



Vidya Vikas Education Trust's

Universal College of Engineering

Gujarati Linguistic Minority Institution

Approved by AICTE, DTE, Maharashtra State Government and Affiliated to Mumbai University
Accredited with "B+" Grade by NAAC



The Benchmark

Issue 017: December 2019 Edition



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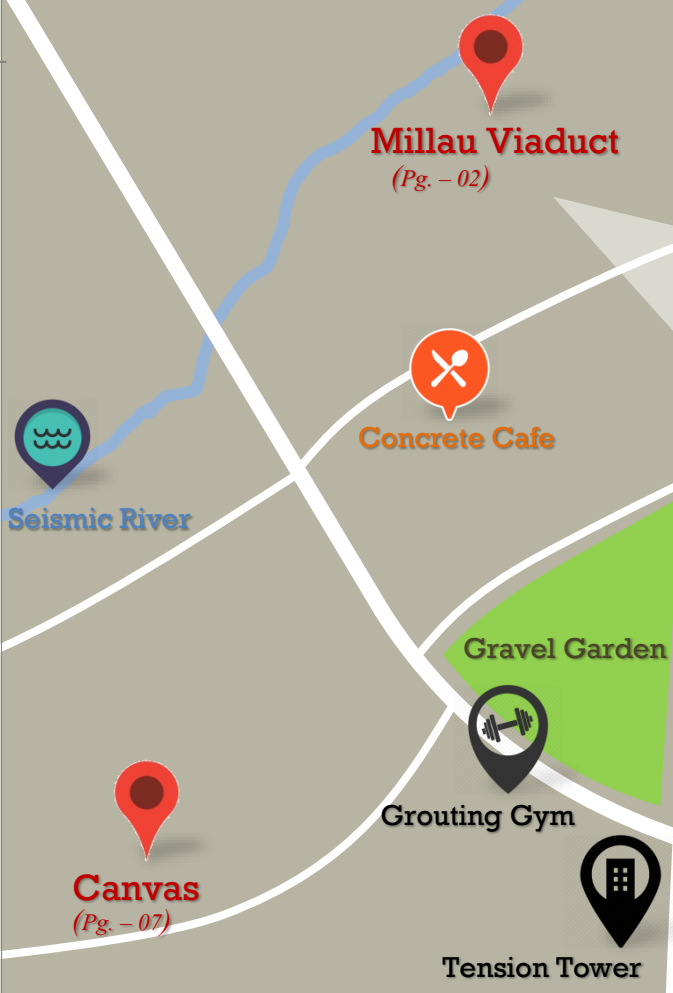
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Volume Village

Editor's Desk

We are pleased to present the December 2019 Edition of Benchmark. In this Edition you all will find an article on "Millau Viaduct". In this Edition we have focused on articles related to environmental issues and concern. Student Experience in College life and other contribution of students & faculties of Department of Civil Engineering in the month of November is highlighted

Department Vision

- To excel in every area of Civil Engineering, inculcate research-oriented study to explore hidden talent.
- Providing Opportunity to display creativity, out of the box thinking & innovativeness, aimed at providing cutting edge technology for sustainable development.

Department Mission

- Providing qualified, motivated faculties to deliver the content using updated teaching methodology, inviting industry experts from various areas to disseminate subject knowledge in Civil Engineering.
- Motivating students to undertake the Research Oriented studies, participate in competitions at all levels, grasping new techniques and methods which can be improved on further.
- Conducting and participating in seminars, workshops and training programs with a view to make the students industry ready and improve their employability factor for global career ahead.
- To create quality professionals capable of planning, designing and analytical skills for better infrastructural development in the field of Civil

Millau Viaduct

Overview

- The Millau Viaduct or Viaduct de Millau, is a cable-stayed bridge that spans the valley of the River Tarn near Millau in Southern France. It is the tallest bridge in the world with one mast's summit at 342 meters (1,122 ft) above the base of the structure. Designed by the British architect "Norman Foster" and French structural engineer Michel Virlogeux, it is the 21st highest bridge deck in the world, being 270 meters (890 ft) between the road deck and the ground below.
- The Millau Viaduct is part of the A75-A71 autoroute axis from Paris to Beziers and Montpellier. The cost of construction was approximately €400 million. It was formally inaugurated on 14 December 2004, and opened to traffic on 16 December. The bridge has been consistently ranked as one of the great engineering achievements of all time and received the 2006 "International Association for Bridge and Structural Engineering Outstanding Structure Award".
- Due to the traffic issues on the route from Paris to Spain along the stretch passing through the Tarn valley near the town of Millau, which led to congestion in the summer due to holiday traffic, construction of a bridge to span the valley was required. The first plans were discussed in 1987 by Centre for Educational Testing and Evaluation (CETE), and by October 1991, the decision was made to build a high crossing of the Tarn River by a structure of around 2,500 m (8,200 ft) in length.
- During 1995–1996, a second definition study was made by five associated architect groups and structural engineers. In January 1995, the government issued a declaration of public interest to solicit design approaches for a competition. In July 1996, the jury decided in favor of a cable-stayed design with multiple spans, as proposed by the Sogelerg consortium (Michel Virlogeux and Norman Foster).
- The bridge's construction cost up to €394 million, with a toll plaza 6 km (3.7 miles) north of the viaduct costing an additional €20 million. The builders, Eiffage, financed the construction in return for a concession to collect the tolls for 75 years, until 2080.

