



**G H PATEL COLLEGE OF ENGINEERING & TECHNOLOGY,
VALLABH VIDYANAGAR**

**Dr. C. C. Patel and Mrs. Sushilaben Patel
Department of Civil Engineering**

BRICK

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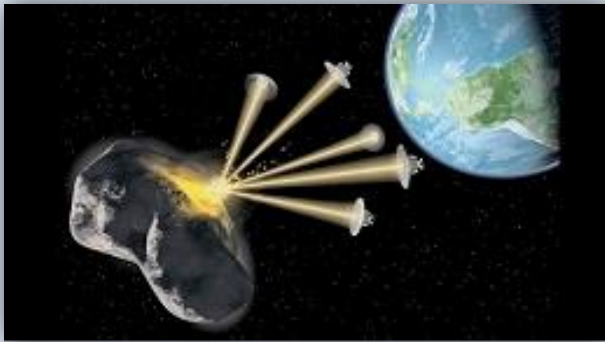


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G H Patel College of Engineering & Technology, Vallabh Vidhyanagar started Civil Engineering branch in the academic year 2014-15 under the guidance of Charutar Vidhyamandal in view of the high demand for trained and employable Civil engineers. AICTE has approved an intake of 60 and the course is affiliated to Gujarat Technological University (GTU), Ahmedabad. The revised syllabus from the academic year 2013-14 of GTU is followed throughout the semesters.

A separate building has been constructed and is named as “Dr. C. C. Patel & Mrs. Sushilaben Patel Department of Civil Engineering, GCET”. The new building has four classrooms, six laboratories, staff rooms, department library and tutorial room as per AICTE criteria. All the basic labs for first year, Mechanics of Solids lab and Concrete lab are located in GCET main building. All other laboratories have been developed for this branch as per the syllabus of GTU. A separate computer lab has been developed in the new building with 40 computers with advanced software installations.

Highly qualified faculty members having good teaching experience are available in the Department. Department have organised various technical events, non-technical events, educational visits, GATE classes, General Aptitude sessions, etc. for the betterment of students.



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CURRENT AFFAIRS

GST Impact on Gross Domestic Product (GDP) in India

The biggest tax reform i.e. Goods and Services Tax is now a part of Indian Economy. A new and unified tax structure is followed for indirect taxation on the place of various tax laws like Excise duty, Service Tax, VAT, CST etc. and for sure

the new tax regime is determined to eliminate the cascading effect of tax on transaction of products and services, and it will result in availability of product and services to consumers at lower price. It is expected that it will be helpful in increasing production and the purchasing power of the buyer which may increase the GDP by 1% to 3%. Recently, India accounted 7.1 percent growth for the financial year of 2016-17 while for the March quarter; it was behind the china at 6.1 percent in front of 6.9 percent of China's statistics.



GDP Data for July-September Quarter

India's GDP has been recorded at 6.3 percent in the quarter of July-September, with a fast approach towards better number than 5.7 in the previous quarter. Gross domestic product grew 6.9 percent in the October-December quarter from a year earlier. With some expectations for 6.7 percent in the financial year 2018, to the 7.3 percent and 7.5 percent in the FY 19 and FY 20 respectively. There is some hindrance to the GDP number due to GST as speculated by the experts but still, many economists are likely to maintain around 6.5 percent.

GST Positive Impact on GDP

There will be one tax rate for all which will create a unified market in terms of tax implementation and the transaction of goods and services will be seamless across the states. The same will reduce the cost of the transaction. In a survey, it was found that 10-11 types of taxes levied on the road transport businesses. So the GST will be helpful to reduce transportation cost by eliminating other taxes.

After GST implementations the export of goods and services will become competitive because of nil effect of cascading effect of taxes on goods and products. In a research done by NCAER, it was suggested that GST would be the key revolution in Indian Economy and it could increase the GDP by 0.9 to 1.7 percent. As speculated earlier, the tax experts can now assume that the growth will be around 1 to 2 percent after the implementation of the GST.

GST will be more transparent in comparison to the existing law provision so it will generate more revenue to the Government and will be more effective in reducing corruption at the same time. Overall GST will improve the tax Compliances.

In a report issued by the Finance Ministry, it was mentioned that Make In India programme will be more benefited by the GST structure due to the availability of input tax credit on capital goods.

As the GST will subsume all other taxes, the exemption available for manufacturers in regards of excise duty will be taken off which will be an addition to Government revenue and it could result in an increase in GDP.

The GST regime has although a very powerful impact on many things including the GDP also. The Gross Domestic Product has the tendency to loom on the shoulders of revenue generated by the economy in a year. Still, a worthwhile point includes that the GST has the capability to extend the GDP by a total of 2 percent in order to complete the ultimate goal of increasing the per-capita income of every individual. Also, the GST scheme will certainly improve the indirect revenues to the government as the tax compliance will be further enhanced and rigid, extending the tax paying base which will add to the revenue. The increased income of the government will redirect towards the developmental projects and urban financing creating an overall implied scenario.

GST Negative Impact on GDP

As the GST rates are 5%, 12%, 18% and 28% and if the GST rate on service will be finalized at 5% or 12% then cost of services will get reduced while in else case if the rate will be 18% or 28% on services then services will become costlier and it will lead to inflation for a short period.

In a report, DBS bank noted that initially, GST will lead to the rise in inflation rate which will remain for a year but after that GST will affect positively on the economy.

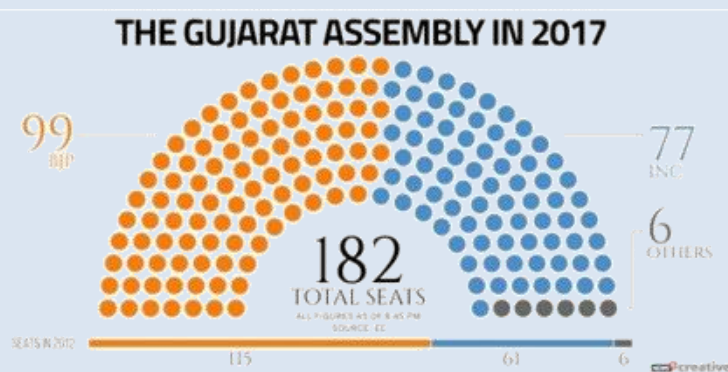
As we know Real Estate also plays an important role in Indian economy but some expert thinks that GST will impact the Real Estate business negatively

as it will add up the additional 8 to 10 percent to the cost and reduce the demand about 12 percent.

GST will apply in the form of IGST, CGST AND SGST on the Center and State Government, but some economists say that there is nothing new in the form of GST although these are the new names of Central Excise, VAT, CST and Service Tax etc.

Gujarat Election

The Bharatiya Janata Party (BJP) retained power in Gujarat for the sixth consecutive term as they won a clear majority in the 2017 state assembly elections.



Out of 182 assembly seats, BJP bagged 99, Congress won 77 and others won seven seats. BJP's vote share in the state increased from 47.9 per cent (2012) to 49.1 per cent. Though, it is a huge comedown if we compare it with the 59.1 per cent

share it got in the 2014 Lok Sabha polls.

On the other hand, the Rahul Gandhi-led party improved its performance and its vote share got increased from 38.9 per cent (2012) to 41.4 per cent.

The polls in the state were held in two phases. In the first phase held on December 9, 68 per cent of voters exercised their franchise; the second phase held on December 14 saw a voter turnout of 69 per cent.

Ram Nath Kovind took oath as 14th President of India

Ram Nath Kovind took oath as the 14th President of India on 25 July 2017, following his landmark win in the Presidential elections. He was administered the oath of office by Chief Justice of India Justice JS Khehar at a special function in the Parliament. Also, Venkaiah Naidu sworn in as 13th Vice President of the country



With this, Kovind has become the second Dalit

President of India after KR Narayanan. The NDA presidential candidate defeated the opposition candidate Meira Kumar by 1086 votes.

At the time of his nomination as the Presidential candidate, Ram Nath Kovind was serving Bihar as its Governor.

Narmada Control Authority (NCA) gave the permission to close the sluice gates to fill the Sardar Sarovar Project

Narmada Control Authority (NCA) gave the permission to close the sluice gates to fill the Sardar Sarovar Project (SSP) dam with Narmada waters to its full height up to 138.68 meters from 121.92 meters where the work had stuck.

It is a historic day, opening up a very bright future, green revolution and all round development of Gujarat. The drought which used to be hit by the state every third year, supplying water to one-third of total 18,000 villages, will be a thing of the past now. Gujarat's mostly rain-fed agriculture will also be now a canal-based irrigation.



It will entail power generation to its full capacity of 1450 MW from the riverbed and canal head power stations hopefully by the end of the next monsoon. At present the riverbed power stations generated electricity from the half-completed height of the dam at 121.92 meters. Similarly, it will also entail irrigation from the Narmada waters to full capacity of 6- lakh hectare. Gujarat occupying six per cent of India's geographical area and five percent of population had access to 2.28 per cent of the nation's total surface water resources.

Nirmala Sitharaman becomes India's First full-time woman Defence Minister

Nirmala Sitharaman, a JNU alumni and former Minister of State (Independent Charge) Commerce, was appointed as the new Defence Minister on 3 September 2017, thus gaining entry into Prime Minister Narendra Modi's Union Cabinet.



The trained economist took the charge of the key ministry from Arun Jaitley who had been handling the portfolio after Manohar Parrikar quit to become Goa's chief minister.

With the development, Sitharaman became India's first full-time Defence Minister and second alltime one, after Indira Gandhi who had held the portfolio twice, first from 1- 21 December in 1975 and the second time from 14 January 1980 to 15 January 1982.

So, India has a woman at the helm of the key ministry, 35 years after the last one.

