

I B.Tech I Semester Supple Examinations, November-2020

Sub Code: 19BCC1TH01

COMMUNICATIVE ENGLISH - I

Time: 3 hours

(Common to CE, EEE, ME, ECE, CSE, IT)

Max. Marks: 60

Note: Answer All FIVE Questions.

All Questions Carry Equal Marks (5 X 12 = 60M)

Q.No	Questions	Marks								
1	<b>Unit-I</b>									
	i) Discuss Sony's relationship with music and media highlighting how Morita defied Japanese society's expectations.	[6M]								
	ii) Describe in a paragraph your college campus expressing your impressions of the library, cafeteria and sports facilities.	[3M]								
	iii) Fill in the gaps with correct option of the words given in brackets. Sandhya is looking for a pair of walking (1) _____ (footwear/shoes) for an excursion with her friends. She is looking forward to the (2) _____ (journey/journeys) as she has heard a lot about the beautiful (3) _____ (scenery/scenarios) of Shimla. She is excited about the trip. She is eager to meet a lot of new (4) _____ (people/peoples) and make new friends. Sandhya hopes to create memorable (5) _____ (experience/experiences) and gain (6) _____ (knowledge/knowledges) about diversity in our country.	[1/2x 6=3M]								
	<b>OR</b>									
	i) Describe Akio Morita's character and values throwing light on his childhood responsibilities and his American experience.	[6M]								
	ii) Describe in a paragraph profiles of your parents or any two family members expressing how they made an impression on your life.	[3M]								
	iii) Fill the following table with the appropriate forms of the given words	[1/2x 6=3M]								
	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 25%;">Noun</th> <th style="width: 25%;">Verb</th> <th style="width: 25%;">Adjective</th> <th style="width: 25%;">Adverb</th> </tr> </thead> <tbody> <tr> <td></td> <td style="text-align: center;">interest</td> <td></td> <td></td> </tr> </tbody> </table>	Noun	Verb	Adjective	Adverb		interest			
Noun	Verb	Adjective	Adverb							
	interest									

a	i) Explain how Ambani changed Indian Corporate history detailing why polyester was a significant part of his life.	[8M]
	ii) Write a coherent paragraph on "an invention you would like to see in your lifetime."	[4M]
OR		
b	i) Sketch the character of Dhirubhai Ambani.	[4M]
	ii) Fill in the blanks with suitable connections given in the brackets. 1. Most of the youngsters stayed up late ____ they were tired after the long trek. (although, despite) 2. They went out for a run ____ the hot and humid weather. (although, despite) 3. I enjoy the Chemistry course ____ Prof. Rao who is a good teacher. (because, because of) 4. He looks ____ your friend Ravi. (as if, like) 5. She read a newspaper ____ she was waiting for the doctor to see her. (during, while) 6. When she is happy her eyes shine ____ stars. (as if like) 7. They are professional enough to complete the project, ____ the differences of opinion. (although despite) 8. ____ their interest in stars and planets, they decided to study astronomy. (in spite of, because of)	[1/2x 8=4M]
	iii) Each erroneous sentence given below has one extra word. Rewrite the following sentences after removing that error. 1. Shall I book for a cab to go to the railway station? 2. Ravali and Chinmay are going to a play at this evening. 3. We got some of bread from the super market. 4. The journey from Hyderabad airport to the home takes about one hour.	[1/2x 8=4M]

	<p>5. We are going to the theatre on Sunday at evening.</p> <p>6. The postman delivers a mail in the morning.</p> <p>7. Sunny always goes to the bed and gets up early for jogging.</p> <p>8. You can go to there and return in a day.</p>	
3	Unit-III	
a	<p>i) In comparison to its earlier system, how did Braille system transform the reading method for the blind?</p>	[6M]
	<p>ii) Fill in the gaps with most suitable words from the list given below.</p> <p>creation, acceptance, prevails, countered, exploited, ironical</p> <p>It is (1) _____ that diversity, which is one of the most beautiful characteristics of (2) _____ could cause problems in human society. Confusion (3) _____ because of lack of knowledge and understanding. Differences such as language, race, religion and nationality are (4) _____ by anti-social beings who have self-serving agendas. This can be (5) _____ by developing a social ecosystem that fosters harmony. What we need is real (6) _____ of differences, rather than mere tolerance.</p>	[1/2x 6=3M]
	<p>iii) Fill in the gaps with the appropriate reporting verb to serve the purpose given in the brackets from the given list. states</p> <p>states, implies, proves, explains, emphasizes, describes</p> <p>1. Stine _____ the importance of Bloom's Taxonomy in educational assessment. (give particular importance to)</p> <p>2. In a journal article, Stark _____ how information technology has changed the world around us. (describe in detail by providing relevant facts)</p> <p>3. Gupta _____ there is a link between obesity and</p>	[1/2x 6=3M]

genes. (SHOW THAT SOMETHING MUST BE TRUE)

4. Patel \_\_\_\_\_ that historians have misinterpreted the period. (say indirectly)

5. Wayne \_\_\_\_\_ that achieving goals involves lot of planning and strategic implementation. (say directly)

6. Sheldon \_\_\_\_\_ the process of strategic management. (explain in detail)

OR

i) Illustrate with textual examples, how Braille's loss of vision and his character resulted in developing a new reading system for the blind.

