and Verbal Reasoning sections, and removal of the unscored section are the three changes the ETS informed about.

IIT-M to Launch India's First Global Campus in Tanzania with First Female Director

Indian Institute of Technology (IIT) Madras made history by launching India's inaugural global campus in Zanzibar-Tanzania, East Africa, on October 25. This initiative marks the first time an IIT is led by a female director. The institute stated that the campus commence with a Bachelor of Science (BS) program in data science and AI, as well as a Master of Technology (M. Tech) program in the same field. Professor Preeti Aghalayam, the current dean of the School of Science and Engineering at IIT Madras, has been appointed as the director of the Zanzibar campus. This announcement was made by the institute on Monday following the signing of a memorandum of understanding (MoU) between the governments of India and Tanzania.

PhD not mandatory for assistant professor jobs in Universities: UGC

University Grants Commission (UGC) hasreversed the eligibility criteria for assistant professors in Universities. The UGC has decided to overturn its previous decision of mandating a Ph.D. degree for entry-level positions in colleges. Instead, the National Eligibility Test (NET), State Eligibility Test (SET), and State Level Eligibility Test (SLET) will continue to serve as the basis for recruitment.

UGC's Professor of Practice portal attracts over 4k applications

Over 4,300 industry experts and professionals have shown interest in the newly proposed category of college teachers known as "professors of practice." This innovative initiative, introduced by the higher education regulator and backed by the National Education Policy 2020, aims to bridge the gap between academia and industry.

Five new UG programs at IIT-Mandi

IIT-Mandi has introduced five new undergraduate programs: B.Tech. In General Engineering; B. Tech. In Microelectronics and VLSI; B.Tech. In Materials Science and Engineering; B.Tech. In Mathematics and Computing; and BS in Chemical Sciences. Admissions are now open through the All India JEE (Adv.) ranking system. For more details, visit https://www.iitmandi.ac.in

IGNOU revises eligibility criteria for MBA in Banking and Finance

The Indira Gandhi National Open University (IGNOU) has changed the criteria for the admission to Master of Business Administration (Banking and Finance) (MBF) program. Removing the requirements of CAIIM certification, along with two-year work experience in the banking and financial firm(s), the university announced the revised criteria. "Passed a bachelor's degree of minimum three-year duration with a minimum of 50% marks (45% for students belonging to reserved categories)," are the new criteria for the applicants. Interested and eligible candidates can apply at the official website— https://www.ignouadmission.samarth.edu.in

UGC New Refund Policy Gives Huge Relief to Students and Parents

UGC (University Grants Commission) gave a huge relief to the students and parents, who struggle to get a refund from the college after admission cancellation. UGC has directed HEI (Higher Educational Institutions) to refund their fees if the student wants to cancel their admission or migrate up to September 30. The commissions has come up with a new refund policy for the academic session of 2023-24. During the 570th meeting on June 27, the UGC decided that as per the policy, the HEI can deduct a maximum amount of Rs 1000 as a part of the processing fee, if the students opt to cancel their admission or want to migrate. The deadline is October 31st.

FUTURISTIC COURSES

Engineering/Science in Sustainable Development

Designing, creating, and implementing engineering solutions to address the climate and environmental challenges, its degradation have become vital for the whole world along with India. If India wants to achieve its net-zero carbon emission by 2070, its academia, civil societies, and governments must encourage students to look for the courses that fall under the category of Sustainable Engineering.

Course Overview:

Renewable Energy, Wind Energy, Solar Energy, Transportation Engineering/Management, Waste Management, Waste Solution Engineering, Water Management, Energy Economics, Green Chemistry, Sustainable Materials Science, Sustainable Infrastructures are some of the exemplary courses that come under the domain of stream of Sustainable Engineering/Management. The sublimity of these courses is that they are multidisciplinary, an indispensable requirement of the NEP 2020.

Duration:

The courses usually span over three to four years, and the curriculum is designed to provide fundamental knowledge of engineering principles in focus with sustainable development.

