Newspaper Clips
June 17, 2014

Times of India, ND 17/06/2014 P-9

IIT refuses to change wrong answer keys

Akshaya Mukul | TNN

New Delhi: IIT's new measure of inviting queries on the answer keys of JEE (advanced) evoked a huge response and IIT Kharagpur, the organizing institute, even acknowledged that answers to four questions carrying 12 marks were wrong.

But despite admitting the mistake IIT said, "Answer keys remain unchanged and are frozen."

Of all the wrong answer keys, there were several hundred queries about one question that asked 'largest value of the non-negative integer 'a'. On solving, two values — zero and two — were obtained.

Two, being the largest, was the correct answer, but the answer key had zero. The question was worth three marks.

Some students got the problem solved by mathematical websites like Wolfram Alpha and Texas TI-89 Titanium and found two to be the correct answer.

One student, who approached chairperson of JEE (advanced), was told that IIT's verdict is final. "Due to extremely competitive merit-list, each mark affects the rank of a candidate significantly," said a student.

IIT also did not give any clarification regarding the "imprecise marking scheme for questions in Section 1", which have more than one correct choice out of the given options.

For the full report, log on to www.timesofindia.com

Tribune, ND 17/06/2014 P-7

8 IITs sanctioned in 2008 still have no campus

Estimated cost jumps by 156%; HRD Minister to hold meeting of state education secys today

ADITI TANDON
TRIBUNE NEWS SERVICE

NEW DELHI, JUNE 16

The BJP government's promise of one Indian Institute of Technology (IIT) for every state is set to be challenged by some hard realities. None of the eight new IITs sanctioned in the XIth Five Year Plan (2007-2012) have yet managed to get a permanent campus.

Worse: The expenditure estimated on creating infrastructure for the eight IITs has shot up since July 17, 2008, when the then Cabinet approved the detailed project reports.

The Human Resource Development (HRD) Ministry's calculations show that the cost has escalated by a whopping 156 per cent from Rs 6,080 crore in 2008 to Rs 15,565 crore. The revision, ministry documents reveal, was necessitated due to delayed land allotment for campuses by states and revised Central Public Works Department (CPWD) rates. The revised cost for the IITs is awaiting the Finance Ministry's approval.

HRD Minister Smriti Irani has called a meeting of state education secretaries tomorrow, her first major meeting after assuming the charge. One of the agenda item is "infrastructure for new IITs", besides discussions on the BJP's poll manifesto promise of one IIT in every state.

The eight institutes include IITs at Hyderabad (Andhra Pradesh), Patna (Bihar), Jodhpur (Rajasthan), Bhubaneswar (Odisha), Ropar (Punjab), Gandhinagar (Gujarat), Indore (Madhya Pradesh) and Mandi (Himachal Pradesh). Six of these institutes started functioning from the 2008-09 academic year and the others from 2009-10.

The HRD Ministry note on the current status of these eight IITs says: "Though land for the permanent campus of each IIT has been provided by the respective state governments, all these are presently functioning from temporary premises. Construction of the permanent campuses of IITs Hyderabad, Mandi, Bhubaneswar, Patna and Gandhinagar is in progress while the construction of the remaining IITs at Ropar, Jodhpur and Indore is yet to start."

The Mandi IIT has reported slow pace of construction and written to the Centre for an airport at Mandi for better access to the institute. Out of 501.42 acres allotted by the Madhya Pradesh Government for the Indore IIT, 200 acres are yet to be handed over by the Forest Department to the institute. Of land allotted for Bhubaneshwar IIT, some part is disputed.

IIT Mandi wants airport for better access

The IIT Mandi authorities have urged the Centre to construct an airport at Mandi for better access to the new institute. Former HRD Minister MM Pallam Raju had forwarded the request to the Ministry of Civil Aviation, with a positive note.

Seemandhra to get new IIT, IIM, NIT, IIIT

The HRD Ministry on Tuesday will urge Seemandhra to allocate land for new IIT, IIM, NIT and IIIT as part of the settlement following the bifurcation of state. The Hyderabad IIT will eventually go to Telangana.

IITs without buildings

The eight institutes sanctioned in 2008 include IITs Hyderabad (Andhra Pradesh), Patna (Bihar), Jodhpur (Rajasthan), Bhubaneswar (Odisha), Ropar (Punjab), Gandhinagar (Gujarat), Indore (Madhya Pradesh) and Mandi (Himachal Pradesh).

Economic Times ND 17/06/2014 P-17

Infra Woes Plague New IITs & IIMs; Delays Escalate Cost

Eight new IITs, set up in 2009, continue to operate out of temporary premises; three out of seven new IIMs also face infrastructure-related hurdles

URMI A GOSWAMI
NEW DELHI

Infrastructure problems continue to hamper the higher education sector even as the government moves ahead on its ambitious plans of "one IIT, one IIM in every state". Problems and delays with infrastructure — construction of campuses — continues to be an issue for the "new" Central Universities, IITs and IIMs, some of these institutions have been operational for nearly five years now. The delays will require higher-than-sanctioned outlays, in some cases to more than double the initial cost.

Delays in setting up adequate infrastructure are expected to figure prominently at state higher education secretaries meeting, which will be chaired by human resource development minister Smriti Irani on Tuesday. This will be Irani's first interaction with senior state-level education officials.

Eight new IITs — that were set up in 2009 — continue to operate out of temporary premises. Construction of permanent campuses for IITs at Hyderabad, Mandi, Bhubaneswar, Patna and Gandhinagar are underway, while construction of campuses for the remaining three IITs at Ropar, Jodhpur and Indore are yet to commence.

Escalation of construction costs is a major issue for the new IITs.

The detailed project report for the eight new IITs, prepared in 2008 and approved by the Cabinet in July 2008, put the total cost at ₹6,080 crore. However, delays in allotment of land, revision of CPWD rates led to major escalation in costs — more than double the original budget — it is now estimated at ₹15,565 crore.

Campus Crossroads

While escalation of construction costs is a major issue for the new IITs, delays in allotment of land key hurdle for new IIMs

IITs

- CONSTRUCTION OF PERMANENT CAMPUSES UNDERWAY — Hyderabad, Mandi, Bhubaneswar, Patna and Gandhinagar
- CONSTRUCTION OF PERMANENT CAMPUSES YET TO START — Ropar, Jodhpur and Indore

IIMs

- INFRASTRUCTURE-RELATED ISSUES PERSISTS AT — Ranchi, Rohtak and Udaipur

Delays in setting up adequate infrastructure are expected to figure at state higher education secretaries' meeting, which will be chaired by HRD minister Smriti Irani on Tuesday

The revised costs are yet to be approved by the Expenditure Finance Committee. Sources indicate that the new IITs proposed by this government will each come at a cost of ₹1,800 crore over a five-year period.