[6M]

ii) Fill in the blanks with suitable forms of the verbs given in brackets.

1. We \_\_\_\_\_ (watch) a movie last evening.

2. Jyothi \_\_\_\_\_ (contribute) articles to the college magazine for the last two years.

3. They always \_\_\_\_\_ (drink) coffee at breakfast.

4. He \_\_\_\_\_ (live) here all his life.

5. After I tour France next summer, I \_\_\_\_\_ (be) to ten countries.

6. If I \_\_\_\_\_ (wake up) early this morning, I would not have missed the bus.

[1/2x  
6=3M]

iii) Rewrite the following passage after correcting the six errors in subject verb agreement.

Sreeja and Anvita are really bored. They have a lot of homework to complete but neither of them want to do it. Instead, they decides to go to a shopping mall. When the girls arrive at the mall, they notices that some of the stores offer discounts to their customers. They buy shoes and dresses, and enjoys a few treats. After a little while, Sreeja want to go to the gaming zone, but Anvita is tired. Since they could not decide on what to do, they just goes home.

[1/2x  
6=3M]

4

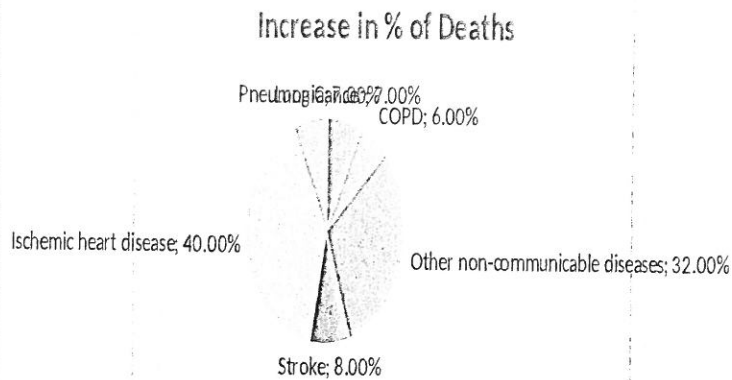
Unit-IV

a i) Compare how TAFE changed from the year of its inception to 2000s in the light of initiatives

[6M]

taken by Mallika.

ii) Interpret the pie chart given below while analyzing the effect of air pollution on health in Europe where 790,000 excess deaths due to ambient air pollution are reported every year.



Source: European Society of Cardiology, Mar 12, 2019

[6M]

OR

i) What were Mallika Srinivasan's sources of motivation and inspiration and how did she deal with the setbacks she faced?

[6M]

ii) Write the antonyms of the following words.

1. transition
2. contradict
3. regular
4. absolute
5. experimentally
6. abrupt

[1/2x  
6=3M]

iii) Write the synonyms of the following words.

1. amiable
2. reliable
3. intelligent
4. vibrant
5. rude
6. shy

[1/2x  
6=3M]

5

Unit-V

a i) Choosing textual examples, illustrate how Yunus contributed to the Grameen Bank's success?

[6M]

ii) Write an essay on how best to use social media

[6M]

	for educational activities.	
	OR	
	i) Write an essay on how engineering students can leverage technology for learning.	[6M]
b	ii) Give the meanings of the following phrases and use them in sentences of your own. 1. stuck in a rut 2. egging someone on 3. look promising 4. to take to heart 5. ins and outs 6. come in handy	[6M]

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I B.Tech I Semester Supple. Examinations, November-2020

Sub Code: 19BCC1TH02

ENGINEERING PHYSICS

Time: 3 hours

(Common to CE, ME, ECE)

Max. Marks: 60

Note: Answer All FIVE Questions.

