

## Newspaper Clips

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# आईआईटी दिल्ली के नए निदेशक की नियुक्ति प्रक्रिया शुरू

नई दिल्ली (भाषा)। आईआईटी दिल्ली के नए निदेशक की नियुक्ति प्रक्रिया शुरू हो गयी है और मानव संसाधन विकास मंत्रालय ने 40 वरिष्ठ शिक्षाविदों के साक्षात्कार लिए हैं। इस पद के लिए करीब 70 वरिष्ठ शिक्षाविदों ने आवेदन किया है। एक समिति द्वारा साक्षात्कार लिये और चयनित उम्मीदवार के नाम अंतिम मंजूरी के लिए राष्ट्रपति प्रणब मुखर्जी कार्यालय भेजे जाएंगे जो केन्द्रीय संस्थानों के 'विजिटर' हैं। मंत्रालय ने पद खाली होने पर पिछले साल आईआईटी निदेशक के पद के लिए आवेदन मांगे थे।

Times Of India ND 18/03/2016 P-11

# IITs OK 200% fee hike, ministry may not play ball

**Akshaya Mukul & Hemali Chhapia** | TNN

**New Delhi/Mumbai:** The standing committee of the IIT council has approved a 200% fee hike, thus upping the annual tuition fees from Rs 90,000 to Rs 3 lakh for undergraduate students. At the same time, interest-free scholarships will be offered under the Vidyalakshmi scheme.

While the final decision on the hike rests with the IIT council headed by HRD minister Smriti Irani, the SCIC, which met on Thursday, studied the average cost per student and felt that 60% should be collected from them. "On an average, it costs a bit over Rs 5 lakh a year to educate one student at an IIT. But while we approve the increase in fees, we also want to assure students that there will be scholarships and loans and the IIT gates will be open to all, irrespective of their means," said SCIC chairman Ashok Misra.

A panel, that included the directors of the Bombay, Madras, Kanpur and Hyderabad IITs, had drawn up a document — 'Roadmap to Financial Autonomy of IITs' — in consultation with the HRD and finance ministries in which it recommended the hike. This, the panel had stated, would be enough to cover costs incurred by way of salaries and maintenance.

A highly placed ministry source, however, made it clear that a hike of this propor-



The final decision on the hike rests with the IIT council led by HRD minister Smriti Irani

## Free e-classes by IIT profs soon

In a big step forward aimed at helping poor students aspiring to join IITs, the standing committee of IITs agreed with HRD ministry's proposal for launching an IIT-PAL (professor-assisted learning) that would provide free online coaching by IIT professors and experts to students. Former IIT Bombay director Ashok Misra has been assigned the task of making the portal a reality. The idea is to create an interactive portal that would upload lectures by IIT professors. **Akshaya Mukul** | TNN

tion will not be accepted and a middle path could be found. Fee hike for post-graduate students will be examined later: "The standing committee does not take decisions. We only prepare agenda for the IIT council," Bhaskar Ramamurthi, director, IIT Madras, told TOI.

## Soon, free online lessons from IIT professors

Akshaya Mukul | TNN | Mar 18, 2016, 09.42 AM IST

<http://timesofindia.indiatimes.com/home/education/news/Soon-free-online-lessons-from-IIT-professors/articleshow/51451909.cms?>

New Delhi: Now, poor students aspiring to join the IITs will get free online lessons from the prestigious institutes' professors.

The IITs have agreed to a government proposal for professor-assisted learning, which will be called IITPAL.

"We want to break the stranglehold of coaching centres," a senior government official said.

Former IIT Bombay director Ashok Misra has been put in charge of creating the IITPAL portal.

The interactive portal will have uploaded lectures by IIT professors on physics, chemistry and mathematics. Questions and answers from the IITs' Joint Entrance Examination of the past 50 years will also be uploaded .

"Most of them (the coaching centres) have the database of questions which we will (also) provide free along with solutions," the senior official said.