Some examples of sustainable engineering opportunities:

- An energy engineer who designs and implements solar power systems for homes and businesses.
- A water resources engineer who develops a new method for treating wastewater that is more efficient and environmentally friendly.
- A materials engineer who creates a new type of bio-based plastic that is compostable and biodegradable.
- An environmental engineer who conducts an environmental impact assessment for a new development project.
- A sustainability consultant who helps businesses and organizations reduce their environmental impact.

Colleges Offering in India:

IITs, NITs, Tata Institute of Social Sciences, University of Delhi, Banaras Hindu University, Maulana Azad National Institute of Technology (Bhopal), TERI School of Advanced Studies, Guru Gobind Singh Indraprastha University, JSS Science and Technology University (Mysuru) are some prominent institutes offering higher education in it.

Potential of the Stream:

The future of sustainable engineering is bright like sun. As the world becomes increasingly aware of the need to address climate change and other environmental challenges, the demand for sustainable engineers will continue to grow. If you are interested in a career that makes a difference, sustainable engineering is a great option.

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JSS SCIENCE AND TECHNOLOGY UNIVERSITY, MYSURU

Academic excellence in professionally-oriented programs in Science, Technology, Engineering & Mathematics (STEM) and Management

Accordant with the Government of Karnataka's Vision to develop a vibrant knowledge society and maximizing industrialization by enhancing human capabilities, JSS Mahavidyapeetha established JSS Science and Technology University in the year 2016 at JSS Technical Institutions' Campus, Mysuru. JSS Science and Technology University is built on a strong reputation of Sri Jayachamarajendra College of Engineering, Mysuru and passionately committed for providing technical education in various sectors of the society with its excellent Campus, Infrastructure, Faculty and Staff. JSS STU is devoted to offering top-notch education in the Science, Technology, Engineering, Mathematics, Management, Humanities and Social Sciences fields with goals of helping to produce the kind of talented, creative workforce that is necessary for the advancement and success of society and country.

HIGHLIGHTS

- State-of-the-art facilities
- Spectacular 102 acres green campus
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- Student clubs to encourage students to engage in technical and extracurricular activities.
- JSS Multimedia Resource Centre to create a Digital Information Platform for all the stakeholders.
- Research and innovation council
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- Material Science and Engineering