All Questions Carry Equal Marks (5 X 12 = 60M)

Q.No	Questions	Marks
<b>Unit-I</b>		
1	a i) Discuss the differences between Fresnel's and Fraunhofer diffraction. A plane diffraction grating has the value of grating constant equal to $15 \times 10^{-4} \text{cm}$ . calculate the position of the third order maximum for $\lambda = 2.4 \times 10^{-4} \text{cm}$ .	[6M]
	ii) Differentiate Quarter wave and Half wave plate.	[6M]
	OR	
	b i) Discuss the procedure for finding the wavelength of light using Newton's rings.	[6M]
	ii) Explain the Fraunhofer diffraction pattern at single slit with a neat sketch.	[6M]
<b>Unit-II</b>		
2	a Discuss the construction and working of He-Ne laser with neat sketch of energy level diagram. Discuss any five characteristics of Laser in detail.	[12M]
	OR	
	b i) Mention the expression for the numerical aperture of an optical fibre. Discuss its significance.	[4M]
	ii) Differentiate spontaneous and stimulated emission of radiation using energy level diagram.	[4M]
	iii) Discuss the principle of propagation of light through optical fibre using ray optics.	[4M]
<b>Unit-III</b>		
3	a i) Define atomic packing fraction. Obtain the atomic packing fraction for face centered cubic.	[6M]
	ii) State and explain the Bragg's law. Lead Exhibits FCC structure. Each side of the unit cell is of $4.95 \text{ \AA}$ . Calculate the radius of lead atom.	[6M]
	OR	
	b i) Mention the significance of Miller indices in representing the crystal structures. Determine lattice constant for FCC lead crystal of radius $1.746 \text{ \AA}$ . Also find the spacing of (i) (111) planes, (ii) (200) planes and (iii) (220) planes.	[6M]
	ii) Differentiate different Bravais lattices using lattice parameters.	[6M]
<b>Unit-IV</b>		
4	a i) Discuss the physical significance of Maxwell's electromagnetic equation. Mention the Maxwell's equations in differential form.	[6M]
	ii) Differentiate Soft and Hard magnetic materials	[6M]

		OR	
	b	i) Classify the magnetic materials based on magnetic susceptibility and the influence of external magnetic field.	[6M]
		ii) Write the fundamental laws of electro magnetic fields	[6M]
Unit-V			
5	a	i) Derive the Schrodinger time independent wave equation.	[6M]
		ii) State and explain the Hall effect. A copper strip 2.0 cm wide and 1.0 mm thick is placed in a magnetic field with $B=1.5 \text{ wb/m}^2$ . If a current of 200 A is set up in the strip, calculate Hall voltage that appears across the strip. Assume $R_H=6 \times 10^{-7} \text{ m}^3/\text{C}$ .	[6M]
OR			
	b	i) Differentiate Conductors, semiconductors and insulators based on the band theory.	[6M]
		ii) Derive the wavelength of matter waves using de Broglie hypothesis. An enclosure filled with helium is heated to 400K. A beam of He-atoms emerges out of the enclosure. Calculate the de Broglie wavelength associated to He atoms. Mass of He atoms is $6.7 \times 10^{-27} \text{ kg}$ .	[6M]

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I B.Tech I Semester Supple. Examinations, November-2020

Sub Code: 19BCC1TH03

LINEAR ALGEBRA AND CALCULUS

Time: 3 hours

(Common to CE, EEE, ME, ECE, CSE, IT)

Max. Marks: 60

Note: Answer All FIVE Questions.

All Questions Carry Equal Marks (5 X 12 = 60M)

Q.No	Questions	Marks
1	Unit-I	
	a) Find the value of k so that the rank of the matrix $A = \begin{bmatrix} 4 & 4 & -3 & 1 \\ 1 & 1 & -1 & 0 \\ k & 2 & 2 & 2 \\ 9 & 9 & k & 3 \end{bmatrix}$ is three.	[6M]
	ii) Solve the following system of equations by the Gauss-Jordan method: $x + y + z = 9, \quad x - 2y + 3z = 8, \quad 2x + y - z = 3$	[6M]
	OR	
	b) Apply LU decomposition method to solve the following system of equations: $3x + 2y + 7z = 4, \quad 2x + 3y + z = 5, \quad 3x + 4y + z = 7$	[12M]
2	Unit-II	
	a) Find the eigen values and the eigen vectors of the matrix $\begin{bmatrix} 5 & 4 \\ 1 & 2 \end{bmatrix}$	[6M]
	ii) Obtain the canonical form of the quadratic form $2x^2 + 2y^2 + 2z^2 - 2xy - 2yz - 2zx$ got by an orthogonal transformation. Hence indicate its nature, rank, index and signature.	[6M]
	OR	
	b) i) Verify Cayley-Hamilton theorem for the matrix $A = \begin{bmatrix} 1 & 4 \\ 2 & 3 \end{bmatrix}$ and find its inverse	[6M]
ii) For the nonsingular matrix $A = \begin{bmatrix} 1 & 3 & 4 \\ 0 & 2 & 5 \\ 0 & 0 & 3 \end{bmatrix}$ , find the eigen values of $A^2, A^{-1}$ .	[6M]	