India's Manushi Chhillar crowned Miss World 2017

India's Manushi Chhillar was crowned Miss World 2017 at the prestigious pageant's 67th edition that was held in Sanya, China on 18 November 2017.

The 20-year-old was crowned Miss World 2017 by outgoing titleholder Stephanie Del Valle, Miss World from Puerto Rico. Chhillar's win has brought home the coveted title after a 17-year-long wait.

The last Indian contestant to win Miss World was Priyanka Chopra in the year 2000.



PM Narendra Modi launched 'Saubhagya' scheme

Indian Prime Minister Narendra Modi launched a Rs. 16320-Crore 'Pradhan Mantri Sahaj Bijli Har Ghar Yojana'- Saubhagya on 25 September 2017 in New Delhi to mark the birth anniversary of Pandit Deendayal Upadhyaya. Through this scheme, the government would supply electricity to all household by the end of 2018.

Listed on the agenda of the Cabinet meeting held last week, the scheme is expected to cover all rural families after expected electrification of all villages by the end of 2018.



PM Narendra Modi launched BHIM-Aadhaar Pay app

Prime Minister Modi on 14 August 2017, the 126th birth anniversary of Dr. BR Ambedkar, launched BHIM-Aadhaar app for merchants in Nagpur. In addition to this, he also launched cash back and referral bonus schemes for BHIM and declared about 75 townships spread all over India as 'lesscash townships'.

The initiatives were launched with an aim to further the digital payments revolution in India. It also seeks to reinforce the vision of Baba Saheb for social empowerment of all through financial inclusion.



SIERRA ODC building in Coimbatore receives World's Second Highest Green Rating

The SIERRA ODC is a three-storied building which has been constructed by laying specific emphasis on increasing the efficiency of resource use such as energy, water or materials.



The building has managed water use efficiency of 89% by using water saving fixtures and curbing wastage. In the building, water is recycled 100%. The building is a carbon-neutral building. The building was the first to implement a technology called Amorphous Silicon Thin Building Vortex for the first time in South India. By using this technology, photovoltaic modules produce power at the low cost per watt.

Ahmedabad became first Indian city to get UNESCO Heritage tag

The Indian city of Ahmedabad on 8 July 2017 was declared India's first World Heritage City, recognising heritage value of the walled city's unique heritage. The announcement was made by the World Heritage Committee (WHC) of UNESCO following a meeting in Krakwo, Poland.



After the announcement, the city has now joined the likes of heritage cities like Paris, Edinburg, Galle in Sri Lanka, Cairo, among others. Ahmadabad's nomination received huge support from around 20 countries, who lauded the peaceful co-existence of dominant Hindu, Islamic and Jain communities in the Walled City area. In 2011, the city had figured in UNESCO's tentative list.

NASA Developing First Asteroid Deflection Mission

NASA is developing Double Asteroid Redirection Test (DART), the first-ever mission that will deflect a near-Earth asteroid. The mission will help to test the systems that will allow mankind to protect the planet from potential cosmic body impacts in the future.

Key Facts

The DART will be built and managed by the John Hopkins Applied Physics Laboratory (APL). It will be NASA's first mission to demonstrate kinetic impactor technique. The target for DART is an asteroid called Didymos that will have a distant approach to Earth in October 2022 and then again in 2024.



The asteroid Didymos (Greek word for twin) is an asteroid binary system that consists of two bodies: Didymos A (about 780 meters in size), and Didymos B (about 160 meters in size), smaller asteroid orbiting Didymos A. DART will impact only the smaller of the two bodies, Didymos B. After launch, DART will fly to Didymos and use an APL- developed onboard autonomous targeting system to aim itself at Didymos B. The refrigerator-sized spacecraft will strike the smaller body at a speed about 6 km/s i.e. about nine times faster than a bullet.

Earth-based observatories will observe the impact and the resulting change in the orbit of Didymos B around Didymos A. It will allow scientists to better determine the capabilities of kinetic impact as an asteroid mitigation strategy.

PM Narendra Modi, Ivanka Trump inaugurate Global Entrepreneurship Summit in Hyderabad

Prime Minister Narendra Modi and US President Donald Trump's advisor and daughter Ivanka Trump jointly inaugurated 8th annual Global Entrepreneurship Summit (GES 2017) in Hyderabad, Telangana.

The mega event was co-hosted by National Institution for Transforming India (NITI) Aayog and US Government and partnership with Telangana Government.

Key Highlights GES 2017



GES is preeminent annual entrepreneurship gathering that convenes over one thousand emerging entrepreneurs, investors, and supporters from around the world. It is organized annually since 2010. This is the first time GES is being held in South Asia.

The theme for 2017 GES is “Women First, Prosperity for All” to celebrate entrepreneurship in all its strength, diversity and entirety. Around 1,500 delegates from over 160 countries will participate in 2017 GES.

GES 2017 aims to empower Indian entrepreneurs to pitch their ideas, build partnerships, secure funding, and create innovative products and services that will transform societies for better future. It will not only bring global best practices to India, but also create irreplaceable place for India in global entrepreneurial ecosystem.

The four primary focus areas of GES 2017 are Digital Economy and Financial Technology, Health Care and Life Sciences, Energy and Infrastructure, and Media and Entertainment. The summit will deliberate on four key sectors, focus on critical aspects of entrepreneurship and host interactive sessions between panelists and audience.

48th International Film Festival of India held in Goa

The 48th International Film Festival of India (IFFI) was held in Panaji in Goa. The closing ceremony was held at Shyama Prasad Mukherjee Stadium in Bambolim. Legendary Bollywood actor Amitabh Bachchan was honored with the Indian film personality of 2017 award. Acclaimed Canadian filmmaker Atom Egoyan was honored with the lifetime achievement award.



Other Category Awards

Best film award: 120 Beats per Minute (French movie) directed by Robin Campullo.

Best director award: Vivian Qu for Angels Wear White (China).

Special Jury Award: Take-off (Malayalam film-India).

Best Actor (Female) award: Parvathy.

Best Actor (Male) award: Nahuel Perez Biscayart for his performance in 120 Beats per Minute.

Best Debut Feature Film Director Award: Kiro Russo for film Dark Skull (Spanish).

ICFT-UNESCO Gandhi Medal: Kshitij-A Horizon (Marathi movie) directed by Manouj Kadamh.

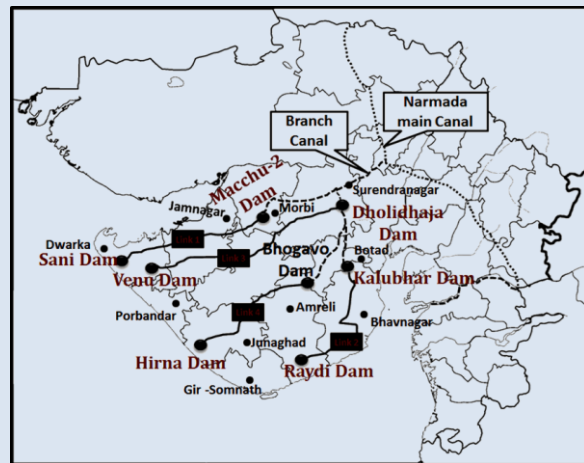
Film beyond the Clouds directed by Iranian filmmaker Majid Majidi was opening film this year, while Pablo Cesar-directed Indo-Argentine film Thinking of Him was the closing film. Around 200 films from 82 countries were screened during nine-day event.

[Link-4 of SAUNI Scheme: President Ram Nath Kovind lays foundation stone](#)

President Ramnath Kovind laid foundation stone for link-4 of Saurashtra Narmada Avataram Irrigation Scheme (SAUNI) Yojana in Rajkot district, Gujarat. SAUNI Yojana is multipurpose project that aims to solve water problems of parched Saurashtra region of Gujarat. Three phase of SAUNI yojana already have been dedicated to people following completion of work.

SAUNI YOJANA

SAUNI project was launched by Prime Minister Narendra Modi during his tenure as Chief Minister of Gujarat. It aims to fill up 115 major dams in Saurashtra by diverting overflow of water from Sardar Sarovar Dam on Narmada River. It is an out-and-out irrigation and drinking water project designed solely for Saurashtra peninsula. Its unique feature involves making pipe canals instead of conventional open canals which has led to no acquisition of land and involve less loss of water. It has network of canals comprising 1,125-km network of pipelines that will help to channel water into farms.





Germany wins 2017 Confederation Cup Football title

Four-time FIFA World Cup winner Germany won maiden FIFA Confederation Cup Football title by defeating Copa America Champion Chile by 1-0 goals in the final match held at St Petersburg, Russia. Lars Stindl of Germany scores the goal in the first half against the run of play. Chile was not able to score goal. Earlier, in the third-place play-off match, Portugal defeated Mexico by 2-1.



BCCI appoints Ravi Shastri as new head coach of Indian cricket team

The Board of Control for Cricket in India (BCCI) has named former Indian all-rounder and captain Ravi Shastri as the new chief coach of the Indian cricket team till ICC World Cup 2019. He will succeed Anil Kumble who had resigned from the post after the ICC Champions Trophy 2017. The decision was announced after the Cricket Advisory Committee (CAC) zeroed in on his name ahead of other strong contenders, including Virender Sehwag and Tom Moody.



Harinder Pal Sandhu Wins South Australian Open Squash Title

India's Harinder Pal Sandhu has defeated Rhys Dowling of Australia 11-8 12-10 11-4 to lift South Australian Open squash title. This will be Sandhu's first PSA tournament victory in Australia. South Australian Open squash title is on the Professional Squash Association (PSA) international circuit. This victory will be Sandhu's third this season after winning two in Malaysia in May.