Students can send their queries online to individual professors. Students will also be given assignments. The IITs are also agreeable to the idea of having a mobile app for the portal so that students can read lectures and work on assignments while they are on the move.

## CBI gets sanction from IIT-Kanpur to prosecute NS Gajbhiye

TNN | Mar 17, 2016, 11.15 PM IST

<http://timesofindia.indiatimes.com/city/bhopal/CBI-gets-sanction-from-IIT-Kanpur-to-prosecute-NS-Gajbhiye/articleshow/51447788.cms>

Bhopal: CBI on Thursday received sanction from IIT-Kanpur to prosecute Dr NS Gajbhiye for his alleged role in illegal recruitment scam of Dr Hari Singh Gour Central University, Sagar. The agency has booked him in connection with nearly a dozen cases of irregularities, besides a case of disproportionate assets.

"We have got necessary clearances for his prosecution from the executive committee of the university and IIT Kanpur. Charge-sheet would soon be filed against Gajbhiye and two others in one of the cases," said a CBI officer wishing anonymity.

Gajbhiye was working as a professor at IIT-Kanpur before his appointment as first VC of HS Gour University after it was declared a Central university in 2009. His services were repatriated to IIT-Kanpur after completion of a five-year term. An affidavit submitted to CBI indicates 153 assistant professors and associate professors were appointed against 76 vacancies advertised in newspapers. As per complaint, appointments were made in flagrant violation of Central University and Statute Act, 2009.

Several other complaints were filed against university authorities. There are allegations that university had purchased instruments worth crores for a nano lab without recommendations of technical committee and even before the building was completed. Head of the technical committee resigned in protest. Similarly, furniture worth Rs 2.43 crore was purchased from a Mumbai-based company. The money was shown as spent on SC/ST welfare, according to complaints submitted to CBI.

In similar instances of wasteful expenditure, the university purchased books worth Rs 4 crore in one day from a book fair in New Delhi. The purchase is also under CBI scanner. Former VC had been contending the charges.

## **Google offers Rs 1.8 crore to IIT Patna's Ashutosh Agarwal**

THE HANS INDIA | Mar 17,2016 , 10:12 PM IST

<http://www.thehansindia.com/posts/index/Technology/2016-03-17/Google-offers-Rs-18-crore-to-IIT-Patnas-Ashutosh-Agarwal/214440>

BENGALURU: In India, it has been a dream for many students who complete their higher education to look for highest paying jobs from Apple, Oracle, Microsoft, Google, Adobe, and Facebook. IIT students have again proved that such dream can be a reality by grabbing the highest paid jobs from the aforementioned firms. Early this year, an IIT Kharagpur student, Vatsalya Singh bagged an INR 2 crore per annum package with Microsoft. Later this year, other IIT students of the country have also been awarded with such highest paying jobs. Business Insider interrogates that life is merry, once the milestone of entering into the IITs of the country is achieved!!

## **Ministry calls for green campuses, AU takes step 1, to audit energy utilised**

TNN | Mar 18, 2016, 01.13 AM IST

<http://timesofindia.indiatimes.com/city/allahabad/Ministry-calls-for-green-campuses-AU-takes-step-1-to-audit-energy-utilised/articleshow/51448973.cms>

Allahabad: The UGC (University Grants Commission) has invited proposals from all central universities, including Allahabad University (AU), to develop their campuses as green campus during the 12th five-year plan.

Financial assistance upto Rs 5lakh would be given for preparation of a master plan and DPR (detailed project report) including the action plan for renewable energy installations, green campus development, awareness generation and trainings.

AU PRO, K N Uttam said, "AU administration has started following UGC's instructions and to start with, the varsity has started budgeting of energy after which we would be conducting auditing of individual units wherein energy consumed and utilised would be audited."

In the second step, the proposal for 'green campus' would be sent to UGC, he added.