Unit-III		
3	a	i) In the mean value theorem $f(x + h) = f(x) + hf'(x + \theta h)$ , show that $\theta = \frac{1}{2}$ for $f(x) = px^2 + qx + r$ in $(0, 1)$ . [6M]
		ii) Use Cauchy's mean value theorem to evaluate $\lim_{x \rightarrow 1} \left[ \frac{\cos(\pi x/2)}{\log(1/x)} \right]$ [6M]
	OR	
	b	i) If $0 < a < b$ , prove that $1 - \frac{a}{b} < \log \frac{b}{a} < \frac{b}{a} - 1$ and hence deduce that $\frac{1}{6} < \log 1.2 < \frac{1}{5}$ . [6M]
	ii) Find the maximum and minimum values of $3x^4 - 2x^3 - 6x^2 + 6x + 1$ in the interval $(0, 2)$ . [6M]	
Unit-IV		
4	a	i) If $u = x^2 + y^2 + z^2$ and $x = e^{2t}$ , $y = e^{2t} \cos 3t$ , $z = e^{2t} \sin 3t$ . Find $\frac{du}{dt}$ , as a total derivative and verify the result by direct substitution. [6M]
		ii) If $u = e^{xyz}$ , find the value of $\frac{\partial^3 u}{\partial x \partial y \partial z}$ [6M]
	OR	
	b	i) Find the points on the surface $z^2 = xy + 1$ nearest to the origin. [6M]
	ii) Expand $f(x, y) = \sin xy$ in powers of $(x - 1)$ and $(y - \pi/2)$ upto the second degree terms. [6M]	
Unit-V		
5	a	i) Evaluate $\int_0^1 \int_{y^2}^1 \int_0^{1-x} x \, dz \, dx \, dy$ [6M]
		ii) Find by double integration, the area lying between the parabola $y = 2 - x^2$ and the line $y = x$ [6M]
	OR	
	b	i) Evaluate the following integral by changing to polar co-ordinates $\iint xy(x^2 + y^2)^{n/2} \, dx \, dy$ over positive quadrant of $x^2 + y^2 = 4$ supposing $n > -3$ [6M]
		ii) Find by triple integration, the volume of the sphere $x^2 + y^2 + z^2 = a^2$ . [6M]

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## I B.Tech I Semester Supplementary Examinations, November 2020

Sub Code: 19BCC1TH04

ENGINEERING DRAWING

Time: 3 hours

(Common to CE & ME)

Max. Marks: 60

Note: Answer All FIVE Questions.

All Questions Carry Equal Marks (5 X 12 = 60M)

Q.No	Questions	Marks
<b>Unit-I</b>		
1	a Construct a Parabola when the distance between focus and directrix is 40mm. Draw tangent and normal at any point on it.	
	OR	
2	b The distance between two stations by road is 200 km and it is represented on a certain map by a 5 cm long line. Find the R. F. and construct a diagonal scale showing a single kilometer and long enough to measure up to 600 km. Show a distance of 467 km on this scale.	
	<b>Unit-II</b>	
3	a A line EF 85 long has its ends 25 mm above HP and 20 mm in front of V.P. The top and front views of the line have lengths of 55 mm and 70 mm respectively. Draw the projections of the line and find its true inclinations with the V.P and H.P.	
	OR	
4	b The HT and the VT of a straight line AB is below and above XY respectively. The distance between the HT and the VT as measured parallel to XY is 200mm. The end B of the line is nearer to the VP than the end A. The view from above of the line makes 30° to XY. The end B is 10 mm from the VP and 20 mm from the HP. The distance between the end projectors of the line measures 50mm parallel to XY. Draw the projections of the line	
	<b>Unit-III</b>	
5	a A hexagonal plate of side, 40mm, is resting on a corner in VP with its surface making an angle of 30° with the VP. The front view of the diagonal passing through that corner is inclined at 45° to the line, xy. Draw the projections of the plate.	
	OR	
6	b Draw the projections of a circle of 50 mm diameter having a point on the circumference of the circle in H.P, such that its surface makes an angle of 40° with H.P. and the top view of the diameter passing through that point makes an angle of 30° with V.P. Draw the projections.	
	<b>Unit-IV</b>	
7	a A pentagonal pyramid, base 25mm side and axis 50mm long has one of its triangular faces in the V.P. Draw its projections.	
	OR	
8	b A hexagonal pyramid of base side 30mm and axis height 60mm is resting on its base on HP with two of the base edges parallel to VP. It is cut by a plane perpendicular to VP, inclined 30° to HP and bisects the axis of the pyramid. Draw the development of the lateral surfaces of the lower portion of the pyramid.	
	<b>Unit-V</b>	