India's Sundar Singh Gurjar wins gold medal at World Para Athletics

India's Sundar Singh Gurjar (21) won gold medal in the men's javelin throw event at World Para Athletics Championships held in London, United Kingdom. In the F46 category, Sundar recorded his personal best effort of 60.36m ahead of Dinesh Priyantha Herath (Sri Lanka) who emerged second with 57.93m, followed by defending champion Guo Chunliang (China) with 56.14m.



India's Mithali Raj becomes first to score 6000 runs in women's ODI cricket

Indian captain Mithali Raj (34) scripted history by becoming first player in the history of women's ODI cricket to score more than 6000 career runs. She also became all-time leading run-getter in women's ODI. She achieved the record feat against Australia in the ICC Women's World Cup 2017 match at Bristol. She broke previous record of Charlotte Edwards (5992) in 164 innings – 16 less than Charlotte.



Roger Federer wins record 8th Wimbledon title

Switzerland's Roger Federer won 2017 Wimbledon title in the men's single category. In the final match he defeated Marin Cilic of Croatia by 6-3, 6-1, 6-4 score. It was Federer's record eighth Wimbledon title and overall 19th Grand Slam. With this victory, 36-year old Federer also became Wimbledon's oldest champion,



succeeding Arthur Ashe, who was 32 when he won in 1976. Federer claimed his 19th Grand Slam title beating Cilic 6-3, 6-1, 6-4. The 36-year old Federer is also Wimbledon's oldest men's winner of the modern era, succeeding Arthur Ashe, who was almost 32 when he won in 1976. He also became the

first player since Bjorn Borg in 1976 to win Wimbledon without dropping a set in the entire tournament.

England wins 2017 ICC Women's World Cup

England's women's cricket team won 2017 ICC World Cup title by defeating India by 9 runs at Lord's Cricket Ground in London. It was England's fourth Women's World Cup title. Besides the inaugural edition in 1973, England had won the World Cup in 1993 and 2009 as well.



Government to establish first National Sports Museum in New Delhi

The Union Ministry of Sports and Youth Affairs is going to establish National Sports Museum at Jawaharlal Nehru Stadium, New Delhi. It will be first of its kind sports museum in India. The aim of the sports museum is to popularise the sports as a way of life within the country. It will showcase the India's achievements in sports and also focus on the traditional sports within the country.

PV Sindhu wins silver medal at 2017 World Badminton Championship

Indian ace shuttler and 2017 Rio Olympic silver medallist PV Sindhu won the silver medal in 2017 World Badminton Championship held at Glasgow, Scotland (United Kingdom). In the final match, Sindhu lost to Japan's Nozomi Okuhara by 19-21, 22-20, 20-22 score. Earlier, in Saina Nehwal had won bronze medal. This is for first time; Indian shuttlers have won two medals in the Championship. It was overall Sindhu's third medal at the World Championships as she earlier had won bronze medals in 2013 and 2014 editions.



Rafael Nadal wins 2017 US Open title

World number one Rafael Nadal (Spain) won the 2017 US Open title in men's single category. It was his overall 16th Grand Slam title and third US Open title (2010 and 2013). In the final match played at USTA Billie Jean King



National Tennis Center in New York City, Nadal defeated world number 32, Keevin Anderson from South Africa's by 6-3, 6-3, and 6-4 score.

August 29: National Sports Day

The National Sports Day is observed every year on 29th August every year to birth anniversary of the legendary hockey player Dhyan Chand who was born on 29 August 1905. To celebrate the day, Government had conducted various programs throughout the country. On this occasion, President Ram Nath Kovind presented National sports Awards to 29 players. The President conferred Rajiv Gandhi Khel Ratna Award, Arjuna Award and Dronacharya Award.



BCCI nominates MS Dhoni for Padma Bhushan award

The BCCI has nominated former Indian cricket team captain Mahendra Singh Dhoni (36) for Padma Bhushan, country's third highest civilian award for his contribution to game. He is only cricketer nominated by BCCI for this year's Padma Awards. Dhoni is one of greatest names in contemporary cricket and has impeccable credentials to his name. He is only Indian captain to record two win at World Cup titles (2011 50-over World Cup and 2007 World T20).



Viswanathan Anand wins World Chess title 2017

Chess grandmaster Viswanathan Anand (48) won World Rapid Chess Championship Title 2017 held in Riyadh, Saudi Arabia. In the final tie-breaker mini-match, Anand defeated Russia's Vladimir Fedoseev by 2-0 score to reclaim title he had won in 2003. He had tied with Vladimir Fedoseev and Ian Nepomniachtchi, both of Russia, who also had scored same number of points; a tie-breaker was required to decide the winner.



2017 French Open badminton: Kidambi Srikanth wins men's singles

India's ace shuttler Kidambi Srikanth (World no. 8) won French Open Superseries badminton title in men's single category. In the final match, he defeated Japan's Kenta Nishimoto by 21-14, 21-13 score. It was Kidambi Srikanth's fourth Super Series Premier title in 2017 season after winning Australian Super Series title, Indonesia Super Series Premier title and Denmark Open Super Series title.



Mary Kom wins gold medal in Asian Women's Boxing Championships

Five time world champion Mary Kom won gold medal in Asian Women's Boxing Championships in Light Flyweight (48 kg) category. In the final match held at Ho Chi Minh City in Vietnam, she defeated North Korea's Kim Hyang Mi in the final bout 5-0 by unanimous judge's decision. It was her fifth gold medal in 48 kg category in Asian Women's Boxing Championships (earlier won in 2003, 2005, 2010 and 2012) in only six appearance (in 2008 final she won silver), making her unbeaten in summit clash of continental championship. This was also Mary Kom's first international gold medal since 2014 Asian Games and her first medal in over year.



Solar Road

China has opened a 1-kilometer long solar road in Jinan, the capitol of Shandong province south of Beijing. The two-lane road covers 5,875 square meters and can generate up to 1 million kilowatt-hours of power annually — enough to power 800 Chinese homes. The electricity will be used to run street lights, billboards, surveillance cameras, and toll collection plazas. It will also be used to heat the road surface to keep it clear of snow. Any excess will be fed back into the local utility grid.

The surface of the road is made of transparent concrete which can withstand 10 times more pressure than regular concrete. Beneath the concrete are solar panels that convert sunlight to electricity. Under the solar panels is an insulating layer designed to protect them from excessive heat or cold.



“The project will save the space for building solar farms and shorten the transmission distance,” said Xu Chunfu, chairman of Qilu Transportation Development Group, the project developer. He claims the Chinese solar road cost half as much as similar roads in other countries. France, for one, is experimenting with solar roads as well.

Sources claims the Chinese road cost \$458 per square meter — roughly 90 times the cost of a traditional asphalt road. Figures lie and liar's figure, so the jury is still out on whether China's electric highway is cost-effective, but \$458 per square meter does seem mighty expensive. "With the development of solar power in China, the cost can be further reduced," Xu says. In crowded cities (China has more than 120 cities with a population of one million or more), there is not always room for solar panels, so to find alternative locations such as roads and bodies of water is becoming more common.

Still, one wonders whether concrete transparent enough to let sunlight through will be slick when wet, perhaps leading to more traffic accidents. Also, laying solar panels flat decreases their efficiency somewhat. And how does one replace a defective solar panel if it is encased under a layer of concrete? Only experience with solar roads will tell whether they are worth the investment or just an expensive boondoggle.

Eco floating homes

Affordable housing and overcrowding in cities are putting pressure on urban populations to make changes. To combat these issues, civil engineers are designing floating homes—practical living spaces that sit upon water. The homes are designed to resist floods by floating on top of water using a foundation of concrete and Styrofoam, which makes them virtually unsinkable. This approach means that homes can be built in spaces that were previously off-limits, like rivers, lakes and other bodies of water. Civil engineers predict that modern floating home technology will lower the costs of flood damage in urban cities, while also providing compact inner-city populations with more diverse housing options.



Ministry of Road Transport & Highways inks MoU with IL&FS for construction of Zojila tunnel

The Union Ministry of Road Transport & Highways has inked MoU with IL&FS Transportation Networks Ltd for construction of the 14.150 km long, 2-lane bi-directional Zojila Tunnel in Jammu & Kashmir. This would be India's longest road tunnel and longest bidirectional tunnel in Asia. On completion, the tunnel will provide all weather connectivity between Srinagar, Kargil and Leh.

Zojila Tunnel Project



The project aims at construction of 14.150 km long two lane bidirectional single tube tunnel with parallel 14.200 km long egress tunnel between Baltaland Minamarg in J&K with total capital cost of Rs. 6808 crore. The duration for construction of the project is 7 years.

Its main objective is to provide all weather connectivity to strategically important Leh region in J&K which at moment is limited to 6 months in year because of snow on passes and threat of avalanches.

It will be first of its kind tunnel in such geographical area. It will have all modern technical safety arrangements such as cut and cross ventilation system, two axial fans, uninterrupted power supply, fully transverse ventilation system, CCTV monitoring, variable messaging boards, traffic logging equipment, tunnel radio, emergency telephone system etc.



Ahmedabad tops in using smart city project funds

Ahmedabad tops the chart when it comes to utilization of the funds allocated by the Union government to expedite projects for smart city implementation. According to data provided by Union ministry of housing and urban affairs, some Rs 80.15 crore out of the total Rs 196 crore allocations by the Centre for Ahmedabad have been utilized in projects.

"As far as Ahmedabad is concerned, the focus is on strengthening IT infrastructure especially for developing efficient systems for traffic management, development of new areas and management of heritage," said J N Singh, chief secretary, Gujarat.