Of the seven new IIMs that were set up between 2008-09 and 2011-12, the ministry found that infrastructure-related issues persists with three of the IIMs — at Ranchi, Rohtak and Udaipur.

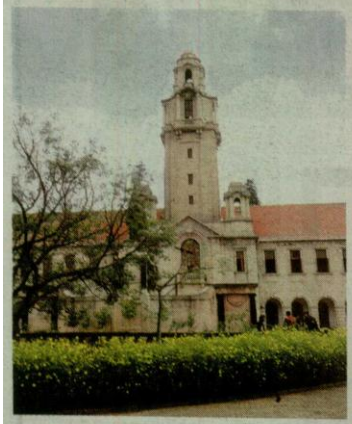
At the time, the Centre decided to expand the IIM network, it was decided that state governments would provide land free of cost and encumbrances to the new IIMs in the respective states. As of now, all barring the IIM at Ranchi have been allocated land.

The Jharkhand government had in July 2013 approved nearly 95 acre for the IIM, Ranchi, however, in order to expedite construction, the state government needs to acquire and transfer 4.22 acre of land. IIM Rohtak, which was sanctioned in 2010-11, was issued a change in land use certificate by the Haryana state government on June 9, 2014, and now needs to fast-track environmental clearance from the state authorities so that construction can begin. While construction of the permanent campus of IIM Udaipur has hit a legal roadblock over the allotted land. This is something that the state government will have to address.

There are residual infrastructure issues with new central universities as well. The central university in Prime Minister Narendra Modi's home state, which has been in existence for five years now, continues to operate from a temporary campus. However, in this case it is not the central government that has been laggard — the Gujarat government had not made land available for the university. Two sites were offered by the states, which were reviewed by the central site selection committee in February and recommendations have been submitted. Other new central universities with outstanding issues include central university of Himachal Pradesh, for which forest clearance needs to be expedited, rehabilitation and compensation issues for the central university of Tamil Nadu.

Mail Today ND 17/06/2014 P-18

IISc devises portable setup to detect explosives



The Indian Institute of Science

EXCLUSIVE

By **Aravind Gowda** in Bangalore

IN A PATH-BREAKING achievement, scientists from the Indian Institute of Science (IISc), Bangalore, have developed a new non-invasive technique to identify explosive and hazardous chemicals hidden inside any container including non-metallic ones like envelopes, plastic and coloured glass bottles.

A portable easy to operate table-top setup helps detect the explosive material and according to the scientists, it can be used by the police and the armed forces. The technique also has commercial application at airports, railway stations, bus stations and ports.

Prof. Siva Umapathy, J.C. Bose Fellow Professor, Department of Inorganic and Physical Chemistry, IISc, who co-developed the technique, said this method is based on Raman spectroscopy — Universal Multiple Angle Raman Spectroscopy (UMARS) and relies on illuminating the sample with the light source, which provides scattered light, offering molecular specific signatures to identify the chemical substance. The research paper has been published in the prestigious Nature Scientific Reports journal in its June edition.

"The UMARS technique employs the principle of deep penetration of photons and diffusion using non-absorbing media employing multiple scattering and detection of signals from all the observable angles. UMARS is a geometry independent, flexible, robust, non-invasive technique having potential to be used in various fields of science," Prof. Umapathy, who is also Special Professor, Department of Chemistry, University of Nottingham, the UK, added.

Non-invasive technology can find out hazardous chemicals

For instance, the method can be used to detect and identify explosives packed in liquids in bottles such as water, milk, creams, emulsions, alcohol or other chemicals — which is not possible with the conventional X-ray baggage screening methods currently in use.

Prof. Umapathy's student Dr Sanchita Sil, who is now at the High Energy Materials Research Laboratory, Pune, pointed out that they have spent two years on developing this idea. "The process to screen the material by the device is generally within 100 milliseconds and the longest time in difficult samples is less than a minute. The laboratory based prototype is ready and is in progress for miniaturization of the UMARS instrument," she added.

In the next phase, the scientists plan to have different designs for specific applications. Raman spectroscopy, originally discovered by Indian physicist C.V. Raman, who won the Nobel Prize in 1930, has developed considerably because of innovations in lasers and associated technologies. This technique has been traditionally used for chemical identification of materials from the scattered light due to interaction of laser light with the sample.

The group has already filed two patents for this new technique.

Rashtriya Sahara, ND 17/06/2014 P-9

उच्च शिक्षा : प्राथमिकताएं होंगी तय

शिक्षा की गुणवत्ता में सुधार के लिए दिशा स्पष्ट करेंगी स्मृति

विनोद श्रीवास्तव/एसएनबी

नई दिल्ली। केंद्र में नई सरकार की नई पहल के लिए प्रयास शुरू हो गए हैं। इसी क्रम में केंद्रीय मानव संसाधन विकास मंत्री स्मृति ईरानी सरकार गठन के बाद पहली बार मंगलवार को राज्यों के उच्च शिक्षा सचिवों के साथ बैठक करने जा रही हैं। समझा जाता है कि इस बैठक में उच्च शिक्षा और शिक्षा की गुणवत्ता में सुधार के लिए स्मृति केंद्र की शिक्षा के क्षेत्र में विकास की दिशा को स्पष्ट करेंगी।

बैठक में उच्च शिक्षा और तकनीकी शिक्षा की मौजूदा योजनाओं की समीक्षा की जाएगी और राज्य स्तर पर योजनाओं की प्रगति देखने के बाद उनको प्राथमिकता बताई जाएगी। बैठक में मुख्य रूप से राष्ट्रीय उच्चतर शिक्षा अभियान, नेशनल मिशन ऑन टीचर एंड टीचिंग, स्कॉलरशिप एवं नए केंद्रीय विश्वविद्यालय के लिए ढांचागत सुविधाएं और आईआईटी, आईआईएम, एनआईटी के नए संस्थानों के संबंध में प्रगति की समीक्षा की जाएगी। इसके बाद स्मृति तमाम उच्च शिक्षा एवं तकनीकी शिक्षा के संबंध में केंद्र की प्राथमिकताओं को बताएंगी। शिक्षा के क्षेत्र में गुणवत्ता बेहतर करने के लिए नए निर्देश भी दिए जा सकते हैं।