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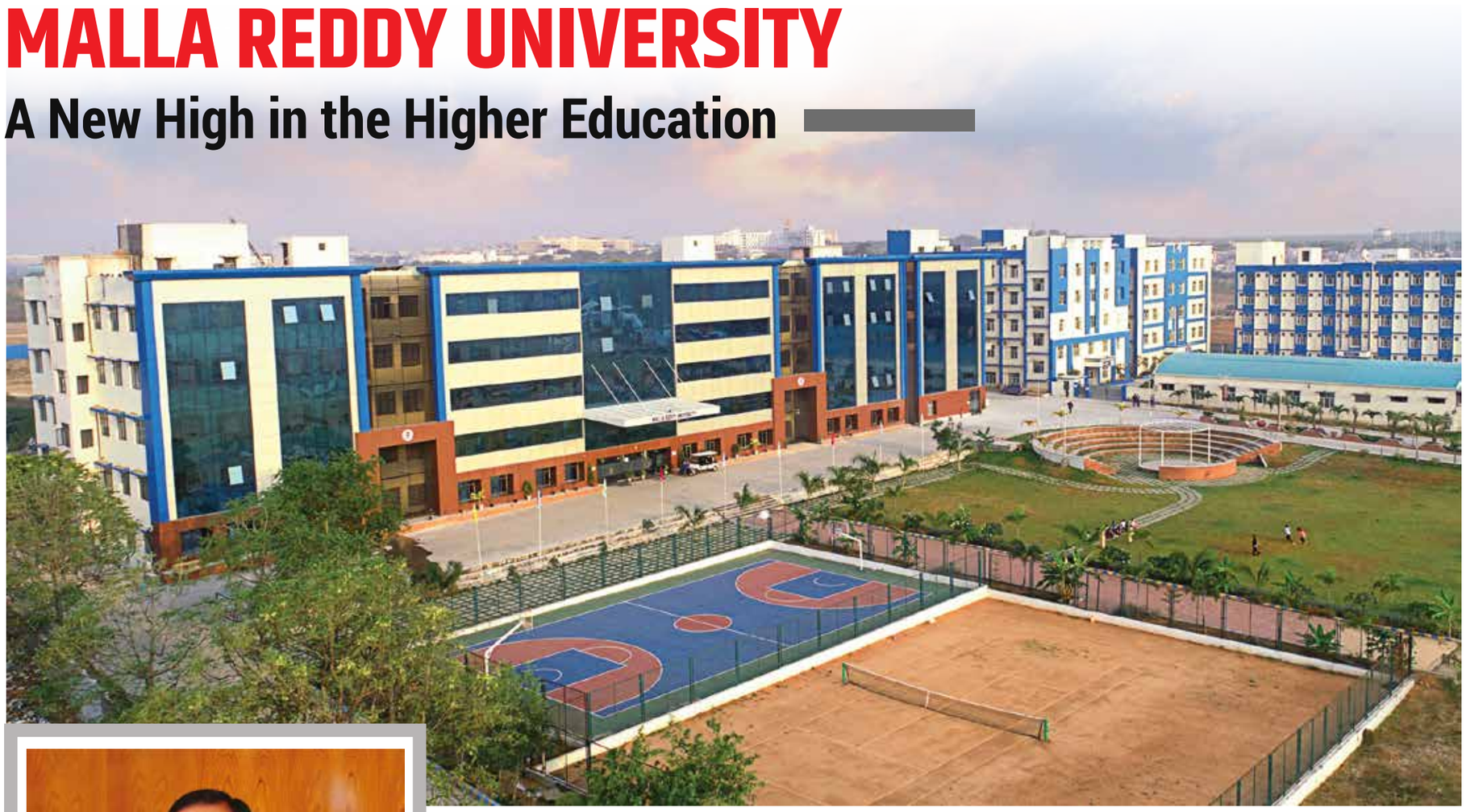
A New High in the Higher Education



Malla Reddy University, Hyderabad, is the first private Green Field University established in 2020 under the Telangana State Private Universities Act No.13 of 2020. Recognized by the UGC and the Government of India, the university offers industry-focused specialized undergraduate, postgraduate, and Ph.D. programs. Its aim is to provide quality higher education that meets international standards. To achieve this goal, the university consistently seeks and adopts innovative methods to improve the quality of its education.

Malla Reddy University is a premier technological institute that engages in state-of-the-art research in almost all fields of engineering and sciences. Our focus is to generate new ideas, create innovative solutions, and reveal the basic principles of matter. We emphasize using this knowledge to develop practical engineering and technological applications.

In this process, we work closely with our industry partners to add value to their products and services. Our larger goal is to bring novel solutions to society at large. We look for opportunities to engage with challenges, and in our constant quest for excellence, we strive to bring forth the best possible solutions in a timely and cost-effective manner.

University awarded with:

- Awarded as one of India's top 100 best universities in technology adoption by ASSOCHAM in 2022
- Awarded as the Best University in Technology Adoption in South India by CollegeDunia in 2022.
- Received the Emerging University Award from StuMagz.

Vice Chancellor

Prof. VSK Reddy, Vice Chancellor of Malla Reddy University, has more than 25 years of combined experience in teaching and industry. An alumnus of the Indian Institute of Technology (IIT) Kharagpur, he obtained his Ph.D. and has multidisciplinary specializations in Communications and Computer Science Engineering. His achievements include more than 150 publications in reputed national and international conferences and journals. He is a fellow of IETE, a life member of ISTE, a member of IEEE, and a member of CSI. Prof. Reddy was awarded an Education Fellowship from the British Council, UK to

visit England, Scotland, Wales, and Ireland to analyze the education system in the UK. He is an accomplished academician, renowned speaker, and visiting professor to various universities in the UK and Malaysia.