Sr. No	City	Amount (Crores of Rs)	% utilization
1.	Ahmedabad	80.15	40.89
2.	Indore	70.69	36.07
3.	Surat	43.41	22.15
4.	Bhopal	42.86	21.87
5.	Bhubaneshwar	41.97	21.41

After the Union government selected some 90 smart cities, a special purpose vehicle (SPV) of government of India (GoI) grant of Rs 9,863.20 crore was released for 60 of these cities.

Smart City Contest

The Ministry of Housing and Urban Affairs has come up with a Smart Cities Awards Contest, 2017 under which prize money of more than Rs. Rs 50 lakh for the promotion of the competition among Smart Cities and measuring the quality and impact of projects undertaken under the flagship program.

Smart City Project List 2018

DS Mishra, the Urban Development Secretary announced that the government is going to announce the name of 10 more cities for participating in the Smart City Project List 2018. Mishra made this announcement at a national workshop organized on the review of the

progress of the on-going schemes in the urban mission under the Smart City scheme. He stated that a total number of 20 cities had participated in this phase of the competition. Out of these cities, the proposals of five cities were not received till the last date.



A total number of 90 cities have been included in the smart city project in four phases till now. As per the official sources, 7 cities (One city from Uttar Pradesh, Three cities from West Bengal, Two from Maharashtra and One city from Tamil Nadu) are expected to be included in the fifth phase in which 20 cities are proposed by the Central Government.

The ministry has received proposals from 15 cities for the fifth and the final round of the mission, while five

cities have not submitted their plans, an official said. Some of the cities that have sent their proposals include Itanagar (Arunachal Pradesh), Biharsharif (Bihar), Amravati (Maharashtra), Erode and Dindigal (Tamil Nadu), and Uttar Pradesh's Moradabad, Meerut, Saharanpur, Bareilly, Rampur, Rae Bareli and Ghaziabad, the official said. Silvassa (Dadra and Nagar Haveli), Kavarati (Lakshdweep) and Diu (Daman and Diu) have also sent their proposals. The official said that Bidhannagar, Durgapur and Haldia in West Bengal, Shillong in Meghalaya and Greater Mumbai in Maharashtra have not submitted their proposals under the scheme. The West Bengal government has already announced that it would not participate in the Centre's Smart City programme.

FACTS & FIGURES

Chenab Bridge (world's highest railway bridge)

Chenab Bridge is a railway steel and concrete arch bridge which is under construction and is scheduled to open in 2019. It is constructed between Bakkal and Kauri in Reasi district of Jammu and Kashmir in India. The bridge will span the Chenab River at a height of 359 m above the river. It is directed by the Northern Railway.



Design

After many deliberations, taking into account aesthetic, economy and availability of local expertise and construction material, the Chenab Bridge was designed as a large span single arch steel bridge with approach viaducts on both sides.

Arch is two-ribbed, fabricated from large steel trusses. The chords of the trusses are sealed steel boxes, internally stiffened and filled with concrete to assist in controlling wind induced forces in bridge.

The design of major arch rail bridges requires considerations of a number of additional parameters, such as fatigue, global stability, second order effects, composite action, etc.

The guidelines of Indian Railway Standards are inadequate i.e. The IRS is primarily intended for simply supported bridges with spans up to 100m (although these have been successfully used for higher spans up to 154m).

The spans for the Chenab Bridge greatly exceed this limit, and are continuous.

Therefore, to assure a safe design, Indian national standards have been supplemented with British Standards, International Union of Railways and Euro.

Also, many experts throughout the globe, based on their versatile and relevant experience, have been involved in order to make the building project a success.

Construction

The Chenab Bridge was originally intended to be completed in December 2009. However, in September 2008 the project was halted due to fears over the bridge's stability and safety.

The construction has been given to Afcons Infrastructure Limited, a part of the Shapoorji Pallonji Group, the third-largest construction group in India.

Two pylons (about 130 m and 100 m high) were erected on either side of the river, and two auxiliary self-propelled cable cranes (capacity of 80t each) were used to tow temporary auxiliary ropes across these pylons. The ropes were used to support the partly finished arch parts.

After arch completion, the trusses will be added; finally the girder will be constructed as a horizontal sliding type platform.

Characteristics			
Design	Arch Bridge	Height	(River bed to formation) 359 m (1,178 ft.)
Material	Steel and Concrete	Longest Span	467 m (1,532 ft.)
Total length	1,315 m (4,314 ft.)	No. of spans	17



GENERAL AWARENESS

Healthy Food Habits

Kartik, 30, is a software engineer by profession and a photographer by hobby. His average week comprises of a 45-50 hours' work schedule. Although he is a fitness enthusiast, his hectic schedule leaves very less time for him to keep his body in shape. Due to the long hours he has to spend in front of the computer, rare breaks and stressing deadlines, Kartik is now a victim of back-ache, fatigue and constipation.

At an age where one is expected to work dedicatedly, we often end up compromising with our health. While many people would agree that a good fitness regime helps keep such risks at bay, it may just not be good enough. Choosing and following a good and healthy diet can help you there. Even with a stressful lifestyle, one can minimize the risks by choosing the right food to eat. But is choosing the right food enough? No.

While there is no set guideline to follow, a general idea of do's and don'ts as a part of healthy food habits.

See what you are eating

Observe your present diet. What is it that you eat more? Are you consuming too many calories in your diet and don't have enough time to burn them? Then you should probably consider eating something that is less fattening and easy for your body to digest. A couple of minutes spent doing basic yoga postures will help you burn those extra calories.

Choose green leafy vegetables

Make sure to add green leafy vegetables to your diet. They are a rich source of proteins, iron, calcium and fiber. Green leafy vegetables are easy to prepare and quite appetizing too.

Know when to drink water

We all remember studying during school phase that our body is 70% water. It is essential that the body receives its much needed daily dose of minerals through water. Drinking plenty of water helps detoxify the body as well as gives you a glowing skin. Although, we should avoid drinking water during meals as it slows down the digestion process. It is advisable to have water 30 minutes before or after having your food.

Include enough proteins in your diet

Proteins are vital for the body and should definitely be included in the diet. Broccoli, soybeans, lentils, asparagus and spinach are some commonly found protein rich foods. Low-fat dairy products are also a rich source of proteins.

Chew your food

Have you seen cow chew their food? A cow chews its food at least 40-60 times. One of the easiest and obvious ways to digest food is to chew it. Most people often eat their food in a hurry and tend to skip chewing their food properly. While what you eat eventually does get digested, but a barely chewed morsel takes more time and tires your digestive system.

Keep away from fast-food and soft-drinks

Although it may appease your taste buds, fast-food usually does a lot of harm to the body. It can be unhygienic and also high on unhealthy fats like trans-fats. Also, carbonated soft drinks have a high sugar content which may lead to obesity, diabetes and dental caries. Instead of these harmful drinks, choose to refresh yourself with a glass of buttermilk or lemonade.

Cook at home

Instead of ordering pizza from the joint around the corner, use your kitchen and make that dish you've been planning on having. You may also prepare your dinner in olive oil rather than sunflower or groundnut oil and make it healthier. Cooking at home is a very good investment as it lets you spend more quality time with your family.

Focus on your food

Most of us have our food while texting on the mobile phones or watching television and don't really keep a count on how much we eat. Though your stomach might be full, your brain tells you that you need to eat more and you eventually end up over-eating. If you focus only on your food then you'll eat only as much as your body requires.

Never skip breakfast

Breakfast is perhaps the most important meal of the day as the body prepares itself for the whole day ahead. Make sure you eat a wholesome and rich breakfast before you step out of the house.

English Comprehensive-1

At this stage of civilization, when many nations are brought in to close and vital contact for good and evil, it is essential, as never before, that their gross ignorance of one another should be diminished, that they should begin to understand a little of one another's historical experience and resulting mentality. It is the fault of the English to expect the people of other countries to react as they do, to political and international situations. Our genuine goodwill and good intentions are often brought to nothing, because we expect other people to be like us. This would be corrected if we knew the history, not necessarily in detail but in broad outlines, of the social and political conditions which have given to each nation its present character.

1. According to the author of 'Mentality' of a nation is mainly product of its...

- a) Present character
- b) International position
- c) Politics
- d) History

2. The character of a nation is the result of its...

- a) Gross ignorance
- b) Cultural heritage
- c) Socio-Political conditions
- d) Mentality

3. The need for a greater understanding between nations...

- a) Is more today than ever before
- b) Was always there
- c) Is no longer there
- d) Will always be there

4. Englishmen like others to react to political situations like...

- a) Others
- b) Us
- c) Themselves
- d) Each others

5. According to the author his countrymen should...

- a) Read the story of other nations
- b) Not react to other actions
- c) Have a better understanding of other nations
- d) Have vital contacts with other nations

English Comprehensive-2

One day Nasreddin went to town to buy new clothes. First he tried on a pair of trousers. He didn't like the trousers, so he gave them back to the shopkeeper. Then he tried a robe which had the same price as the trousers. Nasreddin was pleased with the robe, and he left the shop. Before he climbed on his donkey to ride home, the shopkeeper and the shop-assistant ran out.

"You didn't pay for the robe!" said the shopkeeper. "But I gave you the trousers in exchange for the robe, didn't I?" replied Nasreddin.

"Yes, but you didn't pay for the trousers, either!" said the shopkeeper. "But I didn't buy the trousers," replied Nasreddin. "I am not so stupid as to pay for something which I never bought."

1. How did Nasreddin get to the shop?

- a) On foot
- b) By camel
- c) By donkey
- d) The story doesn't say

2. How did Nasreddin get to the shop?

- a) On foot
- b) By camel
- c) By donkey
- d) The story doesn't say

3. What did Nasreddin try on next?

- a) A robe
- b) A pair of trousers
- c) A hat

4. Which item did Nasreddin like best?

- a) The robe
- b) The hat
- c) The trousers

5. How many people were working in the shop?

- a) Four
- b) Three
- c) Two

6. Why was the shopkeeper angry when Nasreddin left?

- a) He didn't take the trousers.
- b) He didn't pay for the robe
- c) He didn't say goodbye.