दरअसल 12वीं पंचवर्षीय योजना में राष्ट्रीय उच्चतर शिक्षा अभियान के तहत कालेजों को अपग्रेड करने तथा नए मॉडल कालेज बनाने के साथ-साथ अनुसंधान व गुणवत्ता सुधार समेत 18 बिंदुओं पर फोकस किया गया है। इस अभियान में अब तक दो दर्जन से अधिक राज्यों ने अपनी सहमति जताई है और अभियान के तहत उच्च शिक्षा के क्षेत्र में ढांचागत विकास के साथ-साथ अन्य शिक्षा कार्यक्रमों को आगे बढ़ाने का काम शुरू कर दिया है। नेशनल मिशन ऑन टीचर एंड टीचिंग में भी बीते वित्तीय वर्ष में सौ करोड़ रुपए का आवंटन किया गया था जबकि 12वीं पंचवर्षीय योजना में इस पर 17 सौ करोड़ रुपए खर्च किए जाने का प्रावधान है।

■ राज्यों के शिक्षा सचिवों के साथ केंद्रीय मानव संसाधन विकास मंत्री की बैठक आज

गुजरात, हिमाचल प्रदेश, तमिलनाडु, बिहार आदि में नए केंद्रीय विश्वविद्यालयों में ढांचागत सुविधाओं के विकास का भी मुद्दा है। इसी तरह से मौजूदा 13 आईआईएम के अलावा सात नए आईआईएम स्थापित किए जाने हैं, उनके लिए भूमि एवं अन्य निर्माण संबंधी कार्य होना है। इसकी प्रगति का भी मुद्दा बैठक में प्रमुख होगा। नए एनआईटी और आईआईटी के आठ नए संस्थान बनाने का भी मसला इसमें शामिल होगा।

मौजूदा समय में कुछ नए आईआईटी अस्थाई परिसरों में चल रहे हैं जबकि कुछ का निर्माण कार्य शुरू हुआ है। इसी तरह से कम्युनिटी कॉलेज भी बनाने हैं। इन तमाम बिंदुओं की समीक्षा करने के बाद बैठक में स्मृति ईरानी उच्च शिक्षा व तकनीकी शिक्षा के क्षेत्र में नई रफ्तार और दिशा तय करने के लिए अपनी प्राथमिकताएं बताएंगी। साथ ही राज्यों को इस संबंध में उनके स्तर पर किए जाने वाले कार्यों को तेजी से पूरा करने की अपील करेंगी और केंद्र की ओर से सहयोग देने के लिए भरोसा देंगी।

State higher education ministers' meet tomorrow

Press Trust of India | New Delhi http://www.business-standard.com/article/pti-stories/state-higher-education-ministers-meet-tomorrow-114061601081_1.html
June 16, 2014 Last Updated at 21:23 IST

Higher education ministers from the states are meeting here tomorrow to review the progress of a host of programmes, including the roll out of Rashtriya Ucchatar Shiksha Abhiyan and mandatory accreditation of educational institutions.

Crucial on the agenda will be setting up of IIT, NIT, IIM and IIIT in Seemandhra, the land for which has to be allotted by the state government.

The meeting, to be chaired by HRD Minister Smriti Irani, assumes significance as it is being held for the first time after the NDA government came to power at the Centre last month.

The issue of accreditation of higher educational institutions would also be deliberated at length.

The UGC has decided that no higher educational institution or its faculties, schools, departments, centres or any other units therein, by whatever name called, shall be eligible for applying or receiving financial assistance from the Commission from April 1, 2015, under any of its schemes without having undergone assessment and accreditation on or before June 1 this year.

Guntur to house IIT, IIM, AIIMS

Picture used for representational purpose. (Photo: PTI)

http://www.deccanchronicle.com/140617/nation-current-affairs/article/guntur-house-iiit-iim-aiims

Guntur: The government is likely to set up all-India institutions like IIIT, IIM, NIT and AIIMS, a new railway zone and an international airport in Krishna and Guntur districts. Chief Minister N. Chandrababu Naidu held a meeting with the Guntur and Krishna district collectors and asked them to furnish details of the availability of land for setting up other all-India institutions like the Tribal University, Petro-chemical Corridor and Petrochemical University.

At the behest of the CM, district collector Suresh Kumar directed the revenue officials to conduct a fresh survey to identify government land and prepare a detailed report within four days. He will submit a fresh land availability report to the government. Based on it, the government will take a decision to establish the all-India institutions in Guntur district.

As part of this exercise, the government is thinking of upgrading the existing Gannavaram airport into an international airport or alternately construct an international airport near Nuzvid. As many as 30,000 acres of forest land is available near Nuzvid, and if this land is denotified, the government would take steps to construct an international airport there.

At a meeting held with Union civil aviation secretary Krishna Kishore, Mr Naidu decided to set up international airports at Vijayawada, Vizag and Tirupati. At least 4,000 acres of land is required for an international airport. The government is in favour of allocating land at Nuzvid for the international airport and the all-India educational institutions.

M.P. Rayapati Sambasiva Rao submitted a memorandum to Mr Naidu to take steps to establish the new railway zone in Guntur district. Recently, the Guntur Bar Association passed a resolution requesting the government to re-establish the High Court in the district and honour the gentlemen’s agreement.

Chief secretary I.Y.R Krishna Rao and DGP J.V. Rayudu visited the 6th battalion of the Andhra Pradesh Special Police in Mangalagiri and inquired about the facilities available.

Centre's Initiative on IITs Welcomed

http://www.newindianexpress.com/cities/thiruvananthapuram/Centre%E2%80%99s-Initiative-on-IITs-Welcomed/2014/06/17/article2284781.ece

THIRUVANANTHAPURAM: IIT Kerala Group, comprising professionals who have been associated with one or more of the Indian Institutes of Technologies (IITs) in India as students, administrators, faculty or governing board members, has welcomed the Centre's initiative to establish IITs in all states.

"As a state which has been denied an IIT so far despite its academic credentials and persistent demands, Kerala should benefit from the policy change. Kerala, with its cent percent literacy and top priority to higher education, is ideally poised to become the higher education hub of the country," said a press note from the IIT Kerala Group.

"We request the State Government to make energetic efforts to realise the dream of Kerala and make sure that the state gets an IIT.

We also urge the State Government to allocate suitable land in an appropriate location and make it available and ready, which will attract the best faculty and students to the Institute," the press note said.

Prominent members of the IIT Kerala Group include IIT Madras Board of Governors former chairman A E Muthunayagam, Kerala State Higher Education Council vice-chairman T P Sreenivasan, Additional Chief Secretary Nivedita P Haran (a PhD holder from IIT) and Prof M P Rajan of Indian Institute of Science Education and Research (IISER), Thiruvananthapuram.