School of Engineering

Malla Reddy University's School of Engineering provides our students with a world-class education that prepares them to advance the frontiers of technology. Our cutting-edge technology curriculum allows students to learn about the most current and high-level IT developments. Our engineering graduates don't just learn theory; they expand upon it and apply it. They are equipped with the skills and knowledge they need to make a real difference in the world.

School of Agricultural Sciences

The School of Agricultural Sciences offers a well-rounded curriculum that encourages students to explore, innovate, and conduct research. The program is designed to prepare graduates of agriculture and allied subjects for employment in a variety of institutes, R&D organizations, and industries in the country. It also aims to develop entrepreneurs in the field of emerging knowledge-intensive agriculture.

On-Campus Training Instructional farms, crop museums, and herbal gardens are just a few of the facilities we have that give our students live experience of what they are learning.

RAWEP A pioneering program, the Rural Agricultural Work Experience Programme involves 90 days of training in rural farms where the students get a more hands-on experience.

Multi Disciplinary Approach for a well-rounded education in the field of agriculture, we include courses on a variety of subjects including agricultural economics, genetics, bio-technology and rural development.

Student READY
(Rural and Entrepreneurship Awareness Development Yojana)

School of Allied and Healthcare Sciences

Allied healthcare professionals (AHPs) are individuals who provide health or healthcare-related services. They have qualifications and competence in

therapeutic, diagnostic, curative, preventive, and/or rehabilitative interventions.

Malla Reddy Health City is a world-class hospital located in Suraram, near Jeedimetla in Hyderabad. It is a DSIR SIRO accredited institution, which means that it meets the high standards set by the Department of Scientific and Industrial Research and the Scientific and Industrial Research Organization. Malla Reddy Health City houses two medical colleges, two NABH accredited hospitals with two NABL accredited laboratories, and two dental colleges. This makes it a one-stop shop for all your healthcare needs.

- Malla Reddy Hospital (MRH)
- Malla Reddy Narayana Hospital (MRNH)
- Malla Reddy Institute of Medical Sciences (MRIMS)
- Malla Reddy Medical College for Women (MRMCW)
- Malla Reddy Institute of Dental Sciences (MRIDS)
- Malla Reddy Dental College for Women (MRDCW)
- Malla Reddy Institute of Pharmaceutical Sciences (MRIPS

School of Sciences

The School of Sciences at Malla Reddy University

recognizes the importance of science in understanding the global arena and in human life. The school has been introduced to help ignite minds and nurture new knowledge through its programs. The curriculum is designed to ensure the quality of research and development so that scholars will be fully prepared for professional opportunities and individual research in the field of science.

School of Management / Commerce

The School of Management and Commerce is a program for those who aspire to have a successful career in any global enterprise. The school's focus is on practical case study analysis and hands-on learning from industry experts to provide you with the skills that will prepare you for the global job market. By participating in internships with our placement partners, you will be able to practice the theories you have learned in the classroom in a real-world business setting and see how decisions and strategies are strategically executed.

The university has signed several Memorandum of Understanding (MoU's)

Sahasra Crop Science (P) Limited for Academic - Research Collaboration

- Smart Farming - Registered Chamber of Commerce
- International Universities Collaborations for Short Term Courses / Internships and Higher Education
- MRU ICT Academy CoE for Women Empowerment - "Tech4AIl programme" - powered by Cognizant Foundation

- ETS India for GRE/ TOEFL Assessment Test Centre
- Coursera for Technology Training Programs
- AWS Academy Cloud Foundations / AI & ML Foundations / Data Analytics Foundations Certification.
- Palo Alto Networks Certified Cybersecurity Entry-level Technician (PCCET) Cybersecurity Foundation Network Security Fundamentals, Cloud Security Fundamentals, Security Operations Fundamentals (SOC)
- CISCO NetAcad for CCNA/CCNP, Cyber OPS, DEVNET, Network/cloud, Security & IT Essentials Training and Certifications

CHANNABASAVESHWARA INSTITUTE OF TECHNOLOGY

BRAND OF QUALITY EDUCATION

With the aim and vision to create centre of excellence in education and other related fields and to serve the society to enhance the quality of life through excellence and leadership, the Honorable Member of parliament from Tumakuru, sri G.S. Basavaraj, started Sri Channabasaveshwara Swamy Rural Education Society (CRED society) in the year 2000. Eventually, in the year 2001 with the driving force of the honorable MLA from Tumakuru City constituency, Sri G B Jyothi Ganesh, Secretary and Managing Director, established Channabasaveshwara Institute of Technology (CIT) with the objective of providing quality technical Education to the masses.

