

R20

I B.TECH I SEM

REGULAR & SUPPLEMENTARY EXAMINATIONS

APRIL 2022



I B.Tech I Semester Regular & Supple Examinations, April-2022

Subject Code: R20CC1101 Technical and Communicative English-I

Time: 3 Hours Max.Marks:70. Program: B.Tech. Branch: Common to all Branches.

Note: Answer All FIVE Questions.  
All Questions Carry Equal Marks (5 X 14 =70M)

1. A) I) Describe 1990s about narrator in a lesson **A Drawer Full Of Happiness.** [CO1, K3, 8M]  
II) Write *antonyms* for the following words. [CO4, K3, 6M]  
i. Elegant ii. Conservative iii. Staunch  
OR
- B) I) Arrange the following *jumbled sentences*. [CO3, K3, 6M]  
1. is the shortest / in the class / girl / Emma  
2. smallest continent / Australia is the / in the world  
3. stops these rays / the ozone layer / atmosphere / surrounding the earth's  
4. the boots / the gentleman / who ordered  
5. very fascinating / Switzerland is / the sceneries of  
6. Buddhism / preached / a religion / Buddha / called  
II) Write a paragraph on "Actions speak louder than words." [CO2, K6, 8M]
2. A) I) What did Nehru talk about in his first letter, "Book of Nature" to his daughter Indira Priyadarshini? [CO1, K3, 8M]  
II) Fill in the blanks with suitable *articles*. [CO3, K3, 6M]  
1. Let us play \_\_\_\_\_ Chess.  
2. He hopes to join \_\_\_\_\_ university soon.  
3. I go to Delhi by \_\_\_\_\_ Chennai Express.  
4. \_\_\_\_\_ unit means a measurement.  
5. India will become \_\_\_\_\_ super power shortly.  
6. I met \_\_\_\_\_ one eyed beggar on the street  
OR
- B) I) *Correct the following sentences* if necessary [CO3, K3, 6M]  
1. We had gone to the movies last night.  
2. You must attend your teacher's instructions.  
3. They discussed about the whole matter.  
4. We are playing tennis every day.  
5. Neither of the boys have returned.  
6. Mathematics are a very interesting subject  
II) Fill in the blanks with suitable *prepositions*. [CO3, K3, 8M]  
1. The ship sank \_\_\_\_\_ the bottom.  
2. She spanked the boy \_\_\_\_\_ his bottom.  
3. He was punished \_\_\_\_\_ a boyish prank.  
4. The guest speaker turned \_\_\_\_\_ to be a deadly bore.  
5. Mosquitoes breed \_\_\_\_\_ stagnant water.  
6. He is ambitious \_\_\_\_\_ fame.  
7. She died \_\_\_\_\_ cancer.  
8. He threw the ball \_\_\_\_\_ the basket.

3. A) I) How does the guide of the walking tour to Cambridge describe Hawking? [CO1, K3, 8M]  
 II) Write a formal letter to your HOD to provide adequate subject books in the department library for reference. [CO2, K6, 6M]

OR

- B) I) Write an E-mail cover letter and resume applying for the post of Tech Supporting Officer in Microsoft, Hi- Tech City, Hyderabad. [CO2, K6, 14M]

4. A) I) How did her stay in Kansas change Maathai, physically, emotionally and intellectually? [CO1, K3, 8M]

II) Transform the following sentences as directed. [CO3, K3, 6M]

1. Ram is the most talented boy in the class. (change into positive degree)
2. Mr. Verma is the wisest man in the company. (change into comparative degree)
3. Very few cities in India are as beautiful as Lucknow. (change into superlative degree)

OR

- B) I) Write an essay in 200 words on "Banning violent mobile games is the need of the hour " [CO2, K6, 14M]

5. A) I) What are the three stages of Steve Job's life? What kind of message does his address give the students? [CO1, K3, 8M]

II) Change the following sentences into reported speech. [CO3, K3, 6M]

- 1) Professor Jones said, "I worked all day!"
- 2) The weatherman says, "It may rain today."
- 3) "I must help your father." My mother will say,

OR

- B) I) Match the following GRE words with their meanings. [CO4, K3, 14M]

Word	Meaning
i. Laconic	i. difficult to accomplish, hard to endure
ii. Insipid	ii. concerned with practical matters
iii. Pragmatic	iii. brief and to the point; effectively cut short
iv. Iconoclast	iv. lacking taste or flavour
v. Arduous	v. someone who attacks cherished beliefs
vi. Abate	vi. loud and chaotic noise
vii. Cacophony	vii. to diminish in intensity



I B.Tech I Semester Regular & Supple Examinations, April-2022

Subject Code: R20CC1102

Linear Algebra & Calculus

Time: 3 Hours

Program: B.Tech.