The ministry of new and renewable energy aims to develop green campuses - under development of solar cities programme - which aims at at least 10 % reduction in projected demand of conventional energy at the end of five years. Universities across the country have been asked to step forward for developing their campus as green campus. To qualify as a green campus, buildings within the campus should be based on green building concepts. It would have to

carry out energy and water audit of the campus. Universities would have to explore the utilization of a renewable energy system. Likewise, solar cooking systems must be utilised for hostels.

A master plan for the campus would have to be prepared keeping in view the overall reduction in fossil fuel-based energy by 25% within next five years by utilizing renewable energy applications, and taking suitable measures for energy conservation and energy efficiency.

Institutions have also been asked to organise awareness/training workshops in their respective campuses regarding renewable energy applications, and taking suitable measures for energy conservation and energy efficiency.

Besides, the possibility of redesigning of exterior surfaces of the buildings with energy efficient material may be explored. Universities are free to propose any other innovative actions or points that can be taken for making existing green campus, mentions the UGC letter.

PRO Uttam said there is always scope for improvement and the possibility of sending a proposal would be explored.

## **UGC asks varsities to organise Yoga fests for students**

Press Trust of India | New Delhi March 17, 2016 Last Updated at 22:48 IST

[http://www.business-standard.com/article/pti-stories/ugc-asks-varsities-to-organise-yoga-fests-for-students-116031701383\\_1.html](http://www.business-standard.com/article/pti-stories/ugc-asks-varsities-to-organise-yoga-fests-for-students-116031701383_1.html)

University Grants Commission (UGC) has sent letters to Vice Chancellors of universities asking them to organise two to three-day Yoga fest in April and May for students.

In separate letters, UGC secretary Jaspal S Sandhu said that Prime Minister Narendra Modi has emphasised the need for making Yoga more appealing to youth so that they can imbibe this rich cultural heritage and their energy could be channelized in nation-building.

"You are requested to organise 2 to 3-day 'Yoga Fest' during April-May, where students could be sensitised about the strengths and health benefits of Yoga.

"They may also be trained in the Common Yoga Protocol (CYP) to be performed on International Day of Yoga on 21st June, 2016, which is available at the website of the Ministry of AYUSH," the letter said.

Sandhu also suggested other activities for this fest' like cultural programmes based on Yoga.

Lectures by experts on subjects such as, 'Yoga for Lifestyle modifications', 'Yoga for Wellness', 'Yuva Yoga', 'Yoga and Detoxification', 'Power of Pranayama', could also be included in the fest, he said.

## UGC anti-ragging rules prescribe penalties for race, caste remarks

Neelam Pandey, Hindustan Times, New Delhi **Mar 18, 2016 08:35 IST**

<http://www.hindustantimes.com/education/ugc-anti-ragging-rules-prescribe-penalties-for-race-caste-remarks/story-QhcMtoC1Uk7TzQIn4IjxrM.html>

Using racially or ethnically pejorative terms will come in for stricter punishment at institutions of higher education under new anti-ragging regulations taking effect from the upcoming academic session.

Addressing someone as Bihari or chinki, for instance, or practising discrimination on the basis of someone being a transgender person will come under an expanded definition of ragging approved as part of the latest amendment in regulations at a UGC (University Grants Commission) meeting on February 4.

“The terms race, racial, ethnic, ethnicity, transgender and stalking have now been brought under the regulations and anyone found guilty will face action,” a senior official said.

Those held guilty can be suspended, rusticated, removed from the hostel, have their results withheld or face a fine ranging between Rs 2,000 and Rs 1 lakh.

“There are so many incidents of discrimination and harassment that take place but police find some excuse or the other not to file a complaint. Now we know that calling names will be covered under ragging, so more students will file complaints. This is a positive move,” J Maivio, vice-president of the North East Indian Welfare Society, said.

The Supreme Court had taken cognizance of ragging and constituted the Raghavan Committee to give specific recommendations to prevent the menace, following which a sub-committee under the chairmanship of Rajendra Prasad, principal of Ramjas College, was formed in June last year.