CIT is affiliated to VTU, Belgaum, approved by AICTE, New Delhi and recognisedby the Government of Karnataka. The Institute is located in Gubbi – Tumakuru, the campus is spread across 60 acres of lush green land and enjoys a pleasant atmosphere throughout the year. This environment enables the students to relish these naturals surroundings, which itself are an inspiration to learn and excel. "Students from around the country have chosen CIT as their destination for higher Education" – Stated Sri G B Jyothi Ganesh, Secretary and Managing Director and Dr. Suresh D S, Director and Principal of CIT and they added to the statement saying – "Due to a set of shared attitudes, values, goals, and Practices CIT has become the most favoured choice for Engineering studies."

CIT PROMOTING IMPROVED ACADEMIC PERFORMANCE

Channabasaveshwara Institute of Technology has emerged as one of the premier Institution of Karnataka, and as a brand of quality Technical Education. The impressive record of accomplishment of the institute in terms of admissions for UG courses is living proof that CIT is living up to the expectations and dreams of working towards the better society.

CIT has a well-developedinfrastructure and 60 acres of Campus, comprising of well- furnished classroom and laboratories. The campus is also home to state-of-the-art computer centres with more than 1000 computers. Facilities like an Amphitheatre, A/C Auditorium, Seminar Halls and state-of-the-art Board Room are the few attractions of the campus of CIT. There is also an elaborate learning centre cum library with more than 80,000 volumes of books.

In its road to improve the academic and administrative performance of the institution ad to promote measures for Institutional functioning towards quality enhancement, CIT has set up IQAC (Internal Quality Assurance Cell). CIT also takes necessary steps to train the students and preparing them for right placement opportunities and continues to improve the methods utilized for education, through an effective quality management system.

"For nurturing students with creative ideas, the college has come up with a 'Centre for Creativity in Engineering', Start-ups, Incubation and Data centre, a Private Cloud" said Dr. Suresh D S. the Director &Principle of CIT when compare to other colleges in Karnataka. He also added to this saying, frequently faculty development programs, Workshops, seminars, symposium, Hackathon, and hands - on training programs are a norm at CIT, which helps nurture scientific temperament in the students making them eligible and sensible professionals, ready to take the industry by storm.

PLACEMENT OPPORTUNITIES AT CIT

The department of Placement & Training was established in the year 2003 at CIT. The department has state – of – the-art infrastructure for conducting placement drives on the campus. Placement training is conducted on a very regular basis at CIT, making students prepare themselves according to the industry needs and demands. Few of our major recruiters include wipro, Infosys, TCS, Cognizant, Mphasis, Tayana Software solutions, SLK Software, Mu Sigma, GBOX, Speridian Technologies, Accubvate, Tek System, Accord and many more.

On average each year, over 100 plus placement opportunities are provided to the final year students at CIT and 90% of eligible students get placed every year. CIT organises an offer day every year to honor the recruiters as well as the students who have been placed through campus drives.

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VIDYAVARDHAKA COLLEGE OF ENGINEERING (VVCE) MYSURU

AN INNOVATIVE LEADER IN TECHNICAL AND MANAGEMENT EDUCATION

Vidyavardhaka College of Engineering (VVCE), Mysuru, is a prestigious engineering college which has emerged one of the best technical and management education centers in Karnataka. Established in 1997, by Vidyavardhaka Sangha, envisioned in 1949 by K Puttaswamy and Sahukar Channaiah, VVCE has grown leaps and bounds. Affiliated to VTU, Belagavi with autonomous status from 2020-21, VVCE is approved by AICTE, New Delhi and recognized by Government of Karnataka. The institute has been accredited by NAAC 'A' Grade, by NBA, New Delhi and ranked in NIRF (rank band: 251-300).