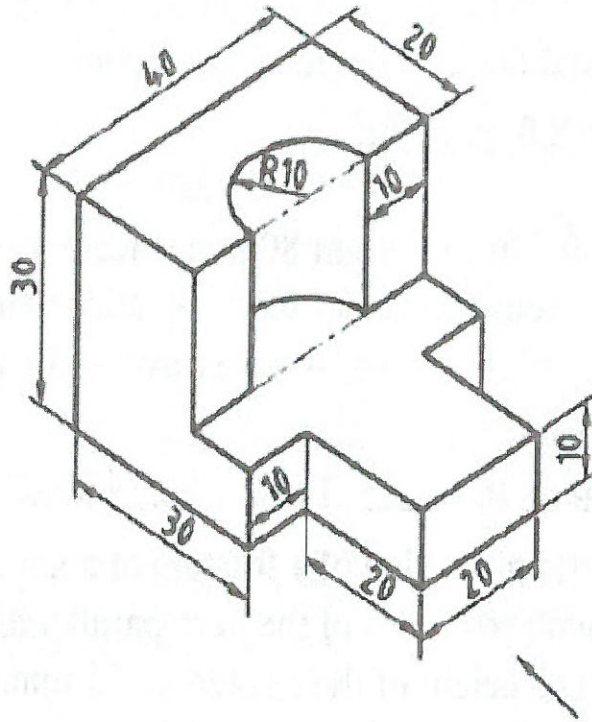
a

A pentagonal pyramid, 30mm edge of base and 65mm height stands on HP such that an edge of the base is parallel to VP and nearer to it. A section plane perpendicular to VP and inclined at  $30^\circ$  to HP cuts the pyramid passing through a point on the axis at a height of 35 mm from the base. Draw the isometric view of the truncated pyramid, showing the cut surface.

OR

b

Draw the front, top and right side views of the object shown in Fig



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**I B.Tech I Semester Supple. Examinations, November-2020**

**Sub Code: 19BCC1TH05**

**PROBLEM SOLVING WITH PYTHON**

Time: 3 hours

(Common to CE, ECE)

Max. Marks: 60

Note: Answer All FIVE Questions.

All Questions Carry Equal Marks (5 X 12 = 60M)

Q.No	Questions	Marks
<b>Unit-I</b>		
1	a	i) Explain data representation in computers. [6M]
		ii) How is information represented in hardware memory? [6M]
	OR	
	b	i) Write an algorithm that describes a common task, such as baking a cake or operating a DVD player. [6M]
	ii) Explain different types of computers. [6M]	
<b>Unit-II</b>		
2	a	Describe raptor flowchart symbols and draw a flow chart for prime number generation. [12M]
	OR	
	b	i) Draw flow chart for unit converter [4M]
		ii) Draw raptor symbols for Assignment, Call, Selection and loop [4M]
iii) How do we use Array variables in raptor, give with simple example. [4M]		
<b>Unit-III</b>		
3	a	i) The math module includes a pow function that raises a number to a given power. The first argument is the number, and the second argument is the exponent. Write a code segment that imports this function and calls it to print the values 8 <sup>2</sup> and 5 <sup>4</sup> . [6M]
		ii) Write a program that calculates and prints the number of minutes in a year [6M]
	OR	
	b	i) Write a program that takes the radius of a sphere (a floating-point number) as input and outputs the sphere's diameter, circumference, surface area, and volume. [6M]
ii) Write a loop that prints the first 128 ASCII values followed by the corresponding characters [6M]		
<b>Unit-IV</b>		
4	a	i) Assume that data refers to a list of numbers, and result refers to an empty list. Write a loop that adds the nonzero values in data to the result list. [6M]
		ii) Give three examples of real-world objects that behave like a dictionary [6M]
	OR	
	b	i) Define a function named even. This function expects a number as an argument and returns True if the number is divisible by 2, or it returns False otherwise. [6M]
ii) Write a program that inputs a text file. The program should print all of the unique words in the file in alphabetical order. [6M]		
<b>Unit-V</b>		
5	a	i) Explain the polymorphism concept with an example. [6M]
		ii) Explain about key press event and mouse events with an example. [6M]
	OR	
	b	i) Outline a bar chart using turtle in python. [6M]
ii) Explain the Exception handling using try and catch blocks. [6M]		

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**I B.Tech I Semester Supple. Examinations, November-2020**