Deccan Herald, ND 17/06/2014 P-10

Is education necessary?

The real challenge is to prize skill over grades in our education system and to put an end to all sham degrees.

By Prasenjit Chowdhury

In India's vast pool of unemployable graduates, it must count as a stuff of fantasy for someone who is not even a graduate to become the HRD minister requiring her/him to deal with the entire gamut of Indian education – its literacy rate, education both at primary and secondary level, university and technical education. By this one single move, Modi has nailed our system of academic brahamanism. If Smriti Irani turns out to be an imaginative HRD minister, it would once again prove, which we were long suspecting, that formal education and academic degrees in India, are cosmetic appendages, just to gain entry in a select few professions, politics not being one of them.

In the academic world, however, hierarchy runs supreme. Media and corporate houses before hiring people scrutinise very carefully what public school, college or varsity has an applicant attended. An Ivy League or Oxbridge education universally carries more weight than one acquired at home. Or even at a baser level, a degree from Jadavpur University or Jawaharlal Nehru University is seen to have greater academic recognition than one obtained through distance education mode. To acquire an engineering degree from an IIT (the IITs have also their grades) is deemed more valuable in the job market than a degree from some nondescript private engineering college much in the same way a management degree from an IIM has got to be qualitatively different than one from an ordinary B-school.

Quality and specialisation do matter when they are perquisites for a job. Academia is one such thing. The medical or legal profession is another. But in India as elsewhere, academic qualifications and professions are often quite unrelated. Historian Ramchandra Guha recently pointed out how Morarji Desai as prime minister showed vision taking recourse to professional expertise in roping in an economist (Manmohan Singh) as secretary in the finance ministry, a plant scientist (MS Swaminathan) as agriculture secretary, a chemist (Lovraj Kumar) as petroleum secretary, an engineer (Manuel Menezes) as secretary of defence production as a departure from the tradition of secretary-level appointments being monopolised by IAS officers, who can theoretically be a graduate from any, often unrelated, discipline.

Though there is near general consensus that education helps in formulating better policies or nurturing richer insights, we cannot be very sure always. For all his education, Murli Manohar Joshi defended Vedic astrology as an imprimatur to save India's ancient, necessarily Hindu, culture against the 'self-hating, secularised/ westernised elite.' Former prime minister Manmohan Singh's formidable education, an MA

in Economics from Punjab University, with academic laurels from both the Cambridge and Oxford University, did not prevent him from surrendering his dignity and own mind to a lady who had been known more for her cunningness than her education. That Singh was comprehensively electorally 'defeated' by an 'average' student from a Vadnagar school who grew later to become Narendra Modi, a graduate with an extramural degree through distance education in political science from Delhi University and later an MA in the subject from Gujarat University was another travesty of Singh's education.

Children's illiteracy

According to Unesco's 11th Education For All (EFA) Global Monitoring Report, released in January this year, 90 per cent of children from poor families remain illiterate despite completing four years of school education. Also, around 30 per cent of children remain illiterate even after attending five-six years of school.

Middle class parents complain that they are spending 50 per cent or more of their disposable income on education and extracurricular activities for children, which, according to a report by Assocham, come down to a whopping Rs 65,000 per annum on education per child at school level, and let's assume that it is the cost of an average English medium school. If the fees for IITs hiked from Rs 50,000 to Rs 90,000 per annum look modest, an MBA degree in India from a reputable college can easily cost between Rs 10-16 lakh per annum.

Our colleges and varsities routinely churn out unemployable graduates or hand out worthless diplomas without caring to develop the skills prized by employers, confirmed further by the National Skill Report 2014 prepared by the CII, PeopleStrong and Wheebox. Pointing to our threatened public university system, President Pranab Mukherjee recently noted that out of top 200 universities in the world, not a single Indian institute finds its place, ruing that none out of over 600 universities, 30,000 degree giving colleges and 16 IITs in India is world class. Therefore, the requirement for the Modi government should rather be to increase the core strengths of renowned institutes before it embarks on setting up more IITs and IIMs in every state.

If politics is a profession where a school dropout can rub shoulders with a PhD in cardiac anatomy from the University of Denver, what would become of the hundreds of thousands of unskilled workers, and of the vast, unemployed pool of graduates without a professional education by dint of which they can find gainful employment, supposing that not all of them are going to join politics? Some 90 per cent of India's working population – the casual or informal workforce – many of whom are illiterate or less educated (not studied up to class VIII) remain outside the loop of India's vocational training system which, in plain terms, means that India lacks sufficient skilled workers. As per one estimate, of the 1.5 million engineering students in India, over 70 per cent are unemployed.

The growing mass of a largely undereducated and unemployable young people who aspire to a better life but clueless as how to get there accounted, to a large degree, for the overwhelming mandate for Modi. Not all of them can become ministers, or pracharaks. The real challenge for Ms Smriti Irani, therefore, would be to prize skill over grades in our education system and to put an end to all sham degrees.

Economic Times ND 17/06/2014 P-18

WHEN ENGINEERING STUDENTS TURN PRODUCT BUILDERS

Energy-positive homes, robots, drug delivery systems, chips for quick medical diagnosis, special wheelchairs, visual aids, and a whole lot more. That's the handiwork of some students in Indian engineering colleges. As they plug into the domestic and global competition ecosystem, these students are going from books to blueprints, from laboratory projects to real-world products, reports Hari Pulakkat

Two years ago, about 30 students from IIT Madras came together to build an autonomous underwater vehicle, which travel underwater without human control. It was an audacious goal.

Autonomous underwater vehicles are not easy to build, as they need good intelligence to navigate currents and take instant decisions. The students' immediate objective was to participate in an international competition, but they had a far more useful long-term agenda on their minds. No one makes commercial autonomous underwater vehicles in India, although there is a demand for such a product. Why not form a company that would sell it at some point?

One potential customer would be the Railways, which often sends people or remotely-piloted vehicles underwater for inspecting bridges. There are other uses for them too, like inspecting submerged pipes and studying lake or ocean floors. These are risky activities for people, and remote control becomes difficult as the distance from the shore increases. The only Indian institution that has developed autonomous vehicles is the Defence Research and Development Organisation (DRDO).

After two years of work, this team of IIT Madras students have built a vehicle that has won the first prize of the Indian leg of the RoboSub competition, and earned a free trip to the international RoboSub competition in San Diego. With some more development, it can become a commercial product in the future. "We are participating in the competition to benchmark ourselves," says Ashish Bajaj, a team member. "We should be able to launch the company in two years."