Located in western Mysuru, on an elevated 23 acres sprawling campus, VVCE has an annual intake of 900 students for undergraduate courses in 7 disciplines, viz., Electronics & Communication Engineering, Computer Science & Engineering, Mechanical Engineering, Information Science & Engineering, Electrical & Electronics Engineering, Civil Engineering & Computer Science & Engineering (AI & ML). VVCE also offers post graduate programs in MBA, MTech (Computer Science & Engineering) and MTech (Robotics & Mechatronics). VVCE has set up research centers in 9 departments to promote research activities and offer M.Sc. (Engineering) by research and doctoral programs.

VVCE is blessed with excellent infrastructure and well qualified, experienced, and committed faculty members who have great passion towards their profession. Offering quality education in a highly conducive teaching and learning environment, VVCE has received "The Institute of Happiness" award and silver rating by QS – I Gauge.

Each classroom is fitted with LCD projectors and CCTV surveillance. Lecture capture provision is provided in all classrooms for overall faculty improvement and sharing of lecture videos with students for better understanding. The incubating facility nurtures budding engineering and management entrepreneurs. An industry-academia advisory board guides each program to move ahead in the right direction.

VVCE has 35 plus student-led clubs for holistic personality development of every student. The training and placement department prepares students to be industry ready. Student placements in reputed companies have been increasing year-on-year, ~90% students have been placed, and the highest placement package is ~INR 33 lakhs.

VVCE students have bagged university ranks and gold medals in core disciplines. Faculty members and students regularly conduct national level hackathon events on campus and win cash prizes and goodies from industry sponsors. Periodic international conferences on recent & new trends in Engineering & Management are conducted. The University Innovation Fellows program with Stanford University, USA enables international collaborations and achievements benefitting students and faculty.

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DSU'S EXCEPTIONAL B.TECH PROGRAM

EMPOWERING TOMORROW'S TECH LEADERS TO DRIVE THE FUTURE OF TECHNOLOGICAL INNOVATION!

In the ever-evolving digital age, a wide range of career opportunities in Engineering disciplines based on futuristic technologies such as AI, ML, Dev-ops, Robotics, Cybersecurity, data science, and cloud technology are emerging. It has become the most sought-after profession for emerging bright minds with a passion for creating, designing, and shaping the future. On the other side, it has become equally challenging for the students to compete and meet the job requirements, where engineers, in addition to the necessary prerequisite abilities, should also have the cognitive ability and skills to address the growing challenges in any new and unfamiliar real-life situation.

To foster talented and contemporary engineers, various institute and universities in India and around the world are offering industry-oriented B.Tech Programmes based on futuristic technologies, and it has become critical for students to choose the right colleges that can set their successful path in shaping their education in engineering and career trajectory.

DSU's Global Campus:
A Nexus of Academic Excellence & Innovation in Engineering

Dayananda Sagar University, Bengaluru, among the top 3 universities in Karnataka, has ideally positioned itself for the last six decades in providing revolutionary education in various disciplines, including Engineering. Today, it is not only fostering and empowering tomorrow's tech leaders to drive the next big wave of digital innovation.

The University is offering an exceptional B.Tech. programme in futuristic technologies, and the unique and multidisciplinary learning here is backed by some of the world's best state-of-the-art infrastructure, job-role based emerging specialisations, innovative pedagogy, an industry 4.0 - aligned contemporary curriculum, multifaceted faculties, strong industry collaborations, and impeccable placements.

The University recently expanded its wings with a 130-acre new tech campus in Harohalli, Kanakapura Road (35Kms from Bengaluru city). This self-contained campus is equipped with all modern state-of-the-art infrastructure, such as modern classroom facilities, a well-stocked digital library, advanced innovation labs set up by top-notch companies, an on-campus medical facility, world-class sports and hostel facility, all with the goal of creating a conducive environment for progressive learning in the engineering domain and thus emerging as the top choice for students who want to become the next-generation technocrats, innovators, developers, and creators.