Photos



The bridge has been consistently ranked as one of the great engineering achievements of all time and received the 2006 "International Association for Bridge and Structural Engineering Outstanding Structure Award".



DID YOU KNOW?

The Panama Canal was one of the most difficult engineering projects ever, it estimated more than 25,000 workers which lost their lives during the construction.

*To know more about
Millau Viaduct, Scan
the QR Code*



Page 03:- Let's Talk Plastic

There is too much plastic in the world. And all over the world, scientists are working on giving us eco-friendly alternatives. According to the United Nations, the world has produced 8.3 billion tonnes of plastic since 1950. Of this, only 9% of plastic waste was recycled, while another 12% was incinerated. The rest around 80% has accumulated in landfills, dumps or the natural environment. Burning plastics is not a safe way to get rid of it as it leads to the production of environmentally harmful toxins that can increase the risk of heart diseases, aggravate respiratory ailments, damage organs such as kidney and liver and even affect the reproductive and development system in young people.

Even now, despite increasing awareness, the total production of plastics is about 350 million tonnes in a year in the world, which is more or less equal to the weight of the entire human population. Most plastics that we know today are produced from petroleum and they have a huge carbon footprint. Apart from contributing to the mounting climate change crisis, floods, heat waves, severe cold spells, melting glaciers etc. there are other serious issues around the disposal of plastics. On an average, we use a plastic carry bag for 12 minutes before it is disposed of, but it can take nearly 500 years to break down in the environment. And it adversely affects not only animals on land, but also puts the more vulnerable marine organisms at peril. There is, of course, an increasing realization that the problem of plastic pollution needs to be tackled before it brings the entire planet down. It is also clear that the problem being prolonged, multiple solutions need to be found to address it.

Plastics are basically made up of a long chain of molecules (polymers) containing repeated units of carbon atoms. The chemical bonds that hold these molecules together are so strong that Nature does not have the power to take them apart. While there are numerous types of plastic materials, the most commonly used ones are polyethylene (PE), polypropylene (PP), Polyethylene terephthalate (PET), polyvinyl chloride (PVC) and polystyrene (PS). The trouble is that they cannot be recycled together. Besides, world over there are no mandatory declaration laws for plastics and the additives they contain, and producers keep the composition of materials secret, making it difficult for consumers to tell harmful products from harmless ones.

For instance, in 2016-17, India produced 4.76 million tonnes of PE, 4.97 million tonnes of PP, 2.07 million tonnes of PET, 1.44 million tonnes of PVC and 0.6 million tonnes of PS. All these plastic materials take a very long time to degrade. The solution for this is to break down polymers to monomers. Carbon atoms typically form two types of compounds in nature aliphatic and aromatic.

Polymer materials that can have aliphatic carbon bonds rather than aromatic bonds could be a better alternative. While aromatic carbon bonds are difficult to crack, aliphatic bonds are more amenable to microorganisms. Polylactic acid (PLA) is one such plastic alternative. Usually made from the fermented starch of grains such as corn, PLA is a bioplastic that can be easily digested by microbes, making their degradation easy. Even agricultural waste is a promising raw material when it comes to developing biodegradable plastic. Also, there are other methods to deal with plastic waste. One can use bacteria to synthesize certain polymers such as polyhydroxy butyrate, which are biodegradable and used for medical applications widely. Some researchers are trying to develop greener versions of plastics; others are working to find better ways to recycle them. There are also others who are trying to identify genetically engineered microbes that can break down different plastics.

Scratch Your Head !!