Other student teams at IIT Madras are similarly busy, building various kinds of gadgets for tech competitions. They are not academic projects but attempts to solve real social and business problems in the country. In recent times, students have had special incentives to do so, including a well-equipped lab that can be used to build anything without prior clearances.

IIT Madras students are not unique in this endeavour either, as building useful products has now become part of a student movement around the country. This movement is strong in the IITs, but students from other engineering colleges are giving IITians tough competition.

The products they build are of a staggering variety: energy-positive homes, robots, drug delivery systems, chips for quick medical diagnosis, special wheelchairs, visual aids, novel combustion engines, and so on. Some of them use sophisticated engineering principles and are yet low-cost devices for rural areas. Some try to tackle uniquely Indian problems not yet solved by anybody, while some others are fresh attempts at solving cutting-edge contemporary engineering problems. "Students these days are less deferential," says Anil Gupta, professor at IIM Ahmedabad, who organises one such technology competition. "And they don't care about getting jobs."

IIT BOMBAY The 700 sq ft energy-positive house—which is entirely powered by sunlight—built by Rahul Singh, Sanjana Shettigar and Parth Bhatia (left to right) is on its way to France to participate in the Solar Decathlon. It will be judged on parameters like architecture, energy efficiency... c

IIT MADRAS The autonomous underwater vehicle—which travels underwater without human control—built by a team of 30 IIT Madras students won the first prize of the Indian leg of the RoboSub competition. With some more development, it can become a commercial product

SRM University Students of SRM University in Chennai built a small, unmanned copter. This 2-kg copter—with weather sensors—can now fly up to 2 km with a one kg payload. The India Meteorological Department was impressed enough with the copter that it wanted 40 of them

Solving Real-World Problems

Gupta's organisation Sristi gives away, every year, the Gandhian Young Technological Innovation Awards, now becoming extremely popular among engineering students around the country. The award gets over 1,500 entries from students from 100 institutions around the country, but the IITs dominate the winners.

The notable entries this year—in three categories—included a satellite-based white space communication system, a vegetable chiller for rural farmers, a system for detecting contamination in food, an inhalable carrier for TB drug delivery, and a diagnostic biochip. These products are unlike anything we have seen, as the questions asked by the students are quite unique.

Washing clothes had long bothered Gyanendra Singh, now a PhD student at the department of pharmaceutical engineering at IIT-BHU. He had thought, as would have many of his ilk, about designing clothes that needed washing only once in three or four days. His eyes lit up when he heard about non-compliance in taking anti-TB drugs, common in rural areas. Why not develop a method to let people take the drug once in four days?

Within two years, he had developed a method of delivering TB drugs to the body slowly, after it is taken in one dose. He didn't win the Gandhian innovation prize, but received a certificate of appreciation. Now it has developed into his PhD project. "I cannot develop it into a commercial product," says Singh. "But I hope a pharma company will take it up later."

Making a commercial product is not the aim of most students when they start a technology project. Even if these products do not end up in the market, they will contribute to the development of Indian industry over several years. This is specifically true of technology challenges, which keep raising the bar as the students go along.

Consider the automobile industry as an example. Over 3,000 students in 100 teams have participated in the Baja SAE challenge since it started in 2007. The challenge is to build and race vehicles that can perform well in difficult terrains. Student designs were crude in the first two years, but they gradually learned the ropes. Their work is now very impressive, according to industry experts.

Over the years, the students learned to improve the suspension and steering, get the right height, and get substantial weight reductions in their vehicles. "It required significant effort outside the classes," says Pawan Goenka, president of the Mahindra Group's automotive, two-wheeler and farm equipment businesses, who had been closely involved in the challenge right from the beginning. "When we started, students had no exposure to automobiles. Now, they are better prepared to work in the industry." Mahindra has hired several such students in its labs and factories.

Some use advanced engineering principles and are yet low-cost devices. Some tackle Indian problems not yet solved. Some are fresh attempts at solving cutting-edge engineering issues

Competing Internationally

From a global perspective, Indian students have still some way to go; they are yet to make a mark in the International leg of the Baja competition, held every year in Mexico. Students from the country now perform well in several other international competitions, and some of them, particularly from the IITs, are becoming increasingly ambitious. The underwater vehicle, for example, is a tough challenge but the IIT Madras students are confident of being in the top 10 in the RoboSub competition in San Diego. They have competition from two other Indian institutions: SRM University and IIT Bombay.

IIT Bombay students are involved in another major international project: to build an energy positive house. Called the Solar Decathlon, this competition requires students to assemble within 10 days a 700-sqft house from prefabricated materials. The only energy input should be through solar panels, and the house will be judged on multiple parameters like architecture, energy efficiency, sustainability, and so on. The challenge is tough because the energy consumption of the house has to be reduced to the bare minimum, while still providing enough energy for comfortable living.

Students who worked on the project, called team Shunya, had Indian requirements in their minds. They used many contemporary design concepts in their house, which is now on its way to France for the competition. It uses passive solar design, a technique of using solar energy without mechanical devices.

It uses solar tracking, where solar arrays tilt as the sun moves to receive maximum sunlight. It uses a hybrid AC-DC network and DC devices to reduce energy use. Above all, it uses home automation systems to use energy optimally. Says Parth Bhatia, a student in the team: "It was a wholesome experience. We don't get opportunities in the curriculum to do this kind of hands-on work."

Work for competitions is done completely outside academic obligations, and projects such as these abound in engineering colleges around the country. Some colleges give the IITians a run for their money, often coming up with better products repeatedly. Chennai-based SRM University, for example, sent a satellite into low-earth orbit two years ago, using ISRO's launch vehicle, beating at least two IITs in the process. The university spent Rs 2 crore for the satellite project. SRM students are truly ambitious, as their products sometimes require serious technology development.

Unmanned aerial vehicles have caught the fancy of students around the country. SRM built one, and then moved on to a product not so popular: a small copter. Its 2-kg copter—with weather sensors—can now fly up to 2 km with a one kg payload. The India Meteorological Department (IMD) was impressed enough with the copter that it wanted 40 of them.

The Pune-based Indian Institute of Tropical Meteorology wanted a vehicle that can carry a 2-kg payload, and the National Physical Laboratory in Delhi wanted one to survey the Himalayas. Even the DRDO made enquiries: can SRM build a tiny copter weighing only 50 grams? "People would take a 50-gram copter for a bird," says Narayana Rao, head of R&D at SRM. "It would have done its job by the time they realise what it is."