Exceptional B.Tech Programs: Laying a Strong Foundation in Emerging Technologies

- Computer Science & Engineering
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- Computer Science & Engineering (Data Science)

- Computer Science & Engineering (Cyber Security)
- Computer Science & Technology (Cloud Technology & DevOps)
- AI & Robotics
- Electronics & Communication Engineering (Automotive Electronics, Electronics in Agriculture, Evolution of Telecommunication & Wireless Sensor Networks, Microcontrollers & Microprocessor Based Design)
- Mechanical Engineering (3D-Printing, Hybrid & Electric Vehicles, Robotics)
- Aerospace Engineering (Aeronautical & Astronautical Engineering)

Exceptional Features of B.Tech Program at DSU

- DSU, SOE ranked no. 1 by TOI 2023 as
- Top Emerging Engineering Institute
- Top 4 Emerging Engineering Institute Placement 2023
- Emerging Engineering Institute in Research Capabilities
- Engaging and innovative industry-aligned curriculum as per Industry 4.0.
- Different innovation labs on campus: Automotive System lab by ETAS (BOSH), Art Design & Innovation Centre by Autodesk, IBM Software Lab for Emerging Technologies, Nvidia – Boston lab, Dassault Systems - Aerospace Engineering Lab, GE advanced healthcare simulation lab.
- Rewarding and Exciting Scholarship Opportunity through DSAT exam
- Dayananda Sagar Entrepreneurship Research & Business Incubator (DERBI) empowering young entrepreneurs having innovative ideas.
- Club activities beyond classrooms for enhancing and shaping the personal interests and hobbies
- Industry preparedness program – A superbly crafted initiative that prepares a students for the larger world beyond the campus
- Year-on-year ground-breaking placements in top core engineering companies

A Glimpse into the Serene and Inspiring World of DSU's Campus and Infrastructure

REVOLUTIONIZING EDUCATION IN CENTRAL INDIA
LNCT GROUP LEADS THE WAY

Dr Anupam Chouksey
Secretary, LNCT Group of Colleges &
Pro - Chancellor, LNCT University Bhopal

Jay Narayan Chouksey
Chairman, LNCT Group of Colleges &
Chancellor, LNCT University, Bhopal

The LNCT Group, led by the visionary leadership of Shri Jai Narayan Chouksey, has spearheaded a transformative journey in Engineering, Medical, Management, and Professional Education in Central India. With a strong presence in Bhopal, Indore, Bilaspur, and Jabalpur, the group has established an impressive network of educational institutions, including universities, colleges, and specialized training centers. The LNCT Group has become synonymous with excellence in discipline, academics, and placements, nurturing the next generation of leaders across various domains.

The illustrious legacy of the LNCT Group dates back to 1993 when the first self-financed private technical institution, Lakshmi Narain College

of Technology (LNCT), was established in Madhya Pradesh and Central India. Since then, the group has expanded its offerings to include a wide range of educational institutions such as Lakshmi Narain College of Technology & Science, Lakshmi Narain College of Pharmacy, Jai Narain College of Technology, and Lakshmi Narain College of Technology Excellence, all based in Bhopal. Going beyond the boundaries of Bhopal, the LNCT Group has also established LNCT Vidhyapeeth University and LNCT (BPL) Indore Campus (Engineering and Management College) in Indore, LNCT (Engineering and Management College) in Jabalpur, and LNCT ACS (Professional Education College) in Jabalpur.

In Chhattisgarh, the group operates esteemed institutions including Chouksey Engineering College, Bilaspur (CEC), C.L. Chouksey Memorial Homeopathic Medical College, Bilaspur, Chouksey College of Science and Commerce (CCSE), School of Pharmacy (SOP), and Kujanbai Chouksey Memorial Women and Men Ayurved Health Worker Training Center, Pendra. These institutions are managed by trusts and other organizations affiliated with the LNCT Group.