Multiple Choice Questions – Quantitative Aptitude

1. A fruit seller had some apples. He sells 40% apples and still has 420 apples. Originally, he had:

- a) 588 apples
- b) 600 apples
- c) 672 apples
- d) 700 apples

Ans: (D)

2. It was Sunday on Jan 1, 2006. What was the day of the week Jan 1, 2010?

- a) Sunday
- b) Saturday
- c) Friday
- d) Wednesday

Ans: (C)

3. In a shower, 5 cm of rain falls. The volume of water that falls on 1.5 hectares of ground is:

- a) 75 cu. m
- b) 750 cu. m
- c) 7500 cu. m
- d) 75000 cu. m

Ans: (B)

4. A man has Rs. 480 in the denominations of one-rupee notes, five-rupee notes and ten-rupee notes. The number of notes of each denomination is equal. What is the total number of notes that he has ?

- a) 45
- b) 60
- c) 75
- d) 90

Ans: (D)

5. 3 pumps, working 8 hours a day, can empty a tank in 2 days. How many hours a day must 4 pumps work to empty the tank in 1 day?

- a) 9
- b) 10
- c) 11
- d) 12

Ans: (D)

6. In a 100 m race, A can give B 10 m and C 28 m. In the same race B can give C:

- a) 18 m
- b) 20 m

- c) 27 m
- d) 9 m

Ans: (B)

7. An accurate clock shows 8 o'clock in the morning. Through how many degrees will the hour hand rotate when the clock shows 2 o'clock in the afternoon?

- a) 144°
- b) 150°
- c) 168°
- d) 180°

Ans: (D)

8. Three times the first of three consecutive odd integers is 3 more than twice the third. The third integer is:

- a) 9
- b) 11
- c) 13
- d) 15

Ans: (D)

9. An aeroplane covers a certain distance at a speed of 240 kmph in 5 hours. To cover the same distance in 1 hour, it must travel at a speed of:

- a) 300 kmph
- b) 360 kmph
- c) 600 kmph
- d) 720 kmph

Ans: (D)

10. If a person walks at 14 km/hr instead of 10 km/hr, he would have walked 20 km more. The actual distance travelled by him is:

- a) 50 km
- b) 56 km
- c) 70 km
- d) 80 km

Ans: (A)

11. Two numbers are respectively 20% and 50% more than a third number. The ratio of the two numbers is:

- a) 2:5
- b) 3:5
- c) 4:5
- d) 6:7

Ans: (C)



Multiple Choice Questions – Civil Engineering

1. The type of masonry in which the stones of the same height are used and the courses are also of the same height is called

- a) Random rubble masonry
- b) Coursed rubble masonry
- c) Uncoursed rubble masonry
- d) Polygonal rubble masonry

Ans: (C)

2. The minimum thickness of a wall in stone masonry cannot be less than

- a) 10 cm
- b) 20 cm
- c) 35 cm
- d) 50 cm

Ans: (C)

3. The nominal thickness of an expansion joint in brick wall must be more than

- a) 10 mm
- b) 20 mm
- c) 30 mm
- d) 40 mm

Ans: (B)

4. The roof, suitable for large assembly hall, will be a

- a) Couple trussed roof
- b) R.C.C. flat roof
- c) Shell roof
- d) Anticlastic roof

Ans: (C)

5. The errors in leveling due to earth's curvature are

- a) Positive
- b) Negative
- c) Sometimes positive sometimes negative
- d) Cumulative

Ans: (A)

6. If E is the spherical excess and R the radius of the earth, the surface area of the triangle is

- a) $\frac{\pi R^2 E}{180^\circ}$

- b) $\frac{\pi R^2 E}{90^\circ}$
- c) $\frac{\pi R^2 E}{360^\circ}$
- d) $\frac{\pi R^2 E}{270^\circ}$

Ans: (a)

7. The moment of inertia of an area is always least with respect to

- a) Vertical axis
- b) Bottom most axis
- c) Radius of gyration
- d) Central axis

Ans: (D)

8. When a simply supported beam carries a uniformly distributed load of w kilogram per metre run and span of the beam is ' l ' metre, then the left hand support reaction will be equal to

- a) $w l$
- b) $Wl/2$ (Upward)
- c) $Wl/4$
- d) $Wl/2$ (Downward)

Ans: (B)

9. A deposit of fine sand has a porosity ' n ' and specific gravity of soil is G . The hydraulic gradient of the deposit to develop boiling condition of sand is given by

- a) $i_c = (G - 1)$
- b) $i_c = (G - 1) (1 + n)$
- c) $i_c = \frac{G - 1}{1 - n}$
- d) $i_c = \frac{G - 1}{1 + n}$

Ans: (A)

10. The number of piles required to support a column is

- a) 1
- b) 2
- c) 3
- d) 4

Ans: (C)

11. The soils most susceptible to liquefaction are

- a) Saturated dense sand
- b) Saturated fine and medium sands of uniform particle size
- c) Saturated clays of uniform size
- d) Saturated gravel and cobbles

Ans: (B)

12. The design flood commonly adopted in india for barrages and minor dams is

- a) Probable maximum flood
- b) A flood of 50 – 100 years return period
- c) Peak flood
- d) Standard project flood or a 100 years flood, whichever is higher

Ans: (D)

13. Delta (Δ) in cm, Duty (D) in hectare/Cumec and Base period (B) in days are related as

- a) $\Delta = 864 B/D$
- b) $B = 864 D/\Delta$
- c) $B = 864 \Delta/D$
- d) $D = 8.64 B/\Delta$

Ans: (A)

14. Consider the following statements

1. Modulus of elasticity of concrete increases with the increase in compressive strength of concrete.
 2. Shear strength of concrete increases with the increase in compressive strength of concrete.
- a) Neither 1 nor 2
 - b) Both 1 and 2
 - c) 1 only
 - d) 2 only

Ans: (B)

15. The approx. ratio of direct tensile strength to flexural strength is

- a) 0.25
- b) 0.33
- c) 0.5
- d) 0.90

Ans: (C)

Job & Career

PSU Recruitment through GATE 2018

An increasing number of PSUs, current figures stand at 50 plus, today use GATE scores to recruit graduate engineers. Some of the prominent PSUs that use GATE scores for recruitment include BHEL, GAIL, NHPC, BSNL and DMRC. Candidates need to have valid and good GATE scores to be considered for recruitment, as competition is stiff. The trend of PSU recruitment through GATE first started in 2012, when a handful of PSUs used GATE scores for recruitment.

The trend took off from there and GATE scores quickly turned into a benchmark that PSUs today use to screen and hire quality highly-educated graduates across various engineering disciplines. The number of vacancies that are filled in these companies through the PSU recruitment through GATE are huge; for instance BSNL hired a record-setting 2,510 GATE candidates this year. The lists of all PSUs that are hiring through GATE 2018 have been compiled on this page. The announcements for PSU recruitment through GATE 2018 have started to come in and the updated information along with the dates, links to apply can be accessed here from the corresponding given links alongside in the table.

How to apply for the PSU Recruitment through GATE 2018?

Some PSUs accept both online and offline applications, while there are others that recommend online applications. In case of an offline application, candidates have to download it, fill it and sent the same along with the specified documents. However, most PSUs announce online applications only. Candidates applying online are generally required to register, upload requisite documents and fill the application. Some PSUs ask for an application fee to be paid online or through a challan/DD.

The GATE Details of the candidates are extremely important and are a pre-requisite to fill the application forms of the respective PSUs. Candidates will be asked to enter their GATE Registration ID which will be available only after the GATE 2018 admit card is announced as it is mentioned in the same.

 **PSU Recruitment through GATE 2018**

Name of Company	No. of Posts	Discipline
THDC India Limited	40	Mechanical/Mechanical & Automation Engineering/ Electrical/ Electrical (Power)/ Electrical and Electronics/ Power Systems & High Voltage/Power Engineering/ Civil Engineering
Power Grid	139	Electrical Engineering, Electronics and Communication and Civil Engineering
NLC India Ltd	150	Mechanical, Electrical & Electronics, Electrical, Electronics & Communication, Civil, Civil & Structural, Instrumentation, Electronics, Instrumentation, Instrumentation & Control, Computer Science, Information Technology, Mining
IOCL (Indian Oil Corporation Limited)	NA	Chemical, Petrochemical, Civil, Computer Science & Information Technology, Electrical, Electrical & Electronics, Electronic & Communication, Electronics, Electronics & Telecommunications, Instrumentation, Electronics & Instrumentation, Mechanical
HAL (Hindustan Aeronautics Limited)	To be notified	Mechanical, Mechanical & Industrial, Mechanical and Production, Civil, Electrical, Electrical & Electronics, Electrical & Instrumentation, Electronics, Electronics & Communication, Instrumentation & Control, Instrumentation & Electronics, Applied Electronics & Instrumentation, Electronics & Instrumentation, Electronics & Telecommunication
BARC (Bhabha Atomic Research Centre)	NA	Mechanical Engineering, Civil Engineering, Electrical Engineering, Electronics & Communication engineering, computer Science, Metallurgical Engineering, Chemical Engineering, Instrumentation Engineering
WBSEDCL (West Bengal State Electricity Distribution Company Limited)	To be notified	Electrical Engineering, Electrical & Electronics (Combined), Power Engineering, Civil Engineering, Construction Engineering, Information Technology, Computer Science, Electronics, Electronics &