The sub-committee focused on discrimination on the basis of physical characteristics/gender identity, too. “These have now been defined as punishable forms of racial injustice,” a senior official said.

The commission sent its recommendations to the HRD ministry for concurrence and a gazette notification will be issued soon.

The ministry has allocated a sum of Rs 5 crore to the UGC for a media and publicity campaign against ragging in educational institutions. Radio jingles, short films and TV ads will be created to make students, parents and teachers aware of punishment, provide call-centre numbers, and distribute information about who to contact in case of ragging. Universities and colleges have witnessed a spurt in incidents of discrimination on grounds of regional or caste origins over the past few years. As students from the northeast in particular faced a lot of discrimination, former HRD minister Pallam Raju had requested the UGC to consider racial discrimination as ragging.

## Most universities fall in line with UGC directive

MG, Calicut, Kannur varsities to go by ruling on research guides; KU keeps compliance in abeyance

<http://www.thehindu.com/news/cities/Thiruvananthapuram/most-universities-fall-in-line-with-ugc-directive/article8368358.ece>

Arts and science universities in the State, with the exception of the University of Kerala, have decided to implement, with small variations, the UGC directive that retired teachers shall not act as research guides. Following a UGC letter, the University of Kerala had passed an order mandating that retired teachers be no longer considered research guides.

The varsity order also stipulated that a guide has under him only a maximum of eight doctoral scholars and five M.Phil. scholars at a time.

The varsity's academic council, however, decided that a letter should be written to the UGC listing practical difficulties.

The UGC reportedly replied, reiterating that its directive be complied with. The varsity issued an order on February 1 wherein teachers who retire in 2015-16 were allowed to act as research guides for one more year.

The order says that existing research supervisors who are retired teachers can continue guiding research scholars so as to complete the research work before July 15, 2016. The university's Syndicate which met on February 29 decided to keep in abeyance compliance with the UGC directive.

Mahatma Gandhi University has decided that no new research scholar would be allocated to a retired teacher from April 1, 2016.

However, existing research scholars under retired teachers would be allowed to complete their work. Vice Chancellor of Kannur University M.K. Abdul Khader told *The Hindu* that a scholar under a retired teacher would be allowed to complete the research work and submit the thesis.

At Calicut University too the UGC directive is being implemented with the same modification; that existing research scholars under retired teachers would be allowed to complete the work. With immediate effect, retired teachers are not being given new scholars.

## **UT teachers bat for 80% quota during appointments**

**The union members have demanded that during the appointment of teachers, 80 per cent of the seats should be reserved for candidates from Chandigarh and the remaining 20 per cent should be from outside.**

Express News Service Chandigarh Updated: Mar 18, 2016, 5:38

<http://indianexpress.com/article/cities/chandigarh/ut-teachers-bat-for-80-quota-during-appointments/>

The UT Cadre Educational Employees Union has written to the Ministry of Human Resource and Development (MHRD) for implementing a reservation quota for teachers from Chandigarh.

The union members have demanded that during the appointment of teachers, 80 per cent of the seats should be reserved for candidates from Chandigarh and the remaining 20 per cent should be from outside.

The president of the UT Cadre Educational Employees Union, Swarn Singh Kamboj, said owing to the absence of UT quota for appointment of teachers, majority of the posts were being filled by applicants from Punjab and Haryana.

Kamboj told The Chandigarh Newline: "Recently 1,100 posts were filled in the UT for JBT and TGT. Out of them, majority of the posts have been filled by candidates from Haryana. In the absence of any quota for applicants from Chandigarh, many students after finishing their BEd and MEd degrees from Chandigarh go to other states looking for jobs."

The students pursuing their education in the UT have also voiced their support for the implementation of a quota for appointment of teachers from the city.