**Sub Code: 19BCI1TH06 ELECTRONIC DEVICES AND LOGIC DESIGN**

**Time: 3 hours (Common to CSE & IT) Max. Marks: 60**

**Note: Answer All FIVE Questions.**

**All Questions Carry Equal Marks (5 X 12 = 60M)**

Q.No	Questions	Marks
1	<b>Unit-I</b>	
	a	i) Draw and explain the PN junction Diode Characteristics along with Forward and reverse bias. <span style="float: right;">[6M]</span> ii) What is Rectifier? Explain the operation of Full Wave and derive the ripple factor and efficiency <span style="float: right;">[6M]</span>
	OR	
	b	i) Draw and explain the operation Zener diode along with its characteristics <span style="float: right;">[6M]</span> ii) Draw and explain the circuit diagram of Bridge rectifier with inductor filter along with output wave forms <span style="float: right;">[6M]</span>
	<b>Unit-II</b>	
	a	Explain the I/P and O/P characteristics of CE configuration and prove $I_E = I_B + I_C$ <span style="float: right;">[6M]</span>
2	b	List out the few comparisons of BJT and FET along with advantages <span style="float: right;">[6M]</span>
	OR	
	b	i) Draw the circuit diagram of Enhancement mode MOSFET and explain its operation <span style="float: right;">[4M]</span> ii) Explain the I/P and O/P characteristics of CB configuration <span style="float: right;">[4M]</span> iii) List out few Comparison Between JFET & MOSFET in detail <span style="float: right;">[4M]</span>
	<b>Unit-III</b>	
3	a	i) Convert the following to Decimal and then to octal (i) $(148F)_{16}$ (ii) $(110111011)_2$ (iii) $(372)_{10}$ (IV) $(FAB)_{16}$ <span style="float: right;">[8M]</span> ii) What are Universal gates? Explain the importance of Universal gates with one example <span style="float: right;">[6M]</span>
	OR	
	b	i) Simplify the following using K- map and implement the same using NAND gates. $Y(A, B, C, D) = \sum (0, 2, 4, 5, 6, 7, 9, 11, 12, 14, 15)$ <span style="float: right;">[6M]</span> ii) Obtain the Dual of the following Boolean expressions (i) $x'yz + x'yz' + xy'z + xy'z'$ (ii) $x'yz + xy'z' + xyz + xyz'$ (iii) $x'z + x'y + xy'z + yz$ <span style="float: right;">[6M]</span>
	<b>Unit-IV</b>	
4	a	i) Define Multiplexer? explain the procedure to implement 4X1 Multiplexers in detail <span style="float: right;">[6M]</span> ii) Draw the logic diagram of a JK flip- flop and using excitation table explain its operation <span style="float: right;">[6M]</span>
	OR	



	b	i) Explain the following terms in detail (i) Encoder (ii) Decoder	[6M]
	b	ii) Define Flip-flop? Draw and explain the construction detail of T-flip flop along with truth table	[6M]
	Unit-V		
5	a	i) Draw the circuit diagram of Universal Shift Register and explain its operation in detail	[6M]
		ii) Design a MOD-10 Counter and explain its operation	[6M]
	OR		
	b	i) Draw the circuit diagram of Bidirectional Shift Register and explain its operation	[6M]
		ii) What is Counter? Design a Ring counter and explain its operation in detail	[6M]

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*(T. RAVI KANTH)  
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Asst Prof  
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**I B.Tech I Semester Supple. Examinations, November-2020**

Sub Code: 19BCC1TH07

**ENGINEERING CHEMISTRY**

Time: 3 hours

(Common to EEE, CSE, IT)

Max. Marks: 60

Note: Answer All FIVE Questions.

All Questions Carry Equal Marks (5 X 12 = 60M)

Q.No.	Questions	Marks
1	Unit-I	
	a i) Explain ion-exchange process for softening of hard water	[6M]
	ii) Explain break-point chlorination of water.	[6M]
	OR	
	b i) Describe how alkalinity can be determined in a given sample of water.	[6M]
ii) Define hardness, temporary and permanent hardness. Calculate the amount of lime required for softening 25, 000 liters of hard water containing Ca(HCO <sub>3</sub> ) <sub>2</sub> = 8.1 ppm, Mg(HCO <sub>3</sub> ) <sub>2</sub> = 7.3 ppm, CaSO <sub>4</sub> = 13.6 ppm, MgCl <sub>2</sub> = 9.5 and MgSO <sub>4</sub> = 12 ppm	[6M]	
2	Unit-II	
	a Explain the mechanism of free radical polymerization? Describe compression and injection moulding techniques of plastics.	[12M]
	OR	
	b i) Explain how moisture and volatile matter determined by proximate analysis of coal and their significance.	[4M]
	ii) What is meant by knocking and anti-knocking agents?	[4M]
iii) What is calorific value? Calculate the gross and net calorific value of coal having the following composition: C = 78%, H = 9%, O = 5%, S = 2%, N = 5% and rest ash.	[4M]	
3	Unit-III	
	a i) Write a short note on composite materials with their applications.	[6M]
	ii) Explain how carbon nanomaterials are characterized by TEM and BET methods.	[6M]
	OR	
	b i) Describe any two methods for preparation of carbon nanotubes.	[6M]
ii) Define liquid crystals? Explain thermotropic liquid crystals.	[6M]	
4	Unit-IV	
	a i) Explain any five factors affecting the rate of corrosion.	[6M]
	ii) What are batteries? Explain its types with examples.	[6M]
	OR	
	b i) Discuss the constituents of paints and their functions.	[6M]
ii) What are reference electrodes? Explain the construction of hydrogen electrode.	[6M]	
5	Unit-V	
	a i) Describe the mechanism of fluid film and extreme pressure lubrication.	[6M]
	ii) What is refractory? Explain refractoriness under load	[6M]
	OR	
	b i) Discuss the setting and hardening of cement.	[6M]
ii) Explain (i) fire and flash point (ii) aniline point	[6M]	

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**I B.Tech I Semester Supple. Examinations, November-2020**

Sub Code: 19BEE1TH08    **BASICS IN MECHANICAL AND CIVIL ENGINEERING**

Time: 3 hours

(EEE)

Max. Marks: 60

Note: Answer All FIVE Questions.