Max. Marks:70.

Branch: Common to all Branches.

Note: Answer All FIVE Questions.  
All Questions Carry Equal Marks (5 X 14 =70M)

1. I) Determine the values of  $b$  such that the rank of  $A$  is 3. Where  $A = \begin{bmatrix} 1 & 1 & -1 & 0 \\ 4 & 4 & -3 & 1 \\ b & 2 & 2 & 2 \\ 9 & 9 & b & 3 \end{bmatrix}$  [CO1,K5,7M]

II) Solve by Gauss-Jordan method [CO1,K3,7M]

$$x_1 + 3x_2 - 2x_3 + 2x_5 = 0$$

$$2x_1 + 6x_2 - 5x_3 - 2x_4 + 4x_5 - 3x_6 = -1$$

$$5x_3 + 10x_4 + 15x_6 = 5$$

$$2x_1 + 6x_2 + 8x_4 + 4x_5 + 18x_6 = 6$$

OR

B) I) Solve the system  $6x_1 + x_2 + x_3 = 20$  [CO1,K3,7M]

$$x_1 + 4x_2 - x_3 = 6$$

$$x_1 - x_2 + 5x_3 = 7$$

using the Gauss-Seidel iterative procedure. Take zero vector as the initial solution vector.

II) Solve the equations  $2x_1 + 3x_2 + x_3 = 9$  [CO1,K3,7M]

$$x_1 + 2x_2 + 3x_3 = 6$$

$$3x_1 + x_2 + 2x_3 = 8$$

by the method of LU decomposition.

2. A) I) Find the eigen values and eigen vectors of the matrix  $\begin{bmatrix} -1 & 3 & -3 \\ -3 & 5 & -3 \\ -6 & 6 & -4 \end{bmatrix}$  [CO2,K1,7M]

II) Verify Cayley-Hamilton theorem for the matrix  $A = \begin{bmatrix} 1 & 2 \\ 2 & -1 \end{bmatrix}$ . Find  $A^{-1}$ . Determine  $A^8$ . [CO2,K3,7M]

OR

A) I)  $A = \begin{bmatrix} 1 & 2 & 2 \\ 0 & 2 & 1 \\ -1 & 2 & 2 \end{bmatrix}$

Determine the algebraic and geometric multiplicity. [CO2,K5,7M]

II) Find the nature, index, and signature of quadratic form  $2x_1x_2 + 2x_1x_3 + 2x_2x_3$  [CO2,K1,7M]

3. A) I) Given  $y = x^4 + 2x^3 - 3x^2 - 4x + 4$ , find (a) the intervals on which  $y$  is increasing and decreasing, and (b) the maximum and minimum values of  $y$ . [CO3,K1,7M]

II) Obtain the Taylor's series expansion of  $f(x) = x^5 + 2x^4 - x^2 + x + 1$  about the point  $x = -1$ . [CO3,K4,7M]

OR

B) I) Apply Lagrange's mean value theorem to calculate approximate root of the equation  $x^4 - 12x + 7 = 0$  near 2. [CO3,K3,7M]

II) Divide the number 120 into two parts such that the product of one part and the square of the other is a maximum. [CO3,K4,7M]

4. A) I) Expand  $\tan^{-1}(y/x)$  about the point  $(1,1)$  using Taylor's theorem up to the second degree terms. [CO4,K3,7M]

II) The temperature  $T$  at any point  $(x, y, z)$  in space is  $T = 400xyz^2$ . Find the highest temperature at the surface of the unit sphere  $x^2 + y^2 + z^2 = 1$ . [CO4,K1,7M]

OR

B) I) Determine maxima and minima of the function  $f(x, y) = \sin x + \sin y + \sin(x+y)$ . [CO4,K5,7M]

II) If  $x = \sqrt{vw}$ ,  $y = \sqrt{wu}$ ,  $z = \sqrt{uv}$  and  $u = r \sin \theta \cos \phi$ ,  $v = r \sin \theta \sin \phi$ ,  $w = r \cos \theta$ . [CO4,K5,7M]

Calculate  $\frac{\partial(x, y, z)}{\partial(r, \theta, \phi)}$ .