		Telecommunication
RITES(Rail India Technical and Economic Service)	To be notified	Civil, Mechanical, Electrical, Electronics & Telecommunications
ONGC Ltd.	NA	Mechanical, Petroleum, Civil, Electrical, Electronics, Telecom, E&T, PG in Physics with Electronics, Instrumentation, Chemical, Applied Petroleum, PG in Geo-Physics, PG in Mathematics, PG in Petroleum Technology, PG in Chemistry, PG in Geology, PG in Petroleum, Geo-Science, PG in Geological Technology, Auto, Computer, Information Technology, MCA, "B"Level Diploma as per Dept of Electronics, GO
Haryana Power Utilities	NA	Electronics, Electronics & Communication, Electronics & Telecommunication, Electronics & Electrical, Communication, Civil, Computer Science, Information Technology, Mechanical, Electrical, Electrical & Electronics
NFL (National Fertilizers Limited)	NA	Mechanical, Electrical, Instrumentation, Materials, Computer Science, IT or Civil Engineering
NPCIL(Nuclear Power Corporation of India Limited)	to be notified	Mechanical, Electrical, Instrumentation, Chemical, Electronics & Communication, Civil Engineering
IRCON (Indian Railway Construction International Ltd)	NA	Civil, Electrical
BSPCL (Bihar State Power Holding Company Limited)	NA	Electrical, Electrical & Electronics, Mechanical, Production, Industrial Engineering, Production & Industrial Engineering, Thermal, Mechanical & Automation, Power Engineering, Civil Engineering, Electronics & Instrumentation, Instrumentation & Control Electronics, Electronics & Telecommunication, Electronics & Power, Power Electronics, Electronics & Communication, CSE, IT
PSTCL (Punjab State Power Corporation Limited)	NA	Electrical, Electrical & Electronics, Mechanical, Electronics & Communication, Instrumentation & Control, Civil,

		Computer Science, IT
NBCC Ltd.	NA	Civil Engineering
NHPC (National Hydroelectric Power Corporation)	NA	Electrical, Electrical & Electronics, Power Systems & High Voltage, Power Engineering, Civil Engineering, Mechanical, Production, thermal, Mechanical & Automation Engineering, Geology, Applied Geology
KRIBHCO (Krishak Bharati Cooperative Limited)	NA	Chemical, Mechanical, Electrical, Civil, Computer, Electronics & Communication and Instrumentation Engineering
Mumbai Railway Vikas Rail Vikas Nigam Ltd	NA	Civil Engineering
EdCIL India (Educational Consultants India Limited)	NA	Civil, Electronics & Communication Engineering
KRCL (The Konkan Railway)	NA	Civil Engineering, Mechanical Engineering, Electrical Engineering, Electrical & Electronics Engineering, Electronics Engineering, Electronics & Telecommunication Engineering
NALCO (National Aluminium Company Limited)	NA	Mechanical, Electrical, Electronics, Instrumentation, Metallurgy, Mining, Chemical, Civil Engineering
OPGC Ltd (Odisha Power Generation Corporation Limited)	NA	Mechanical, Electrical, Civil, C & I

GATE-2018 Syllabus

Section 1: Engineering Mathematics

Linear Algebra: Matrix algebra; Systems of linear equations; Eigen values and Eigen vectors.

Calculus: Functions of single variable; Limit, continuity and differentiability; Mean value theorems, local maxima and minima, Taylor and Maclaurin series; Evaluation of definite and indefinite integrals, application of definite integral to obtain area and volume; Partial derivatives; Total derivative; Gradient, Divergence and Curl, Vector identities, Directional derivatives, Line, Surface and Volume integrals, Stokes, Gauss and Green's theorems.

Ordinary Differential Equation (ODE): First order (linear and non-linear) equations; higher order linear equations with constant coefficients; Euler-Cauchy equations; Laplace transform and its application in solving linear ODEs; initial and boundary value problems.

Partial Differential Equation (PDE): Fourier series; separation of variables; solutions of one-dimensional diffusion equation; first and second order one-dimensional wave equation and two-dimensional Laplace equation.

Probability and Statistics: Definitions of probability and sampling theorems; Conditional probability; Discrete Random variables: Poisson and Binomial distributions; Continuous random variables: normal and exponential distributions; Descriptive statistics - Mean, median, mode and standard deviation; Hypothesis testing.

Numerical Methods: Accuracy and precision; error analysis. Numerical solutions of linear and non-linear algebraic equations; Least square approximation, Newton's and Lagrange polynomials, numerical differentiation, Integration by trapezoidal and Simpson's rule, single and multi-step methods for first order differential equations.

Section 2: Structural Engineering

Engineering Mechanics: System of forces, free-body diagrams, equilibrium equations; Internal forces in structures; Friction and its applications; Kinematics of point mass and rigid body; Centre of mass; Euler's equations of motion; Impulse-momentum; Energy methods; Principles of virtual work.

Solid Mechanics: Bending moment and shear force in statically determinate beams; Simple stress and strain relationships; Theories of failures; Simple

bending theory, flexural and shear stresses, shear centre; Uniform torsion, buckling of column, combined and direct bending stresses.

Structural Analysis: Statically determinate and indeterminate structures by force/ energy methods; Method of superposition; Analysis of trusses, arches, beams, cables and frames; Displacement methods: Slope deflection and moment distribution methods; Influence lines; Stiffness and flexibility methods of structural analysis.

Construction Materials and Management: Construction Materials: Structural steel - composition, material properties and behaviour; Concrete - constituents, mix design, short-term and long-term properties; Bricks and mortar; Timber; Bitumen. Construction Management: Types of construction projects; Tendering and construction contracts; Rate analysis and standard specifications; Cost estimation; Project planning and network analysis - PERT and CPM.

Concrete Structures: Working stress, Limit state and Ultimate load design concepts; Design of beams, slabs, columns; Bond and development length; Prestressed concrete; Analysis of beam sections at transfer and service loads.

Steel Structures: Working stress and Limit state design concepts; Design of tension and compression members, beams and beam- columns, column bases; Connections - simple and eccentric, beam-column connections, plate girders and trusses; Plastic analysis of beams and frames.

Section 3: Geotechnical Engineering

Soil Mechanics: Origin of soils, soil structure and fabric; Three-phase system and phase relationships, index properties; Unified and Indian standard soil classification system; Permeability - one dimensional flow, Darcy's law; Seepage through soils - two-dimensional flow, flow nets, uplift pressure, piping; Principle of effective stress, capillarity, seepage force and quicksand condition; Compaction in laboratory and field conditions; One-dimensional consolidation, time rate of consolidation; Mohr's circle, stress paths, effective and total shear strength parameters, characteristics of clays and sand.

Foundation Engineering: Sub-surface investigations - scope, drilling bore holes, sampling, plate load test, standard penetration and cone penetration tests; Earth pressure theories - Rankine and Coulomb; Stability of slopes - finite and infinite slopes, method of slices and Bishop's method; Stress distribution in soils - Boussinesq's and Westergaard's theories, pressure

bulbs; Shallow foundations - Terzaghi's and Meyerhoff's bearing capacity theories, effect of water table; Combined footing and raft foundation; Contact pressure; Settlement analysis in sands and clays; Deep foundations - types of piles, dynamic and static formulae, load capacity of piles in sands and clays, pile load test, negative skin friction.

Section 4: Water Resources Engineering

Fluid Mechanics: Properties of fluids, fluid statics; Continuity, momentum, energy and corresponding equations; Potential flow, applications of momentum and energy equations; Laminar and turbulent flow; Flow in pipes, pipe networks; Concept of boundary layer and its growth.

Hydraulics: Forces on immersed bodies; Flow measurement in channels and pipes; Dimensional analysis and hydraulic similitude; Kinematics of flow, velocity triangles; Basics of hydraulic machines, specific speed of pumps and turbines; Channel Hydraulics - Energy-depth relationships, specific energy, critical flow, slope profile, hydraulic jump, uniform flow and gradually varied flow

Hydrology: Hydrologic cycle, precipitation, evaporation, evapo-transpiration, watershed, infiltration, unit hydrographs, hydrograph analysis, flood estimation and routing, reservoir capacity, reservoir and channel routing, surface run-off models, ground water hydrology - steady state well hydraulics and aquifers; Application of Darcy's law.

Irrigation: Duty, delta, estimation of evapo-transpiration; Crop water requirements; Design of lined and unlined canals, head works, gravity dams and spillways; Design of weirs on permeable foundation; Types of irrigation systems, irrigation methods; Water logging and drainage; Canal regulatory works, cross-drainage structures, outlets and escapes.

Section 5: Environmental Engineering

Water and Waste Water: Quality standards, basic unit processes and operations for water treatment. Drinking water standards, water requirements, basic unit operations and unit processes for surface water treatment, distribution of water. Sewage and sewerage treatment, quantity and characteristics of wastewater. Primary, secondary and tertiary treatment of wastewater, effluent discharge standards. Domestic wastewater treatment, quantity of characteristics of domestic wastewater, primary and secondary treatment. Unit operations and unit processes of domestic wastewater, sludge disposal.

Air Pollution: Types of pollutants, their sources and impacts, air pollution meteorology, air pollution control, air quality standards and limits.

Municipal Solid Wastes: Characteristics, generation, collection and transportation of solid wastes, engineered systems for solid waste management (reuse/ recycle, energy recovery, treatment and disposal).

Noise Pollution: Impacts of noise, permissible limits of noise pollution, measurement of noise and control of noise pollution.

Section 6: Transportation Engineering

Transportation Infrastructure: Highway alignment and engineering surveys; Geometric design of highways - cross-sectional elements, sight distances, horizontal and vertical alignments; Geometric design of railway track; Airport runway length, taxiway and exit taxiway design.

Highway Pavements: Highway materials - desirable properties and quality control tests; Design of bituminous paving mixes; Design factors for flexible and rigid pavements; Design of flexible pavement using IRC: 37-2012; Design of rigid pavements using IRC: 58-2011; Distresses in concrete pavements.