One of the key achievements of the LNCT Group is its strong association with top-notch multinational corporations (MNCs) and the Indian Army, Navy, and Air Force, making it the preferred choice for central recruitment centers. The group consistently receives the maximum number of Chancellor Awards, which is a testament to its unwavering commitment to academic excellence. Moreover, the LNCT Group boasts an impressive track record of securing placements for its students in renowned national and international companies. Recent success stories include students obtaining high-paying positions at Amazon, BlinkIT, Walmart, VMware, Google, and other multinational corporations.

The LNCT Group has also established an Incubation Center within its campus, recognizing the significance of promoting entrepreneurship and supporting the "Make in India" initiative. This center provides comprehensive support and 24x7 access to budding entrepreneurs, fostering a thriving ecosystem for startups.

At the forefront of transforming the education and allied development sectors, LNCT University (LNCTU) exemplifies the commitment to bridging the gap between academia and industry. Driven by the strategic vision of Dr. Anupam Chouksey, Secretary, LNCT Group, and Pro-Chancellor, the university aims to nurture effective scientists and well-qualified graduates equipped with both theoretical knowledge and practical expertise.

Global exposure and collaboration are fundamental to LNCTU's educational

philosophy. The university has forged partnerships with international universities, including its branch, LN Medical College Bishkek in Kyrgyzstan, and renowned organizations like the Tillotoma Foundation. These alliances provide students with opportunities for international exchanges, broadening their horizons and nurturing cross-cultural understanding.

Beyond academic achievements, the LNCT Group takes immense pride in shaping well-rounded individuals who contribute to society. Its alumni have established their own companies, generating employment opportunities for numerous students. The group actively engages in community welfare by providing free medical treatment and surgical facilities to underprivileged families through J K Hospital, attached to LNCT Medical College. Furthermore, the hospital organizes medical camps in remote areas, extending free medical services to those in need.

Looking ahead, LNCTU envisions itself as one of the top universities in the country. By introducing cutting-edge courses, embracing digitization, enhancing infrastructure, and fostering global relationships, LNCTU aims to continuously evolve and provide students with an education that prepares them to excel in a rapidly changing world. The university remains resolute in its mission to empower students with the knowledge, skills, and mindset required to thrive in the dynamic landscape of the 21st century.

The LNCT Group has solidified its position as a trailblazer in providing top-notch education in technical, medical, management, and professional studies in Central India. With its own universities located in Bhopal and Indore, the group has expanded its footprint by operating educational institutions in Bhopal, Indore, Bilaspur, and Jabalpur. Building on its rich heritage of excellence, the LNCT Group continues to lead the way in delivering high-quality education and shaping the future of students in Central India.

MATHEMATICS CHALLENGE

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CMT-2020/ 41 :

$$If\ \frac{\tan^2(3\alpha)}{\sqrt{\tan^2(3\beta)\tan(2y)}+\sqrt{\tan^2(3\gamma)\tan(2z)}}$$

$$=\frac{\tan^2(3\beta)}{\sqrt{\tan^2(3\gamma)\tan(2z)}+\sqrt{\tan^2(3\alpha)\tan(2x)}}$$

$$=\frac{\tan^2(3\gamma)}{\sqrt{\tan^2(3\alpha)\tan(2x)}+\sqrt{\tan^2(3\beta)\tan(2y)}}$$

$$=1,$$

then,

$$\frac{\tan(2x)}{\tan(3\alpha)+\sqrt{\tan(2x)}}+\frac{\tan(2y)}{\tan(3\beta)+\sqrt{\tan(2y)}}+\frac{\tan(2z)}{\tan(3\gamma)+\sqrt{\tan(2z)}}=?$$

- composed by -
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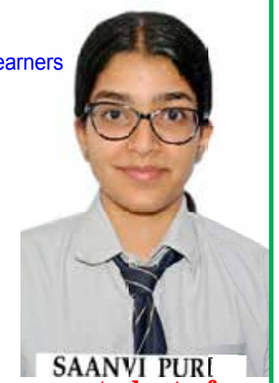

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6. NEET Physics: 180/180; CBSE X, XII Maths- 100/100
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ANSWERS :
CMT-2020/39: $\frac{1}{51}$ *CMT-2020/40 :* 1

Answers will be published in the next issue . You can ask any queries and send your solution to
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