“The students who complete their degrees from colleges in Chandigarh should be entitled to some sort of quota for being appointed in the UT. How does it make sense for students from Chandigarh having to knock doors of other states for employment every time? In states like Punjab and Haryana, we also face the problem of domicile certificates, further narrowing our job prospects,” said Hiral, a student pursuing her BEd from Panjab University.

According to the union members, 600 new teachers are soon going to be appointed under the Sarva Shiksha Abhiyaan (SSA) in Chandigarh. A proposal has already been sent to the Centre for implementing an 80 per cent reservation quota for these appointments.

In the proposal sent, it has also been added that for making appointments for teachers in the UT, it should be made mandatory for the applicants to have opted for Hindi or Punjabi in Class X.

“We had raised the point regarding making Punjabi or Hindi a mandatory option last year as well with the UT education department. However, it was not considered. If a teacher is appointed in Chandigarh, it only makes sense to ensure that he or she knows Hindi or Punjabi for effective communication with the students,” Kamboj added.

A letter containing these demands regarding appointment of teachers in the UT has been forwarded to the MHRD and the Central Board of Secondary Education (CBSE).

Economics Times Hindi ND 18/03/2016 P-1

**बदला नजरिया** इंटरनेशनल ऑफर्स से पहले ही स्टूडेंट्स ने मनपसंद डोमेस्टिक पोजीशन स्वीकार कर ली थी

# IIM में इस साल कम आए इंटरनेशनल जॉब ऑफर्स

**प्राची वर्मा | नई दिल्ली**

इस साल बिजनेस स्कूलों में ग्लोबल पोस्टिंग वाले जॉब ऑफर्स बहुत कम आए। आईआईएम बैंगलोर के कैम्पस प्लेसमेंट के दौरान इंटरनेशनल कंपनियों के ऑफर्स में 25 फीसदी की कमी आई है। आईआईएम कोशिकोड के मामले में यह आंकड़ा 74 फीसदी है। वहीं आईआईएम कलकत्ता में इंटरनेशनल ऑफर्स में 20 फीसदी घटे हैं। आईआईएम इंदौर और काशीपुर में इंटरनेशनल ऑफर्स फ्लैट रहे हैं। एक्सएलआरआई को इस साल एक भी इंटरनेशनल ऑफर्स नहीं मिला।

बिजनेस स्कूलों के मुताबिक, इसकी एक वजह यह है कि इंटरनेशनल ऑफर्स आने से पहले ही स्टूडेंट्स ने डोमेस्टिक ऑफर्स स्वीकार कर लिए थे। चुन लिया था। बी-स्कूलों की प्लेसमेंट टीमों का कहना है

कि भारत ग्लोबल इकनॉमी में आज मजबूत बनकर उभर रहा है। इसलिए स्टूडेंट्स ने डोमेस्टिक कंपनियों के ऑफर्स को तरजीह दी। डेलॉयट इंडिया के चीफ टैलेंट ऑफिसर

और सीनियर डायरेक्टर एस वी नाथन ने कहा, 'इनवेस्टमेंट, कंजम्यशन और पॉलिसी की वजह से इंडिया सबसे तेजी से बढ़ने वाली अर्थव्यवस्था है। इससे रोजगार को

बढ़ावा मिलेगा।' उन्होंने कहा, 'अमेरिकी और यूरोपीय कंपनियां भी यहाँ विस्तार कर रही हैं, लिहाजा वे इंडियन ऑपरेशंस के लिए हायरिंग पर फोकस कर रही हैं।'

आईआईएम बैंगलोर में इंटरनेशनल ऑफर्स पिछले साल के 20 की तुलना में घटकर इस साल 15 रह गए। हालांकि, वीएमडब्ल्यू और प्रोटिविटी जैसी कंपनियां पहली बार कैम्पस में आई थीं। आईआईएम बैंगलोर की हेड (करियर डिवेलपमेंट सर्विसेज) सपना अग्रवाल ने इंटरनेशनल ऑफर्स में गिरावट की वजह बताते हुए कहा, 'ज्यादातर मल्टीनेशनल कंपनियों के इंडिया में ऑपरेशन हैं। ऐसे में वे अपने मैनेजर को इंडिया में पोस्ट करना चाहती हैं।' उन्होंने कहा, 'यहां तक कि कुछ इंडिया से बाहर साउथ ईस्ट एशिया में रोजनल ऑपरेशन संभाल रहे हैं। ऐसे में इंडिया में पोस्टिंग होने