5. A) I) Evaluate  $\iint_R xy dx dy$  where  $R$  is the region in the first quadrant included between  $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$  and  $\frac{x}{a} + \frac{y}{b} = 1$ . [CO5,K5,7M]

II) Evaluate  $\int_0^{\infty} \int_0^{\infty} e^{-(x^2+y^2)} dx dy$  by changing to polar coordinates. [CO5,K5,7M]

OR

B) I) Change the order of integration and hence evaluate  $\int_0^1 \int_x^{\sqrt{2-x^2}} \frac{x}{\sqrt{x^2+y^2}} dy dx$ . [CO5,K5,7M]

II) Find the volume of the ellipsoid  $\frac{x^2}{a^2} + \frac{y^2}{b^2} + \frac{z^2}{c^2} = 1$ . [CO5,K1,7M]



**I B.Tech I Semester Regular & Supple Examinations, April-2022**

Subject Code: R20CC1103

**Engineering Chemistry**

Time: 3 Hours

Program: B.Tech.

Max.Marks:70.

Branch: CE,ME & ECE.

Note: Answer All FIVE Questions.

All Questions Carry Equal Marks (5 X 14 =70M)

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1. A) I) What are Zeolites? How do they function in removing hardness of water? What are the limitations of this process? [CO1,K1,7M]  
II) Explain the desalination of brackish water by reverse osmosis method [CO1,K2,7M]  
**OR**
- B) I) Calculate the amount of lime required for softening 50,000 litres of hard water containing:  $Mg(HCO_3)_2 = 144$  ppm,  $Ca(HCO_3)_2 = 25$  ppm,  $MgCl_2 = 95$  ppm,  $CaCl_2 = 111$  ppm,  $Fe_2O_3 = 25$  ppm,  $Na_2SO_4 = 15$  ppm [CO1,K5,7M]  
II) Explain ION exchange process to remove hardness from water [CO1,K2,7M]
2. A) I) What is natural rubber. Explain vulcanization of natural rubber [CO2,K1,7M]  
II) Explain the mechanism of polymerization through free radicals. [CO2,K2,7M]  
**OR**
- B) I) Calculate the gross and net calorific value of a coal sample having the following the composition: C= 80%, H=7%, O=3%, S=3.5%,N=2.1% and ash = 4.4%. [CO2,K5,7M]  
II) Discuss the proximate analysis of coal and its significance. [CO2,K6,7M]
3. A) I) Describe any one method of preparation of carbon nanotubes? Explain their types in detail. [CO3,K2,7M]  
II) Explain chemical vapour deposition technique of synthesis of nanomaterial [CO3,K2,7M]  
**OR**
- B) I) Brief the polymorphic behaviour of thermotropic liquid crystals with examples [CO3,K2,7M]  
II) Define composite materials and explain various fiber reinforced polymers preparation methods along with applications [CO3,K1,7M]
4. A) I) Discuss the various factors effecting the rate of corrosion. [CO4,K6,7M]  
II) Distinguish a galvanic cell and a concentration cell. Illustrate with examples. [CO4,K2,7M]  
**OR**
- B) I) Describe the construction and working of Lead acid battery. Mention any two applications [CO4,K2,7M]  
II) Illustrate the construction and working of Methanol-oxygen fuel cell. Mention any two applications. [CO4,K2,7M]
5. A) I) Write the different types of mechanism of lubrication [CO5,K1,7M]  
II) Write a short notes on a) Viscosity Index b) Saponification number c) Aniline point d) Acid Value [CO5,K1,7M]  
**OR**
- B) I) Explain the properties of setting and hardening of cement with suitable examples. [CO5,K2,7M]  
II) Enumerate the properties of refractory materials with examples and applications. [CO5,K2,7M]



I B.Tech I Semester Regular & Supple Examinations, April-2022

Subject Code: R20CC1104

Applied physics

Time: 3 Hours

Program: B.Tech.

Max.Marks:70.

Branch: CSE,IT,AI.

Note: Answer All FIVE Questions.