All Questions Carry Equal Marks (5 X 12 = 60M)

Q.No	Questions	Marks
1	<b>Unit-I</b>	
	a	i) Name any four classification of surveying's based on the instruments used <span style="float: right;">[6M]</span> ii) Write short notes on chain survey and related accessories <span style="float: right;">[6M]</span>
	OR	
b	The following perpendicular offsets were taken at 10m intervals from a survey line to an irregular boundary line: 3.15m, 4.30m, 8.20m, 6.85m, 7.60m, 4.20m, 5.60m, and 4.30m. Calculate the area enclosed between the survey line, irregular boundary line, first and last offsets by trapezoidal rule. <span style="float: right;">[12M]</span>	
2	<b>Unit-II</b>	
	a	What are the different types of cements? Explain their properties and uses. <span style="float: right;">[12M]</span>
	OR	
	b	i) State the qualities of good bricks. <span style="float: right;">[4M]</span> ii) Sketch any four steel sections that are commonly used in civil engineering. <span style="float: right;">[4M]</span> iii) What are the requirements of a good building stone? <span style="float: right;">[4M]</span>
3	<b>Unit-III</b>	
	a	i) Explain the working principle of TIG welding <span style="float: right;">[6M]</span> ii) Compare brazing and soldering <span style="float: right;">[6M]</span>
	OR	
	b	i) Discuss different types of resistance welding <span style="float: right;">[8M]</span> ii) State the advantageous and disadvantageous of extrusion operation <span style="float: right;">[4M]</span>
4	<b>Unit-IV</b>	
	a	Categorize the different types of gears with neat sketches and their applications <span style="float: right;">[12M]</span>
	OR	
b	i) State the advantageous and disadvantageous of belt drives <span style="float: right;">[8M]</span> ii) Write short notes on power transmission by chain <span style="float: right;">[4M]</span>	
5	<b>Unit-V</b>	
	a	i) Explain the working principle of two stroke engine with a neat sketch <span style="float: right;">[6M]</span> ii) Make a comparison of a petrol engine and diesel engine based on their operational features. <span style="float: right;">[6M]</span>
	OR	
	b	i) What are the main components of an I.C. engine? <span style="float: right;">[3M]</span> ii) Explain the principle of working of a four stroke Diesel engine with suitable sketches. What are the merits and demerits of four stroke engines? <span style="float: right;">[9M]</span>





### I B.Tech I Semester Supple. Examinations, November-2020

Sub Code: 19BEC1TH09

ENGINEERING GRAPHICS

Time: 3 hours

(ECE)

Max. Marks: 60

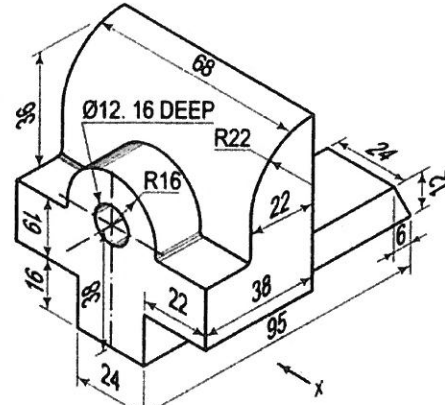
Note: Answer All FIVE Questions.

All Questions Carry Equal Marks (5 X 12 = 60M)