1) If $1+9+11=1$, then what is value of $12+11+9=?$

- | | |
|------|------|
| ❖ 32 | ❖ 0 |
| ❖ 12 | ❖ 10 |

Page 04

India needs a four-pronged strategy to deal with the existing problem of plastics. First, identify those single use plastic products that can be done away with, such as carry bags, disposable cutlery and straws. Second, identify those that can be brought under a buyback scheme. PET bottles, milk pouches and used food packaging materials and plastic bottles used for toiletries fall under this category. In this case, plastic products that cannot be recovered directly from customers, such as shampoo sachets or multi-layered plastics for packing snacks, producers manufacturing these products should work closely with local authorities to ensure their recovery from the environment and recycle accordingly. Fourth, exempt those plastic products having longer service life from those whose replacement itself will add to environmental issues.

While a solution to the problem of plastic is still far away, many governments around the world have been successful in creating awareness about the problem. It is a beginning. And one that seeks to counter plastic menace.

-Ms. Shilpa Patil
Asst. Professor UCOE
Ref: The Hindu News Paper
(1st Nov 2019)

Find Civil Engineering Words – Solve this Civil Engg. Puzzle

S	O	O	L	T	I	A	B	H	T	C	D	G	O
T	N	M	I	E	C	A	Q	O	C	T	E	Y	P
A	I	R	P	O	R	T	R	U	X	U	R	U	P
D	B	P	A	N	H	T	H	S	Z	N	Y	V	O
I	H	L	S	V	Y	O	H	E	E	N	N	M	W
U	G	K	C	W	R	E	S	F	T	E	I	B	E
M	R	A	H	Q	E	F	G	P	O	L	K	R	R
T	E	Y	O	U	A	E	T	U	I	O	I	E	S
U	T	N	O	E	E	O	R	I	T	T	X	T	T
E	P	E	L	E	E	U	A	O	R	Q	A	U	A
R	U	R	E	G	R	F	G	E	A	E	T	L	T
K	O	W	D	A	L	H	E	R	E	D	Z	W	I
A	I	I	U	G	Y	R	Q	U	R	A	W	A	O
R	R	T	R	A	I	N	S	T	A	T	I	O	N
B	Y	T	Y	T	K	Y	P	Y	U	P	Q	U	E

There is something unique in this soil, which despite many obstacles has always remained the abode of great souls.

- Sardar Vallabhbhai Patel

Page 05:- Disaster Management and Mitigation Measures

Nature has various demonstration gentle as well as hostile. The calm side is admired by everyone but when some hostile (aggressive) event takes place depredation happens out of which individual cannot control everything happening in nature. However, we can avert them from devastating the ecosystem, we need few stop-gap measures to save human life and balance the ecosystem. The disaster which has its negative impact on human as well as nature and occurs naturally is termed as natural disaster. Therefore, it is very important to identify the type of disaster and take mitigation measures.

India due its geo-climatic and socio-economic condition is prone to various disaster. About 59% of land mass is susceptible to seismic hazard, 5% to geographical area is prone to floods, 8% to cyclones and 70% of total cultivable area is vulnerable to drought. Apart from this manmade disaster are frequent and causes huge damage. **Be it Tsunami, Landslide, recent Floods in Satara, Sangli, Kerala it has major impact.** To stop these, we need to strengthen our disaster management techniques.

Disaster management refers to organizing and managing resources and responsibilities for dealing with all humanitarian aspects of emergencies to reduce the impact of disaster. In other words, it is a well-planned strategy to manage it cannot avert or eliminate it but focuses on formulating strategy to minimize the impact. It includes co-ordination, rapid assessment of damage, restoration of power, telecommunication and surface transport, deployment of search and rescue teams, arrangement for food and water material, setting up of temporary shelter, sanitation and hygiene identification and earmarking of resources. In short it is a complete cycle which includes preparation, response, recovery, mitigation. The common process followed is to anticipate, assess, prevent, prepare, respond and recover.

The process of Disaster management consists of five phases:

1. Prevention: It is defined as those measures taken to prevent a natural or potential hazard from having harmful effect, and reduce the minimum level of possible damage to human life and nature. It includes establishment of risk, information gathering system (post disaster recovery, early warning) preparing evacuation plans, environmental planning and design standards.

2. Mitigation: It is permanent reduction of risk of disaster happening or to reduce the damages of unavoidable emergencies. These activities take place before and after emergencies.

3. Preparedness: Preparedness focuses on enacting measures and systems that reduce risk. Preparedness activities are geared towards minimizing disaster damage, enhancing disaster response operation, preparing individuals to respond by organization of prompt and efficient actions of response before and after disaster.

4. Response: Response refer to actions taken during and immediately after a disaster to ensure minimum effect and immediate relief and support to affected groups.

5. Recovery: Repair of physical, social and economic damages are referred to recovery and rehabilitation phase. It involves long term reconstruction of health, communication facilities. Its main motive is to reduce the future risk factors. Recovery includes getting financial assistance to help pay for repair. Its immediate goal is to bring the affected area back to normalcy as soon as possible.