All Questions Carry Equal Marks (5 X 14 = 70M)

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1. A) I) Explain the phenomenon of interference of light due to thin parallel film in reflected system and find the conditions for maxima and minima. [CO1,K2,10 M]  
II) A 0.6 mm thick soap film is viewed at an angle of  $35^\circ$ . If the refractive index of the soap film is 1.23. Calculate the wavelength of the light which will be absent from reflected light in the visible spectrum. [CO1,K3,4 M]
- OR
- B) I) Describe the principle, construction and working of Nicol's prism and show how it can be used as a polarizer or analyser. [CO1,K2,10 M]  
II) Find the thickness of a quarter wave plate and half wave plate when the wavelength of light is  $5890 \text{ \AA}$ . ( $\mu_o = 1.55$  and  $\mu_e = 1.54$ ) [CO1,K3,4 M]
2. A) I) Describe the construction and working of Ruby laser with relevant energy level diagram [CO2,K2,10 M]  
II) What are the advantages and disadvantages of Ruby laser? [CO2,K2,4 M]
- OR
- B) I) Derive an expression for acceptance angle and discuss the concept of acceptance cone for an optical fiber. [CO2,K2,10 M]  
II) Calculate the acceptance angle of a given optical fiber, if the refractive indices of core and cladding are 1.548 and 1.456 respectively. [CO2,K2,4 M]
3. A) I) What are lattice parameters? [CO3,K1,4 M]  
II) Draw neatly the Crystal systems indicating the lattice parameters. [CO3,K2,10 M]
- OR
- B) I) What are Miller indices? Derive an expression for inter-planar spacing between two consecutive planes. [CO3,K5,10 M]  
II) Draw the planes (001) and (111) [CO3,K2,4 M]
4. A) I) What are the fundamental laws of electromagnetism? [CO4,K1,7 M]  
II) Write the Maxwell's equation in integral and differential forms. [CO4,K2,7 M]
- OR
- B) I) Define magnetic susceptibility and permeability. Obtain the relation between them. [CO4,K1,4M]  
II) Write the differences between diamagnetic, paramagnetic, and ferromagnetic substances. [CO4,K1,10 M]
5. A) I) Obtain an expression for the wave function of a particle enclosed in one-dimensional potential box of infinite height. [CO5,K3,10 M]  
II) Find the energy of ground state electron moving in one-dimension infinitely high potential box of width  $20 \text{ \AA}$ . [CO5,K3,4 M]
- OR
- B) I) State and explain Hall effect. [CO5,K1,10 M]  
II) Write any four applications of Hall effect. [CO5,K2 4 M]



**I B.Tech I Semester Regular & Supple Examinations, April-2022**

Subject Code: R20ME1106      **Problem Solving using Python**

Time: 3 Hours

Program: B.Tech.

Max.Marks:70.

Branch: ME.

Note: Answer All FIVE Questions.  
All Questions Carry Equal Marks (5 X 14 =70M)

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1. A) I) Define Algorithm. What are the essential features that need to follow in Algorithm? Write an algorithm for greatest of 3 no.s [CO1,K1,7M]  
II) Define Raptor. Also draw and explain each of symbols used in RAPTOR. Write a program to generate the flowchart by using raptor tool for entering a subject marks and generate the grade according to marks entered (above 90(A), above 80(B), above 70(C)). [CO1,K3,7M]  
**OR**  
B) I) what are the functionalities of operating system. Explain the different types in detail. [CO1,K1,7M]  
II) Discuss about the different conditional statement. Write a program to find out the greatest of 3 no's. [CO1,K3,7M]
2. A) I) What is Python and why we use python also give the application of python?[CO2,K1,7M]  
II) What are literals in python and explain about different literals? [CO2,K1,7M]  
**OR**  
B) I) Write the difference between tuple and list. How can you concatenate two tuples. [CO2,K1,7M]  
II) How to reverse a no in python by using recursion. Also write the algorithm for it.[CO2,K3,7M]
3. A) I) What is zip() in python and also explain the different type of functions used in python. [CO3,K1,7M]  
II) What is dataframe in python? Write a program for creating a indexes Dataframe using arrays. [CO3,K3,7M]  
**OR**  
B) I) How to overload constructor or methods in Python. Explain it with program [CO3,K3,7M]  
II) What is turtle in python? Write the steps of plotting using turtle and also write a program to draw a "Hexagon" by using turtle in python [CO3,K1,7M]
4. A) I) What is dictionary? How to create and access dictionary in python explain with program [CO4,K3,7M]  
II) What are the different file processing modes in python? How to write in text file using python [CO4,K1,7M]  
**OR**  
B) I) Define Set with syntax. Also write 6 set methods used in python. [CO4,K1,7M]  
II) How to convert list into dictionary in python. Also write a program for sort dictionaries in python. [CO4,K3,7M]
5. A) I) Define errors and it types in exception handling. [CO5,K1,7M]  
II) How and when multiple exception handling takes place explains it through program. [CO5,K3,7M]  
**OR**  
B) I) Define inheritance. Write a program to show that a derived class doesn't inherit access to private data members but it does inherit a full parent object. [CO5,K1,7M]  
II) What is function overloading how it is different from overriding? [CO5,K1,7M]