के बावजूद विदेश में इन्हें ज्यादा जिम्मेदारी दी जा रही है।' आईआईएम कोशिकोड में इंटरनेशनल ऑफर्स पिछले साल के 15 से घटकर सिर्फ 4 रह गए। वहीं, आईआईएम कलकत्ता में इंटरनेशनल ऑफर्स की संख्या पिछले साल के 26 से घटकर सिर्फ 21 रह गई। आईआईएम कोशिकोड और आईआईएम कलकत्ता में इंटरनेशनल ऑफर्स आने से पहले ही पूरा बैच को ऑफर्स लेटर मिल चुका था।

आईआईएम कोशिकोड प्लेसमेंट ऑफिस के एक सूत्र ने कहा, 'इस बार प्लेसमेंट पहले ही खत्म हो गया। इस वजह से कई इंटरनेशनल कंपनियों को ऑफर्स करने का मौका ही नहीं मिला।' आईआईएम कलकत्ता के एक स्टूडेंट ने कहा, 'डोमेस्टिक जॉब में भी मोटी सैलरी मिल रही है। सब आपकी पोजीशन पर निर्भर करता है।'





# CBSE to rework marking for 'tough'

**REMEDIAL** Board to set up panel of subject experts before evaluation begins

Shradha Chettri

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**NEW DELHI:** The Central Board of Secondary Education (CBSE) on Thursday constituted a committee to review the Class 12 mathematics question paper that students and parents said was "unusually tough and lengthy".

Students across India went into a panic mode after Monday's exam, asking the board to address their concerns. By Tuesday, over 200 petitions were filed on change.org, with some asking for a retest.

The panel, which includes a subject expert, curriculum expert and board representatives, will take corrective measures and prepare a marking scheme before evaluation begins, said a CBSE official.

A copy will be sent to all checking centres and students will be marked according to the set formula, he said.

Usually the board first sends feedback from teachers, principals and students about the question paper to the committee, said LV Sehgal, principal, Bal Bharti School. "The committee then reviews, sets and finalises the marking scheme for that particular paper, taking the feedback into account," he said.

Moderation of marks is generally reserved for rare occasions when it is clear the paper was difficult, a CBSE source said.

Moderation, by large, is a process of academic leveling through a slight "upscaling or downscaling" of marks. It usually benefits low scorers.

"A similar situation arose last year for the same subject. The board took a similar measure," an official said. The board set up an experts' panel last year too to rework the marking scheme.

For particularly vague or tricky questions, marks for every answer step are also mentioned in the scheme. "In case there are out-of-syllabus questions in the paper and students attempt them, the evaluators generally award marks for the attempt alone," said Sehgal.

Students may also get marks for correct application of formulae, even if the answer is wrong.



Students of CBSE Class 12 after the accountancy exam in New Delhi on Thursday. Some of them complained that the paper was lengthy.

ARUN SHARMA/HT

## Students raced against time to solve complex calculations

Shradha Chettri

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**NEW DELHI:** No question was set from outside the syllabus but the allegedly elaborate calculations required to solve even the one-mark problems in the Class 12 mathematics exam left students racing against time.

"To complete one question of Section C, it took me 25 minutes. There were six questions more (of six marks each) which I had to complete in the short duration. Due to nervousness, I could not even solve the questions I knew," said Dhruv Bhatia, a Class-12 student.

Another student from a well-known school in Delhi said he took 25 minutes to solve a six-mark question.