-Mr.Swapnil Wani
Asst.Professor UCOE

Scratch Your Head!!

2) *French Polish is?*

- ❖ *Oil paint* ❖ *Spirit varnish*
- ❖ *Distemper* ❖ *None of these*



Page 06:- Social Awareness and Activities

White Revolution:

White revolution was established in IRAN in the year 1979 under Shah Mohammad Reza Pahlavi and lasted until 1979. This was a step forward towards the reformation of program which was built specially to weaken those classes who supported the traditional system

In India “White Revolution” was one of the biggest dairy development movements by the government of India in 1970. It was the step taken by government to develop and help the dairy industries sustain itself economically by developing a cooperative by providing employment to the poor farmers. One of the major objectives of this revolution was to create a nationwide milk grid. Therefore, it resulted in making India one of the largest producers of milk and milk products. Thus, it was named as “White Revolution” of India. It also helped in reducing malpractices by milk and milk traders



The “White Revolution” was also known as Operation Flood and was launched in 1970. It was an initiative by India's National Dairy Development Board (NDDB) and was the world's biggest dairy development programme. It transformed India from a milk deficient nation into the world's largest milk producers.

The “White Revolution” helped in increasing milk productivity and milk was then sold at competitive market prices. This program increased the demand for development and production of healthy animals, use of modern technology in milk production sector and networking between various small- and large-scale dairy industries was also increased.

National Constitution Day

The Constitution of India was drafted by Dr. Babasaheb Ambedkar. To commemorate the adoption of The Constitution of India, “Constitution Day” (Samvidhan Divas) is celebrated every year on the 26th of November since 2015. It is celebrated on this day because, The Constitution of India was adopted by the Constituent Assembly of India in 1949 on this day. The importance and existence of the National Constitution Day should be known to all the citizens of India in order to respect “The Constitution of India”. The Constitution of India is the supreme law of India. The document lays down the framework demarcating the structure, procedures, power and duties of government institutions and sets out fundamental rights, directive principles and the duties of citizens. It is the longest written Constitution on earth consisting of 448 articles which are grouped into 25 parts with 12 schedules and 5 appendices. Its has been amended 103 times and the latest became effective on 12th January 2019. The Government of India (GOI) declared 26 November as Constitution Day on 19 November, 2015 by a gazette notification (public journal and legal document of GOI). The Prime Minister of India, Narendra Modi made the declaration on 11 October 2015 while laying the foundation stone of the Dr. B. R. Ambedkar 's memorial in Mumbai. Previously, this day was celebrated as Law Day. As per the Department of Education and Literacy, the Preamble of the Constitution is read in all schools, Colleges by the students. In addition, there were Quiz, Essay and Debate competitions both online and offline on the subject of the Constitution of India. The Ministry of External Affairs directed all overseas Indian schools to celebrate 26 November as “Constitution Day”. At the campus of Universal College of Engineering, 35 NSS Volunteers read the Preamble of India celebrating this day under the Guidance of Ms. Swapnali Onkar and a Talk on Article 51A was arranged.

Scratch Your Head !!

3) Particles of 0.002mm size are that of ?

- ❖ Clay
- ❖ Gravel
- ❖ sand
- ❖ None of these

CANVAS



-Archit Binoy
S.E. Civil

Life of Engineering College Students

The word Engineer is derived from a Latin word “Ingeniare” and “Ingenium” which means to create, generate, contrive, devise, and cleverness respectively. Thus, the student who opts engineering as their career has been cultivated with all the above qualities. The most important and ironically funny part is that, we not only get prepared to deal with these practically but also in our real life, the programme not only trains our brain to develop technically but also helps our mind to deal with all the crucial conditions tactfully.

Thus, the entire environment of the programme helps the individual to address the core of humans that is intellect, mental and emotional. This might not be realized by the individual when they are taking the courses but they will surely get struck by the fact when they pass out the course.

Further dissecting the above statements, some instincts which are similar to an engineering persuading student to someone who is employed on a job are the long working hours, last minute edits before submissions, dealing with the stress of project and submission, these are the things which are often criticized by an individual as an engineering student, but after leaving the course are surely some of the factors which are appreciated.

The peers and the teachers that a student encounters while the course plays a vital role too, but that is where the individual learns the other moral ethics of understanding, respecting the authoritative figures and thereby inculcating respect for each and every individual around them.

The entire course is of four years which is equal to one thousand four hundred and sixty days, which play an indispensably essential role in a student’s life, they learn about the technicality of their field which is earnestly beautiful as they go to the roots of the a particular area of our day to day life.