Raising The Creativity Bar

Despite the variety of ideas, most student projects fall into certain popular categories: robots, autonomous vehicles, aids for the physically challenged, and solutions to typical rural problems. Mechanical and electronics engineering—sometimes called mechatronics—dominate among subjects.

Not all student projects, spectacular though they seem from outside, are made after understanding the engineering principles well. This is especially true of academic projects. Says Swami Manohar, CEO of LimberLink, which conducts a competition called Jed-i for the best final-year engineering project: "There are exceptions, but in general, there is no depth of understanding in most projects. Computer science is the weakest link."

Making a commercial product is not the aim of most students when they start a technology project. Even if these products don't end up in the market, they contribute to industry over several years

Jed-i this year has no computer science prize as the entries were weak. Over the last three years, the winning entries included a visual aid for those with poor eyesight, a prosthetic arm for amputees, a method for producing energy from cellulosic waste, a standing wheelchair, an unmanned aerial vehicle, and so on.

Occasionally, some students try to solve local problems. IIT Mandi students are working on a project to design a sewerage network in the campus. Students from St Joseph's College of Engineering in Palai, a small town near Cochin, have sent a proposal this year that outlines a controlled development for the city of Cochin.

The management in engineering institutions are aware of the large student interest in building things, and are creating conditions and the infrastructure to help them. Some of the best institutions also try to raise standards through courses that deepen the students' understanding.

IIT Madras, for example, now has a course called 'engineering in everyday life', which teaches students to apply principles learned in other courses. "The projects require the students to write down the mathematical models before they do hardware design," says Mahesh Panchagnula, associate professor of applied mechanics at IIT Madras. Panchagnula has overseen many of the student projects outside academics, including the underwater vehicle.

As the movement spreads across the country, product building has seeped into PhD work as well. Earlier the benchmark was research papers, but professors increasingly insist now on building products as part of a PhD programme, and also assign tough challenges involving large teams.

At IIT Kanpur, where students are active with a large number of non-academic projects, chemical engineering professor Sidharth Panda set his students a tough task: develop a low-cost sensor for detecting diseases early. The technology to be used was microfluidics, an emerging and multidisciplinary field that uses small volumes of fluid.

The first disease that they tackled was prostate cancer, by developing a method to detect the amount of prostate specific antigen (PSA) in the blood. The product had to be small, rugged and inexpensive. Existing products were big and expensive, using optical technology. No one used electrochemical technology like Panda wanted to. The product is now at the prototype stage and won the Gandhian Engineering award this year. "There is a buzz among the students after the award," says Panda. "We have now raised the bar for the younger PhD students."

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IIT Bombay Picture: BHARAT CHANDA; IIT Madras Picture: S VARADHARAJAN

Where Engineering Students from India are Competing

Engineering students from India are increasingly plugging into competitions that present the challenge of building real-world products. These are some of those competitions:

COMPETITION	ORGANISATION	CHALLENGE
RoboSub Competition	Association for Unmanned Vehicle Systems International, San Diego	Develop autonomous vehicles that perform missions under water
Solar Decathlon	US department of Energy	Build energy-efficient, solar-powered houses that are attractive
University Rover Challenge	Mars Society, Colorado	Build next generation Mars Rovers that will work alongside humans
Gandhian Technological Innovation Award	Society for Research and Initiatives for Sustainable Technologies and Institutions, Ahmedabad	Cost-effective, socially-relevant and technologically advanced innovations
Baja SAE Challenge	Society of Automobile Engineers, Chennai	Build and race vehicles in challenging terrains

Times of India, ND 17/06/2014 P-8

UGC slams DU's reservation policy, asks it to recall affidavit

Akshaya Mukul | TNN

New Delhi: Delhi University's assertion that it is a 'state' has attracted the wrath of the University Grants Commission. The commission has taken exception to an affidavit filed by the university in Delhi High Court in which it said "the university falls within the definition of 'state' under Article 12 of the Constitution and therefore university can have its own policy of reservation under Article 16 (A)".

In a strongly-worded letter, the UGC has asked DU to withdraw its affidavit. The affidavit pertains to a petition filed by the Delhi University SC/ST/OBC Teachers' Forum against the university for not following the reservation policy as per the 200-point post-based roster system. While the commission's missive to DU will come as a big relief to agitating teachers who protested against the method adopted by the university in implementing reservation, it comes as a big blow for the university administration. DU is already facing the UGC heat on four-year undergraduate programme. A lawyer appearing for DU said, "HRD and UGC have not understood the interpretation. We have followed SC order on roster system."

TEACHERS' FIGHT

SC/ST/OBC Teachers' Forum contends that DU Executive Council distorted the guidelines of the department of personnel & training in September 2013. As per the 200-point post-based reservation roster, the posts for the reserved categories and the unreserved categories will be fixed.

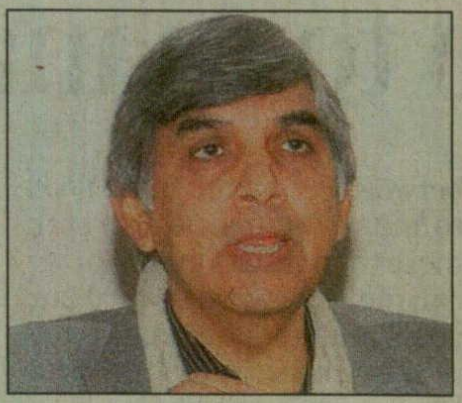
However, as the existing appointees have been adjusted under the roster system, it has become a bone of contention. The forum found that many reserved posts are occupied by general category appointees.

As per DU executive council's 2003 decision, all the reserved category posts occupied by general category candidates will be given to the reserved categories only after the current general category occupant vacates it. Hany Babu of the forum says it will create a situation in which reservation will never be followed.

Times of India, ND 17/06/2014 P-8

Review and reconsider 4-yr degree: UGC to DU

Akshaya Mukul | TNN



Vice-chancellor Dinesh Singh continues to expand FYUP. He has called a meeting of DU's academic council on June 21 to approve it for new courses

New Delhi: The countdown for the end to Delhi University's Four-Year Undergraduate Programme (FYUP) may well have begun. After outrightly rejecting the programme on Friday, the University Grants Commission on Monday took the next step by asking Delhi University to review and reconsider it immediately. The letter was sent to registrar Alka Sharma.

UGC said the full commission unanimously came to the conclusion that FYUP was illegal and not in consonance with the national education policy. The DU has been asked to comply with UGC's order.