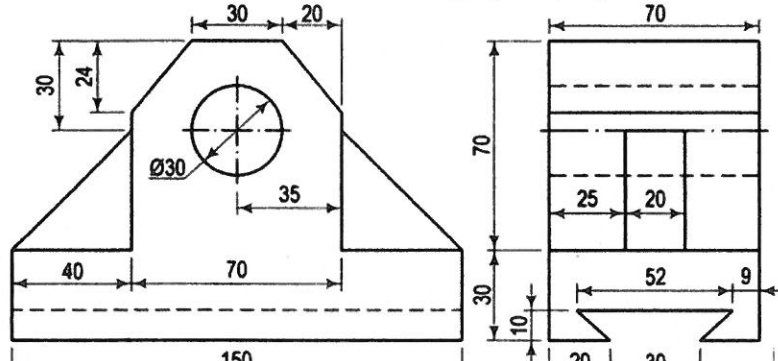
Q.No	Questions	Marks
1	<b>Unit-I</b>	
	a The foci of an ellipse are 90 mm apart and the minor axis is 65 mm long. Determine the length of the major axis and draw the ellipse using concentric-circles method. Also draw a tangent and normal at any point on curve.	[12M]
	<b>OR</b>	
b The distance between a fixed straight line and a fixed point is 65 mm. Trace the path of a point P moving in such a way that the ratio of its distance from the fixed point, to its distance from the straight line is 4/3. Name the curve. Draw a normal and a tangent to the curve at a point on it 50 mm from the fixed point.	[12M]	
2	<b>Unit-II</b>	
	a i) Two points A and B are in the HP. The point A is 30 mm in front of the V.P., while B is behind the V.P. The distance between their projectors is 75 mm and the line joining their top views makes an angle of 45° with xy. Find the distance of the point B, from the V.P.	[6M]
	ii) A straight line AB is 80 mm long and inclined at 45° to H.P. its Elevation measures 60 mm. End A is 20 mm above H.P & 30 mm in front of V.P. Draw its projections and find the inclination of line with V.P.	[6M]
	<b>OR</b>	
b The top view and the front view of the line EF, measures 65 mm and 53 mm respectively. The line is inclined to HP and VP by 30° and 45°, respectively. The end E is on the HP and 10 mm in front of VP. Other end F is in the 1 <sup>st</sup> quadrant. Draw the projections of the line EF and find its true length.	[12M]	
3	<b>Unit-III</b>	
	a i) A hexagonal lamina of side 30 mm rests on one of its edges on HP. This edge is parallel to VP. The surface of the lamina is inclined 60° to HP. Draw its projections.	[6M]
	ii) A pentagonal plate of 30 mm side has a circular hole of 25 mm diameter in its centre. The plane stands on one of its sides on the H.P. with its plane perpendicular to V.P. and 45° inclined to the H.P. Draw the projections.	[6M]
	<b>OR</b>	
b Draw the projections of a circle of 75 mm diameter having the end A of the diameter AB in the H.P., the end B in the V.P., and the surface inclined at 30° to the H.P. and at 60° to the V.P.	[12M]	
4	<b>Unit-IV</b>	
	a A cylinder of diameter 30 mm and axis length 50 mm resting on the H.P. on a point so that its axis is inclined at 45° to the H.P. and parallel to V.P. Draw its top and front views.	[12M]
<b>OR</b>		

b	A pentagonal pyramid has height 60 mm and the side of a base 30 mm. The pyramid rests on one of its sides of the base on the H.P. such that the triangular face containing that side is perpendicular to the H.P. and makes an angle of $45^\circ$ with the V.P. Draw its projections.	[12M]
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**Unit-V**

5	<p>a</p> <p>Draw the (i) Front view (ii) Top view and (iii) Side view for the following figure.</p> 	[12M]
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**OR**

b	<p>Draw the isometric view for the given orthographic projections.</p> 	[12M]
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**I B.Tech I Semester Supple. Examinations, November-2020**

Sub Code: 19BCC1TH10

**C PROGRAMMING**

Time: 3 hours

(Common to EEE, ME, CSE, IT)

Max. Marks: 60

Note: Answer All FIVE Questions.

All Questions Carry Equal Marks (5 X 12 = 60M)

Q.No	Questions	Marks
1	Unit-I	
	a	i) Define identifier, variable, constant, keywords. With example [6M] ii) What are the steps involved in program development process? Explain. [6M]
	OR	
	b	i) Determine the sum and average of n numbers entered from keyboard. With a flowchart represent the same [6M] ii) Write a C program to find the biggest among given 4 numbers (use nested if else). [6M]
	Unit-II	
	a	If a 3 digit integer number is input through the keyboard, write a program to display the number in words. Ex .if input is 210 then output should be "two hundred and ten" [12M]
OR		
b	i) What is recursion? How it is implemented? Explain with example [4M] ii) Illustrate control constructs goto, break, continue [4M] iii) Write a function that checks whether a given year is leap year or not [4M]	
3	Unit-III	
	a	i) Define an array. What are the different types of arrays. Explain. [6M] ii) C program reverse of a given string without strrev() function? [6M]
	OR	
	b	i) How to count a number of vowels and consonants in a String? [6M] ii) Discuss the different ways of passing arrays as a parameter to a function [6M]
	Unit-IV	
a	i) How are the members of a 'Union' are initialized and accessed? [6M] ii) Discuss about the enum data type with example. [6M]	
OR		
b	i) Write a program to swap two numbers using pointers [6M] ii) How is a structure different from an array? Explain with example. [6M]	
5	Unit-V	
	a	i) List and explain the operations of file. [6M] ii) Write a program to copy contents of one file to another file. [6M]
	OR	
	b	i) Mention the different file opening modes that can be used with fopen (). [6M] ii) Write a program to read a text file and count the no of blanks in the text file [6M]

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