To conclude, engineering is a programme so well designed that it helps to enhance most of the qualities of an individual which are important at a personal level, to strive through the rest of the life and the environment provides the necessary auxiliary for the same. Thus, the life of an engineering student is one of the most challenging life, full of various tasks which helps them grow as an individual.

-Kasturee Kelbaikar
B.E. Civil

Scratch Your Head!!

3) *Symon’s rain gauge is?*

- ❖ *Tipping-bucket gauge*
- ❖ *Float recording gauge*
- ❖ *Weighing type gauge*
- ❖ *Non-recording gauge*

Page 08:- Upcoming Events

AURORA 2K19

After completion of a semester for the year, the students of ACES invite you all on behalf of Department of Civil Engineering to participate with the same enthusiasm and dedication to Aurora 2k19. Aurora 2k19 is Sports-cum-Cultural festival to be held at Universal College of Engineering from 11th January 2019 to 18th January 2019. This festive showcase your Calibre, Hidden talent and Sports man spirit by participating in various activities to be conducted. This include indoor sports (Carrom, Table Tennis etc) and outdoor sports (kho-kho, Langdi, cricket etc) and Cultural events like Drama, Dance, Rangoli, Fashion Show etc.

STTP Workshop

Institution of Engineers (IEI), Belapur local centre in association with Dept. of Civil engineering of Universal college of engineering is conducting a one-week short term training programme on "Advancement in Concrete Technology" from 16th Dec to 20th Dec 2019 in UCOE campus.

The main objective of this program is to make engineers aware of the future challenges in concrete. To learn about the properties of cement, fly-ash, aggregate, micro-fine materials, admixtures and concrete. To understand and learn concrete mix design calculation for normal, high strength and high-performance concrete by recently revised IS: 10262- 2019 and ACI 211.1 methods. This program also includes the demonstration of basic lab tests at RMC site.

Course content for the workshop are as follow: -

- Concrete and its constituents
- Properties of concrete
- Aggregates in high strength concrete
- Strength and Durability of the concrete
- Design of Concrete Mixes by IS:10262-2019
- Design of high-performance concrete mixes by IS: 10262-2019
- Design of concrete mixes by ACI 211.1

Training would be given by prominent industry person with more than 25+ years of experience. We also have a prominent advisory committee from IEI. This workshop is beneficial for students, faculties and industry professionals.



The poster is for a one-week short-term training programme titled "ADVANCEMENT IN CONCRETE TECHNOLOGY" held from 16th Dec to 20th Dec '19. It is organized by Vidya Vikas Education Trust's Universal College of Engineering, Gujarati Linguistic Minority Institution, and The Institution of Engineers (India), Belapur Local Center. The poster lists guest speakers, an advisory committee, course content, and contact information for convener and co-convener.

Vidya Vikas Education Trust's Universal College of Engineering
Gujarati Linguistic Minority Institution
The Institution of Engineers (India), Belapur Local Center
Collaborated
ONE WEEK SHORT TERM TRAINING PROGRAMME on
ADVANCEMENT IN CONCRETE TECHNOLOGY
16th Dec to 20th Dec '19

Guest Speakers:

- Mr. Sanjeev raje
Technical Vice-President
M/s Navdeep Const. Co.
Exp: 25+ years
- Mr. Mahesh Tendulkar
Director,
Concrete Research & Engg Services Pvt. Ltd
Exp: 25+ years
- Mr. Shrikant Varpe
Project Manager
Square Const. Pvt. Ltd.
Exp: 13+ years
- Mr. Hiren Joshi
Director,
Global Lab
Exp: 10+ years
- Mr. Ibrahim Shaikh
Working with Sika India Pvt.Ltd
Exp: 10+ years

Advisory Committee:

- Mr.K.K Varkhedkar
Chairman
IEI BLC
- Dr. S.C. Nimkar
Hon. Secretary
IEI BLC
- Dr. M.B. Dagaonkar
Council Member
IEI

Registration Fees:
Students ₹ 600
Faculty ₹ 1500
Industry ₹ 2000

Course Content:

- Concrete & its constituents.
- Properties of concrete.
- Aggregates in high strength concrete.
- Strength & Durability of Concrete.
- Design of Concrete mixes by IS:10262 - 2019.
- Design of high-performance Concrete mixes by IS:10262 - 2019.
- Design of Concrete mixes by ACI 211.1.
- Mix proportioning by Digital computer.

CONVENER: Mr. Yuvraj Chavda
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ANSWERS to "Scratch Your Head"

- 1) 10 2) spirit varnish 3) clay 4) non-recording gauge

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