Traffic Engineering: Traffic studies on flow, speed, travel time - delay and O-D study, PCU, peak hour factor, parking study, accident study and analysis, statistical analysis of traffic data; Microscopic and macroscopic parameters of traffic flow, fundamental relationships; Control devices, signal design by Webster's method; Types of intersections and channelization; Highway capacity and level of service of rural highways and urban roads.

Section 7: Geomatics Engineering

Principles of surveying; Errors and their adjustment; Maps - scale, coordinate system; Distance and angle measurement - Levelling and trigonometric levelling; Traversing and triangulation survey; Total station; Horizontal and vertical curves.

Photogrammetry - scale, flying height; remote sensing - basics, platform and sensors, visual image interpretation; Basics of Geographical information system (GIS) and Geographical Positioning system (GPS).

IES Exam Pattern for CE (Civil Engineering)

Civil Engineers basically deals with planning, constructing, maintaining, designing & operating Infrastructure. Civil Engineers appearing for ESE are selected for the following posts-

- Indian Railway Service of Engineers,
- Indian Railway Stores service,
- Central Engineering services,
- Military Engineer Service,
- Assistant Executive Engineer,
- Survey of India Service,
- Central Water Engineering

IES (Indian Engineering Services) the toughest and the most sought- after careers for the Engineering graduates in India. It comes under civil services which meet the managerial & technical requirement of the Government of India. Selection of IES Officers is totally on merit basis and is done by Union Government as per the recommendation of UPSC. Engineering Services Examination is a combined 4-stage competitive exam.

IES Exam Pattern for CE

Stages	Examination	Marks
Stage 1	Preliminary	500
Stage 2	Mains	600
Stage 3	Personal Interview	200
Stage 1+2+3	Grand Total	1300

IES Preliminary/ Stage 1 Exam Pattern

- IES Exam Pattern for preliminary examination is same for all the streams in the IES.
- This stage consists of 2 papers- General Studies and Engineering Aptitude Paper and Engineering Discipline Paper. These are conducted on two different sessions.
- Questions in IES Prelims are objective in nature.
- The distribution of marks is 200+300 (500 marks).

- The duration of these papers is 2 hours (paper 1) and 3 hours (paper 2) in IES Prelims.

Paper	Name of the paper	Time duration	Marks
Paper 1	General Studies and Engineering Aptitude Paper	2 hours	200
Paper 2	Engineering Discipline – specific paper	3 hours	300
Paper 1+2	Grand Total	5 hours	500

IES Mains/ Stage 2 Exam Pattern

- IES Mains consists of 2 papers that are subjective in nature and are conducted in different sessions.
- Both papers are Engineering Discipline.
- The distribution of marks for both the papers is IES is 300+300 (600 marks).
- The duration of both these papers is 3 hours each.
- The paper pattern for IES Mains only involves the change in the type of questions.

Paper	Name of the paper	Time duration	Marks
Paper 1	Engineering Discipline – specific Paper 1	3 hours	300
Paper 2	Engineering Discipline – specific Paper 2	3 hours	300
Paper 1+2	Grand Total	6 hours	600

IES CE Paper-wise Syllabus

IES CE Paper 1: Building materials, solid mechanics, structural analysis, design of steel structures, design of concrete and masonry structures, construction practice, planning and management

IES CE Paper 2: Fluid mechanics, open channel flow, pipe flow, hydraulic machines and hydropower, hydrology, water resources engineering, environmental engineering, water supply engineering, waste water engineering, solid waste management, air and noise pollution & ecology, soil mechanics, foundation engineering, surveying, transportation engineering.

IES CE Syllabus

PAPER – I

1. Building Materials:

Stone, Lime, Glass, Plastics, Steel, FRP, Ceramics, Aluminum, Fly Ash, Basic Admixtures, Timber, Bricks and Aggregates: Classification, properties and selection criteria; Cement: Types, Composition, Properties, Uses, Specifications and various Tests; Lime & Cement Mortars and Concrete: Properties and various Tests; Design of Concrete Mixes: Proportioning of aggregates and methods of mix design.

2. Solid Mechanics:

Elastic constants, Stress, plane stress, Strains, plane strain, Mohr's circle of stress and strain, Elastic theories of failure, Principal Stresses, Bending, Shear and Torsion.

3. Structural Analysis:

Basics of strength of materials, Types of stresses and strains, Bending moments and shear force, concept of bending and shear stresses; Analysis of determinate and indeterminate structures; Trusses, beams, plane frames; Rolling loads, Influence Lines, Unit load method & other methods; Free and Forced vibrations of single degree and multi degree freedom system; Suspended Cables; Concepts and use of Computer Aided Design.

4. Design of Steel Structures:

Principles of Working Stress methods, Design of tension and compression members, Design of beams and beam column connections, built-up sections, Girders, Industrial roofs, Principles of Ultimate load design.

5. Design of Concrete and Masonry structures:

Limit state design for bending, shear, axial compression and combined forces; Design of beams, Slabs, Lintels, Foundations, Retaining walls, Tanks, Staircases; Principles of pre-stressed concrete design including materials and methods; Earthquake resistant design of structures; Design of Masonry Structure.

6. Construction Practice, Planning and Management:

Construction - Planning, Equipment, Site investigation and Management including Estimation with latest project management tools and network analysis for different Types of works; Analysis of Rates of various types of works; Tendering Process and Contract Management, Quality Control, Productivity, Operation Cost; Land acquisition; Labor safety and welfare.

PAPER – II

1. Flow of Fluids, Hydraulic Machines and Hydro Power:

(a) Fluid Mechanics, Open Channel Flow, Pipe Flow:

Fluid properties; Dimensional Analysis and Modeling; Fluid dynamics including flow kinematics and measurements; Flow net; Viscosity, Boundary layer and control, Drag, Lift, Principles in open channel flow, Flow controls. Hydraulic jump; Surges; Pipe networks.

(b) Hydraulic Machines and Hydro power -

Various pumps, Air vessels, Hydraulic turbines – types, classifications & performance parameters; Power house – classification and layout, storage, pondage, control of supply.

2. Hydrology and Water Resources Engineering:

Hydrological cycle, Ground water hydrology, Well hydrology and related data analysis; Streams and their gauging; River morphology; Flood, drought and their management; Capacity of Reservoirs. Water Resources Engineering: Multipurpose uses of Water, River basins and their potential; Irrigation systems, water demand assessment; Resources - storages and their yields; Water logging, canal and drainage design, Gravity dams, falls, weirs, Energy dissipaters, barrage Distribution works, Cross drainage works and head-works and their design; Concepts in canal design, construction & maintenance; River training, measurement and analysis of rainfall.

3. Environmental Engineering:

(a) Water Supply Engineering:

Sources, Estimation, quality standards and testing of water and their treatment; Rural, Institutional and industrial water supply; Physical, chemical and biological characteristics and sources of water, Pollutants in water and its effects, Estimation of water demand; Drinking water Standards, Water Treatment Plants, Water distribution networks.

(b) Waste Water Engineering:

Planning & design of domestic waste water, sewage collection and disposal; Plumbing Systems. Components and layout of sewerage system; Planning & design of Domestic Waste-water disposal system; Sludge management including treatment, disposal and re-use of treated effluents; Industrial waste waters and Effluent Treatment Plants including institutional and industrial sewage management.

(c) Solid Waste Management:

Sources & classification of solid wastes along with planning & design of its management system; Disposal system, Beneficial aspects of wastes and Utilization by Civil Engineers.

(d) Air, Noise pollution and Ecology:

Concepts & general methodology.

4. Geo-technical Engineering and Foundation Engineering:

(a) Geo-technical Engineering:

Soil exploration - planning & methods, Properties of soil, classification, various tests and interrelationships; Permeability & Seepage, Compressibility, consolidation and Shearing resistance, Earth pressure theories and stress distribution in soil; Properties and uses of geo-synthetics.

(b) Foundation Engineering:

Types of foundations & selection criteria, bearing capacity, settlement analysis, design and testing of shallow & deep foundations; Slope stability analysis, Earthen embankments, Dams and Earth retaining structures: types, analysis and design, Principles of ground modifications.

5. Surveying and Geology:

(a) Surveying:

Classification of surveys, various methodologies, instruments & analysis of measurement of distances, elevation and directions; Field astronomy, Global Positioning System; Map preparation; Photogrammetry; Remote sensing concepts; Survey Layout for culverts, canals, bridges, road/railway alignment and buildings, Setting out of Curves.

(b) Geology:

Basic knowledge of Engineering geology & its application in projects.

6. Transportation Engineering:

Highways - Planning & construction methodology, Alignment and geometric design; Traffic Surveys and Controls; Principles of Flexible and Rigid pavements design.

Tunneling - Alignment, methods of construction, disposal of muck, drainage, lighting and ventilation.

Railways Systems - Terminology, Planning, designs and maintenance practices; track modernization.

Harbors - Terminology, layouts and planning.

Airports - Layout, planning & design.

SSC Exam Syllabus (Civil Engineering)

Paper-I

General Intelligence & Reasoning:

The Syllabus for General Intelligence would include questions of both verbal and non-verbal type. The test may include questions on analogies, similarities, differences, space visualization, problem solving, analysis, judgement, decision making, visual memory, discrimination, observation, relationship concepts, arithmetical reasoning, verbal and figure classification, arithmetical number series etc. The test will also include questions designed to test the candidate's abilities to deal with abstract ideas and symbols and their relationships, arithmetical computations and other analytical functions.