"I technically finished my paper half-an-hour in advance,

### MOST COLLEGES REQUIRE STUDENTS TO CLEAR MATH TO BE ABLE TO STUDY HONOURS IN COMMERCE, ECONOMICS OR BUSINESS ECONOMICS

except for a six-mark matrices question and four-mark integration question. I went back to the six-mark question... However, this took around 25 minutes," he said.

At that speed, a student would have to spend almost two out of the stipulated three hours on Section C alone. That would have left him or her with about an hour to solve the remaining 19 questions carrying a total of 58 marks.

Students said even Section A,

with six questions of one-mark each, required complex calculations. One of the one-mark questions asked was for four marks in last year's CBSE foreign board paper, said a student.

"The paper was lengthy, but students who focussed on time management during preparations could pull through," said Ramesh Batlish, an expert at FIIT-JEE, Noida.

He said the exam may not have on the same level as IIT-JEE, as suggested by some students.

Students from science, commerce and humanities appear for the mathematics exam every year. Most colleges require students to clear the subject in Class 12 to be able to study an honours programme in either commerce, economics or business economics.

### THE STICKY POINTS

Students picked out five questions in the paper that they either found too lengthy or difficult. They explained why they took time and teachers rate the legitimacy of the claims

**SECTION A** It had six questions of one mark each. Students are expected to spend not more than 10 minutes on the section.

**Q3** The two vectors  $\hat{j} + \hat{k}$  and  $3\hat{i} - \hat{j} + 4\hat{k}$  represent the two sides AB and AC respectively of a triangle ABC. Find the length of the median through A

#### STUDENTS' VIEW

**Amogh Mukhi, Sanskriti School:** I am a science student and we have such questions in physics too. Though not difficult, I spent 5-6 minutes on it. It was certainly difficult for commerce and humanities students.

#### TEACHER'S VIEW

**Akshay Garg, Presidium School, Ashok Vihar:** Students would have taken 8-10 minutes. Generally, a one-mark question just has one or two steps. For this question, there are a minimum six steps

**Q5** Find the maximum value of

$$\begin{vmatrix} 1 & 1 & 1 \\ 1 & 1 + \sin \theta & 1 \\ 1 & 1 & 1 + \cos \theta \end{vmatrix}$$

**Samarth Jain:** I decided to skip this question because attempting it would mean wasting time. I couldn't afford to leave out the 4 and 6-mark questions.

**Akshay Garg:** This question also requires 4 steps to come to an answer. Here too, students would have spent some time as CBSE is also particular about steps

**SECTION B** It had 13 questions of 4 marks each, requiring 50 minutes

**Q7** Show that the equation of normal at any point t on the curve  $x = 3 \cos t - \cos^3 t$  and  $y = 3 \sin t - \sin^3 t$  is  $4(y \cos^2 t - x \sin^2 t) = 3 \sin 4t$

**Shakshi:** I managed to prove the equation but I spent almost 25 minutes on it.

**Neenu Gupta, Ahkon International School:** It was very difficult to prove the equation and would have consumed a lot of time

**Q9** Find  $\int \frac{\sqrt{x}}{\sqrt{a^2 - x^2}} dx$

**S Gupta:** I spent 10 minutes trying and then gave up. At the end I was left with no time to do two 6-mark questions

**Neenu Gupta:** It was a very tricky question. Students spent 15-20 minutes on it. For 4 marks, they needn't spend more than 5 minutes

**SECTION C** It had 7 questions of 6 marks each

**Q23** An urn contains 3 white and red balls. Four balls are drawn one by one with replacement from the urn. Find the probability distribution of the number of balls drawn. Also find mean and variance of distribution drawn.

**Priyanka Bhattacharya:** I left the question mid-way as it required a lot of calculation with many sub parts. The calculation ran into several pages

**Neenu Gupta:** If the question was about two and not four balls, it would have been easier for students to solve in the given time. But with four balls, I would have taken 7-8 minutes to solve it

TEXT: SHRADHA CHETTRI