"There is very little option left for the DU administration. A major lacuna has been found. The university never took the approval of President who is the Visitor. Instead, of telling DU directly and bluntly to abolish FYUP, UGC is letting university do it on its own," sources said. Education secretary Ashok Thakur had said in the full commission meeting last week that DU never went to the Visitor.

UGC sources said in case DU does not review/reconsider FYUP, HRD ministry will swing into action. The ministry can, with the approval of the Visitor, reject FYUP.

A senior official said, "In case DU goes to the Visitor to seek approval of the new system of under-graduation, it will find it very difficult to justify it. You do not go to the highest Constitutional authority to seek approval on retrospective basis."

Meanwhile, DU VC Dinesh Singh continues to expand FYUP. He has called a meeting of the university's academic council on June 21 to approve FYUP for new courses. However, many in the UGC say the entire controversy surrounding FYUP could have been easily avoided. "Last year HRD ministry refused to listen to many UGC members who wanted the government to look into it. The plea was university's autonomy. Now both UGC and ministry want FYUP to go. In the process, students will suffer," said one UG official.

Times of India, ND 17/06/2014 P-11

TERI univ under ministry, UGC lens over deemed tag

Manash Pratim Gohain | TNN

New Delhi: TERI University has come under the lens after an RTI activist levelled various allegations against it. Taking cognizance of accusations, the University Grants Commission (UGC) on June 3 asked the "deemed to be university" to submit a detailed report. The Human Resource Development ministry's public grievance section, too, requested joint secretary (higher education) on May 30 to settle the case expeditiously.

The institute's website doesn't mention that it's a deemed varsity. Besides, authorities have rented out space on the campus to two commercial organizations

It has been alleged that the university is misleading public by not mentioning itself as 'deemed university' on its website. The complainant added that it has "rented out a large space to two commercial organizations" and that this space could have been otherwise utilized for accommodation students and for other facilities. In his representation marked to UGC and HRD, a copy of which is with **TOI**, the RTI activist alleged that the institute has violated deemed university regulations by renting out two acres of land n campus to two commercial organizations.

For the full report, log on to www.timesofindia.com

Soon, TCS may be world's 2nd biggest tech employer

Sujit John & Shilpa Phadnis | TNN

Bangalore: With over 3 lakh employees, TCS has become the world's third largest employer of people in the technology sector. And given the pace at which it is growing, it could become the second largest employer this year, crossing Hewlett-Packard, and would be fast closing in on IBM.

In India, TCS is one of the biggest creators of jobs in recent years, maybe even the biggest. Except the Indian Army, the Indian Railways, India Post and Coal India, there's perhaps no other organization that has more employees than TCS. Unlike government departments, which are mostly cutting numbers, TCS numbers are rising each year by between 25,000 and 35,000.

Last fiscal, the $13.4-billion Tata Group company hired 61,200 people, with the net addition being 24,268, discounting for those who left the company. The net addition in each of the past several years has been along similar lines or higher.

On the contrary, for some of the leading global technology companies, numbers are dropping given the transformations they are going through to deal with shifts in technology towards areas like cloud computing and mobility. HP had 3,49,600 employees in 2011, but that number is now down to 317,500. IBM, which has about 4.3 lakh employees, is also in the midst of layoffs. TCS has said it will hire 55,000 people this year. If the net addition is half of that, it will be well ahead of HP's number by the end of this fiscal. Among Indian IT companies, Infosys is almost 50% of TCS, with 1.6 lakh employees.

EMPLOYEE STRENGTH

Global tech companies	
IBM	431,212
HP	317,500
TCS	300,464
Accenture	280,000
Cognizant	178,000
Fujitsu	168,733
Infosys	160,405
Some major Indian companies	
Coal India	357,926
BSNL	244,891
SBI	223,000
Tata Motors	59,759
Indian Oil	36,198
Reliance Industries	23,519

Sanchit Vir Gogia, chief analyst at Greyhound Research, observes TCS is ahead of many of its Indian peers in identifying new areas of growth, making investments and all the right noises. "It is betting big on the Digital Five Forces – mobility, big data, cloud, social media and robotics," he says.

Analysts find it remarkable that it has grown its people strength so quickly, yet created an organizational structure nimble enough to handle these numbers. Equally, it has kept its people costs under such control that it is seen as a major factor in its extremely high operating margins (over 28%), perhaps the highest among large companies in the global IT services industry. Pradeep Mukherji, president and managing partner in the global management consulting firm Avasant, says TCS is managing its huge workforce by breaking it into smaller business units that each function virtually as a smaller company. "The depth and breadth of middle management and work delegation, managing a good onshore and offshore mix are some of the key drivers in managing employee pyramid effectively."

TCS' employee cost has risen from $90 billion in 2007 to $319.2 billion in 2013, but the cost per employee has barely risen in these past seven years. The cost per headcount has grown from Rs 11.5 lakh in 2007, to Rs 12.4 lakh) in 2013, an annual increase of a mere 1.2%, says a report by the US-based IT advisory firm HfS Research.

"A conservative estimate of an 8% annual wage hike in India, a 2% hike in developed countries and a 4% hike in developing countries will lead to about 7.5% weighted average annual wage hike for TCS' mix of employees," says HfS analyst Pareekh Jain. In other words, TCS has been able to offset its salary hikes through other measures. One of the biggest of these seems to be a sharp increase in its fresher intake relative to the intake of experienced employees. The percentage of freshers hired (in total hiring) increased to 81% in 2013, from 51% in 2007, finds HfS. "They have stretched the employee pyramid with an army of junior employees. TCS is aggressively hiring in tier-2 and tier-3 cities that offsets cost to a large extents TCS has also focused on automation and on reusable software tools and frameworks to improve employee productivity," says Sudin Apte, CEO of the IT advisory firm Offshore Insights.

Indian Express ND 17/06/2014 P-13

Essar seeks to join IB report in suit against Greenpeace

MEGHNA YELLURU
MUMBAI, JUNE 16

THE FIRM
has filed a Rs 500 crore defamation suit after the NGO, on January 22, rolled down a banner that read "We kill forests: Essar" along the Essar House

A WEEK after the Intelligence Bureau (IB) submitted a report to the Prime Minister's Office calling foreign-funded NGO Greenpeace "a threat to national economic security", the Essar Group on Monday sought to include the IB report as supporting evidence in the defamation suit filed against the NGO in the Bombay High Court.

On January 22, Greenpeace had rolled down a banner that read "We kill forests: Essar" along the Essar House, the company's headquarters at Mahalaxmi. The Essar group then filed a Rs 500 crore defamation suit against the NGO. The protest was against Essar Power's plans to start mining at Mahan in Madhya Pradesh. Besides Greenpeace, the other defendants in the suit include NGOs Clear Sweep and Mahan Sangharsh Samiti.