General Awareness:

Questions will be aimed at testing the candidate's general awareness of the environment around him/her and its application to society. Questions will also be designed to test knowledge of current events and of such matters of everyday observations and experience in their scientific aspect as may be expected of any educated person. The test will also include questions relating to India and its neighbouring countries especially pertaining to History, Culture, Geography, Economic Scene, General Polity and Scientific Research, etc. These questions will be such that they do not require a special study of any discipline.

General Engineering (Civil and Structural)

Part-A

Civil Engineering

Building Materials, Estimating, Costing and Valuation, Surveying, Soil Mechanics, Hydraulics, Irrigation Engineering, Transportation Engineering, Environmental Engineering.

Structural Engineering

Theory of Structures, Concrete Technology, RCC Design, Steel Design.

Paper II

Part-A: Civil & Structural Engineering

Civil Engineering

Building Materials : Physical and Chemical properties, classification, standard tests, uses and manufacture/quarrying of materials e.g. building stones, silicate based materials, cement (Portland), asbestos products,

timber and wood based products, laminates, bituminous materials, paints, varnishes.

Estimating, Costing and Valuation: estimate, glossary of technical terms, analysis of rates, methods and unit of measurement, Items of work – earthwork, Brick work (Modular & Traditional bricks), RCC work, Shuttering, Timber work, Painting, Flooring, Plastering. Boundary wall, Brick building, Water Tank, Septic tank, Bar bending schedule, Centre line method, Mid-section formula, Trapezoidal formula, Simpson’s rule. Cost estimate of Septic tank, flexible pavements, Tube well, isolates and combined footings, Steel Truss, Piles and pile-caps. Valuation – Value and cost, scrap value, salvage value, assessed value, sinking fund, depreciation and obsolescence, methods of valuation.

Surveying : Principles of surveying, measurement of distance, chain surveying, working of prismatic compass, compass traversing, bearings, local attraction, plane table surveying, theodolite traversing, adjustment of theodolite, Levelling, Definition of terms used in levelling, contouring, curvature and refraction corrections, temporary and permanent adjustments of dumpy level, methods of contouring, uses of contour map, tachometric survey, curve setting, earth work calculation, advanced surveying equipment.

Soil Mechanics : Origin of soil, phase diagram, Definitions-void ratio, porosity, degree of saturation, water content, specific gravity of soil grains, unit weights, density index and interrelationship of different parameters, Grain size distribution curves and their uses. Index properties of soils, Atterberg’s limits, ISI soil classification and plasticity chart. Permeability of soil, coefficient of permeability, determination of coefficient of permeability, Unconfined and confined aquifers, effective stress, quick sand, consolidation of soils, Principles of consolidation, degree of consolidation, pre-consolidation pressure, normally consolidated soil, e-log p curve, computation of ultimate settlement. Shear strength of soils, direct shear test, Vane shear test, Triaxial test. Soil compaction, Laboratory compaction test, Maximum dry density and optimum moisture content, earth pressure theories, active and passive earth pressures, Bearing capacity of soils, plate load test, standard penetration test.

Hydraulics : Fluid properties, hydrostatics, measurements of flow, Bernoulli’s theorem and its application, flow through pipes, flow in open channels, weirs, flumes, spillways, pumps and turbines.

Irrigation Engineering: Definition, necessity, benefits, 2II effects of irrigation, types and methods of irrigation, Hydrology – Measurement of

rainfall, run off coefficient, rain gauge, losses from precipitation – evaporation, infiltration, etc. Water requirement of crops, duty, delta and base period, Kharif and Rabi Crops, Command area, Time factor, Crop ratio, Overlap allowance, Irrigation efficiencies. Different type of canals, types of canal irrigation, loss of water in canals. Canal lining – types and advantages. Shallow and deep to wells, yield from a well. Weir and barrage, Failure of weirs and permeable foundation, Slit and Scour, Kennedy’s theory of critical velocity. Lacey’s theory of uniform flow. Definition of flood, causes and effects, methods of flood control, water logging, preventive measure. Land reclamation, Characteristics of affecting fertility of soils, purposes, methods, description of land and reclamation processes. Major irrigation projects in India.

Transportation Engineering: Highway Engineering – cross sectional elements, geometric design, types of pavements, pavement materials – aggregates and bitumen, different tests, Design of flexible and rigid pavements – Water Bound Macadam (WBM) and Wet Mix Macadam (WMM), Gravel Road, Bituminous construction, Rigid pavement joint, pavement maintenance, Highway drainage, Railway Engineering- Components of permanent way – sleepers, ballast, fixtures and fastening, track geometry, points and crossings, track junction, stations and yards. Traffic Engineering – Different traffic survey, speed-flow-density and their interrelationships, intersections and interchanges, traffic signals, traffic operation, traffic signs and markings, road safety.

Environmental Engineering: Quality of water, source of water supply, purification of water, distribution of water, need of sanitation, sewerage systems, circular sewer, oval sewer, sewer appurtenances, sewage treatments, Surface water drainage, Solid waste management – types, effects, engineered management system, Air pollution – pollutants, causes, effects, control, Noise pollution – cause, health effects, control.

Structural Engineering

Theory of structures: Elasticity constants, types of beams – determinate and indeterminate, bending moment and shear force diagrams of simply supported, cantilever and over hanging beams. Moment of area and moment of inertia for rectangular & circular sections, bending moment and shear stress for tee, channel and compound sections, chimneys, dams and retaining walls, eccentric loads, slope deflection of simply supported and cantilever beams, critical load and columns, Torsion of circular section.

Concrete Technology: Properties, Advantages and uses of concrete, cement aggregates, importance of water quality, water cement ratio, workability, mix

design, storage, batching, mixing, placement, compaction, finishing and curing of concrete, quality control of concrete, hot weather and cold weather concreting, repair and maintenance of concrete structures.

RCC Design: RCC beams-flexural strength, shear strength, bond strength, design of singly reinforced and double reinforced beams, cantilever beams, T-beams, lintels. One way and two way slabs, isolated footings. Reinforced brick works, columns, staircases, retaining wall, water tanks (RCC design questions may be based on both Limit State and Working Stress methods).

Steel Design: Steel design and construction of steel columns, beams roof trusses plate girders.

GPSC Recruitment in 2018

Post	Vacancies	Advertisement Date	Tentative Date of Prelim Exam	Tentative Month of Prelim Result	Tentative Month of Interview
Assistant Engineer (Civil), Class-2 (R&B)	212	15-11-2018	03-03-2019	Jun-2019	Sep-2019
Gujarat Engineering Services (Civil) Class- 1 and 2					
Executive Engineer Class-1(R&B)	05	15-10-2018	06-01-2019	Mar-2019	Oct-2019
Deputy Executive Engineer, Class-2(R&B)	20				

BARC Recruitment through GATE-2018

OCES-2018 : This is a one-year training program for Engineering Graduates (B.Tech /B.E. /B.Sc.-Engg/5 year Integrated M.Tech.) or Science Post Graduate (M.Sc.). The training program is conducted in the BARC Training Schools located at BARC, Mumbai / Indira Gandhi Centre for Atomic Research, Kalpakkam / Raja Ramanna Centre for Advanced Technology, Indore / Nuclear Fuel Complex, Hyderabad / Atomic Minerals Directorate, Hyderabad.

DGFS-2018 : Under this scheme, Engineering Graduates (B.Tech /B.E. /B.Sc.-Engg) or Physics Post Graduates (M.Sc.) who have secured M.Tech. / M.Chem.Engg admission in one of the following institutes, in specified disciplines, will be offered a two-year DAE Graduate Fellowship at IIT – Bombay, Delhi, Kanpur, Kharagpur, Madras, Guwahati, Roorkee, and BHU - Varanasi as well as NIT – Rourkela and Institute of Chemical Technology (ICT) – Mumbai.

Sr.No.	Activity	Important Dates
1.	Commencement of Online Application Process for OCES/DGFS-2018	1st Jan. 2018
2.	Last date for Registration for Online Application	4th Feb. 2018
3.	Last date for Submission of Online Application	5th Feb. 2018
4.	Download of Admit Card for Online Examination	26th Feb. 2018
5.	Online Examination Date	28th Mar. – 3rd Apr. 2018
6.	Last date for uploading GATE score	2nd Apr. 2018
7.	Declaration of List of candidates short-listed for Interview	18th Apr. 2018
8.	Availability of option to select Interview Slot for qualified candidates	20th – 25th Apr. 2018
9.	Selection Interviews	16th May – 15th Jun 2018
10.	Display of List of Candidates finally selected for OCES-2018	Last week of Jun 2018
11.	Last Date for Selected OCES-2018 Candidates desirous of DGFS to give details of M.Tech / M.Chem.Engg. admission in a DGFS institute	4th Jul 2018
12.	Declaration of List of Applicants Selected for DGFS-2018	2nd week of Jul 2018









NBCC Recruitment through GATE-2018

National Buildings Construction Corporation Ltd. (NBCC) is a blue-chip Authorities of India **Navratna Public Sector Enterprise** below the support of Ministry of Urban Development. Listed with both the Stock Exchanges (BSE & NSE) the corporate distinctive enterprise model it has in the present day, made it stand out as a largest PSE within the development sector and a front runner with greater than INR 70,000 Crores order book. The Firm has registered a considerable 32% Progress in prime line throughout FY 2015-16

as in comparison with earlier yr. It has posted revenue of Rs.311 crores, whereas its complete turnover has surged to Rs.5749 Crores throughout FY 2015 – 16. Having an immense strength within the construction sector, NBCC has a PAN India in addition to international presence.

Sr.No.	Post	Maximum age as on closing date of on-line application	Essential Educational Qualification
1.	Management Trainee (Civil)	29 years	Full Time Degree in Civil Engineering or equivalent from Govt. recognized University/Institute with minimum 60% aggregate marks.

References:

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