"A defence they (Greenpeace) have raised is that the agitation was in public interest and it is a fair comment. We wanted to justify whether it is in public interest or not and whether it is a fair comment or a motivated comment," said senior counsel Venkatesh Dhond, who argued for the firm.

Counsel for Greenpeace Mihir Desai said, "The Essar Group had sought time to file an affidavit, to bring on-record, facts arising out of the IB report." The suit filed by Essar alleged that the 12 demonstrators from Greenpeace, entered the company's premises under the pretext of cleaning the building.

However, they rolled down the 36x72 feet defamatory banner along the highrise located in Central Mumbai.

Earlier, the court had come down heavily on the NGO and asked them to remove defamatory content against the Essar Group including that from their website, posters and leaflets. The court had also restrained the NGO from entering the Essar House premises or holding agitations within 100 metre from the building.

The Intelligence Bureau report on foreign-funded NGOs accused Greenpeace of unlawful funding, allegedly aiding an Aam Aadmi Party candidate in the recent Lok Sabha elections and called it "a threat to national economic security" by protesting against nuclear and coal plants,

The report also stated that Greenpeace, "actively aided and led by foreign activists visiting India", of violating the provisions of the Foreign Contribution (Regulation) Act of 2010 (FCRA), and financing "sympathetic studies" at the Tata Institute of Social Sciences (TISS) and at IIT-Delhi.

Economic Times ND 17/06/2014 P-8

THE NEW CODE Other than tech expertise, engineering, accountancy and people management skills will be much sought-after

Get Job-ready with Hottest Skills

SHREYA ROY & ANUMEHA CHATURVEDI
BANGALORE | NEW DELHI

With the installation of the new government at the Centre, hopes of a speedy economic revival have led to expectations that employment will get a boost, especially in sectors such as infrastructure, manufacturing and defence. Experts caution, though, that the coming boom will benefit only those who possess the relevant skills.

According to staffing consultancy Kelly Services, overall demand for skills in areas and functions such as sales and marketing, mobile technology, analytics in information technology (IT), relationship managers in banking, and R&D is likely to grow 10-15% in 2014 compared to the previous year. The new economy sectors of IT, business intelligence and data, and e-commerce have been witnessing a surge over the past few months. The financial services industry has received a push from reforms and new licences while consumer durables and automobile sectors are likely to pick up if the positive sentiment translates into increased purchasing power. Aviation, too, may see an uptick in demand with the arrival of new carriers.

Technology skills are expected to be in demand across sectors while offers are likely to pour in for civil engineers, accountants, people managers and sales experts. Here is a look at the top six skills that are likely to command a premium over the next few quarters.

Business intelligence and data analytics skills: A data scientist, or someone with expertise in analytics, commands an annual salary of Rs 15-20 lakh after an experience of 2-3 years. "Some of these guys make as much as highly successful lawyers and doctors, and they would rank number one in terms of skills demand," says Subeer Bakshi, director, Talent & Rewards, Towers Watson. This category includes data warehousing and business intelligence (DWBI) designers as well as professionals with experience in software frameworks such as Hadoop.

IT, software development and e-commerce: "Technology and digital marketing-related skills are in huge demand as e-commerce companies have got big-ticket investments," says Asim Handa, CEO, Gi Group India. E-commerce jobs, according to him, may see a growth of 18-20% in 2014 compared with the previous year.

Domestic consumption of technology, especially in mobile telephony, is on the rise. The traditional IT services sector is likely to see a spurt in hiring as demand revives in Europe, along with expected economic turnaround at home. According to Teamlease, this category will provide opportunities to a wide range of people, beginning with IT infrastructure managers, mobile developers on IOS, Android and Windows, and those with knowhow of languages like Python, Ruby on Rails, HTML, and CSS, to IT security and cloud computing professionals.

Project management and civil engineering for heavy industries: Owing to the government's focus on infrastructure and power, project managers with experience or certification in these sectors will be in high demand. This will also help people with expertise in urban planning, civil engineering, water resource management, etc. The power sector may also seek in large numbers piping engineers, lead engineers, unit control engineers, safety engineers and utility engineers, besides people with experience in desk operations or field operations, or as site in-charge or shift in-charge.

Sales and marketing skills: Sales and marketing skills are likely to be in demand across sectors, but particularly in consumer goods and financial services. Sales will assume great importance if the general positive sentiment converts to tangible growth. This will be across levels of the function, but with higher requirement in the lower rungs. "There may be a variety of job titles such as sales representative, sales executive, sales advisor, or salesperson," says Srikanth Rengarajan, executive director and president, ManpowerGroup India.

Banking, accounting and finance: This sector has been slow in hiring, but with two new banking licences already issued by the Reserve Bank of India, and more in the pipeline, bankers will be in high demand in roles including relationship managers, branch managers, investment bankers, certified accountants as well as junior staff.

Customer servicing and people management: "We can expect to see an increase in demand for customer representatives and human resource professionals across industries as companies try to capitalise on the improving economic climate," says Moorthy K Uppaluri, CEO, Randstad India.

With the expected surge in hiring, those with a combined proficiency in managing people, business partnering and facing clients are likely to be in high demand. According to a report by Teamlease, a large number of opportunities may arise in education for programme coordinators, admissions representatives, teachers and faculty, assistant professors and student service advisors. Besides, R&D professionals will be needed in health care, chemicals, automobiles and manufacturing sectors.

Analysts, however, caution that the optimism in the job market is based on sentiment and it may take at least three quarters for any meaningful change in the economy. "Some of the hiring is more due to sentiment and expectations of macroeconomic change than hard data of economic change," says Kamal Karanth, managing director-India & Malaysia, Kelly Services.

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The Premium Play

Deccan Herald, ND 17/06/2014 P-12

Treadmill that washes clothes

A South Korean industrial designer has invented a ring-shaped treadmill that lets runners use their kinetic energy to wash clothes, reports PTI from Seoul.

The concept treadmill by Si Hyeong Ryu has wash canisters inside that can be filled with dirty clothes, soap and water like any other washing machine. The size and shape of the canisters reduces the need for a lot of water. When the jogger runs, the motion spins the canisters, agitating the laundry. Extra power gets saved onto a battery as electricity to run the machine on days when the person is not jogging, *Discovery News* reported.

A flexible display on the front of the wheel gives the runner a visual experience.

The treadmill, called The Wheel, is an entry for the 2014 Electrolux Design Lab competition, a global design competition that challenges artists and designers to rethink how people live and work.