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I.B.Tech I Semester Regular & Supple Examinations, April-2022

Subject Code: R20CC1107

Engineering Mechanics

Time: 3 Hours

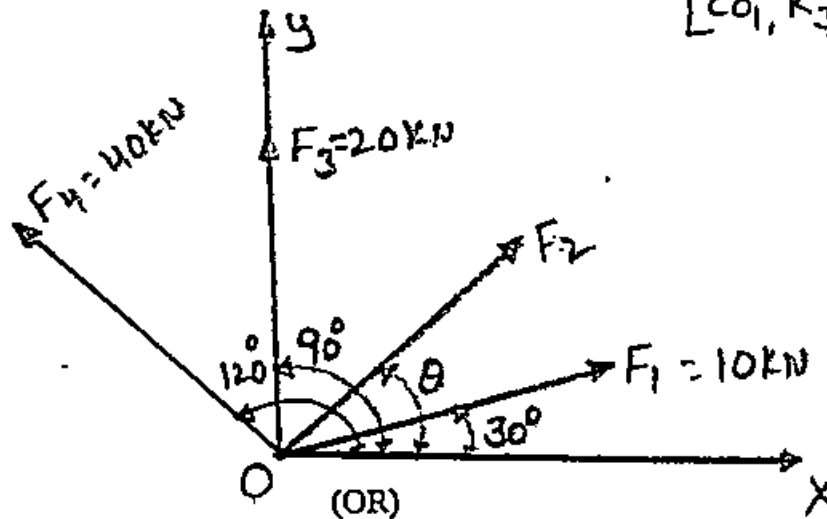
Program: B.Tech.

Max.Marks:70.

Branch: CE & ME.

Note: Answer All FIVE Questions.  
All Questions Carry Equal Marks (5 X 14 = 70M)

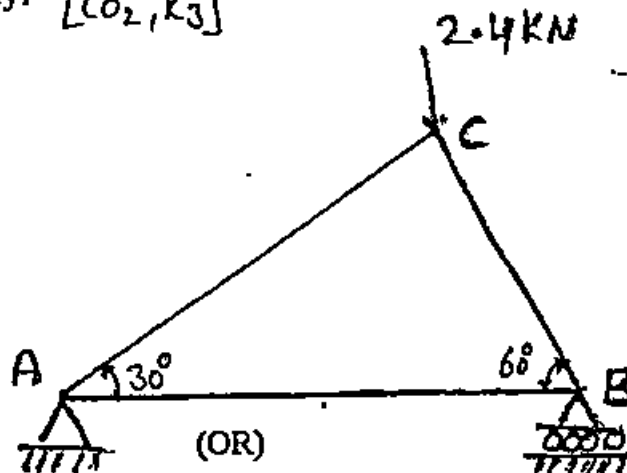
1. A) The resultant of four forces which are acting at a point O as shown in figure below is along Y-axis. The magnitude of forces  $F_1$ ,  $F_3$  and  $F_4$  are 10 kN, 20 kN and 40 kN respectively. The angles made by 10 kN, 20 kN and 40 kN with X-axis are  $30^\circ$ ,  $90^\circ$  and  $120^\circ$  respectively. Find the magnitude and direction of force  $F_2$  if resultant is 72 kN. [CO<sub>1</sub>, K<sub>3</sub>]



B) a) State and prove varignons theorem [CO<sub>1</sub>, K<sub>5</sub>]

b) State and prove Lamis theorem [CO<sub>1</sub>, K<sub>5</sub>]

2. A) Determine the force in each member of the loaded truss. Explain why knowledge of length of each member unnecessary? [CO<sub>2</sub>, K<sub>3</sub>]



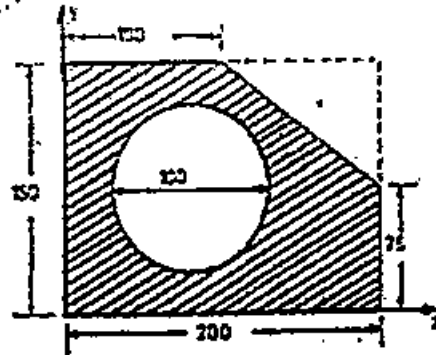
B) a) explain what are the types of friction. Briefly explain Limiting friction? [CO<sub>2</sub>, K<sub>3</sub>]

(b) explain about coloumbs law of dry friction? [CO<sub>2</sub>, K<sub>3</sub>]

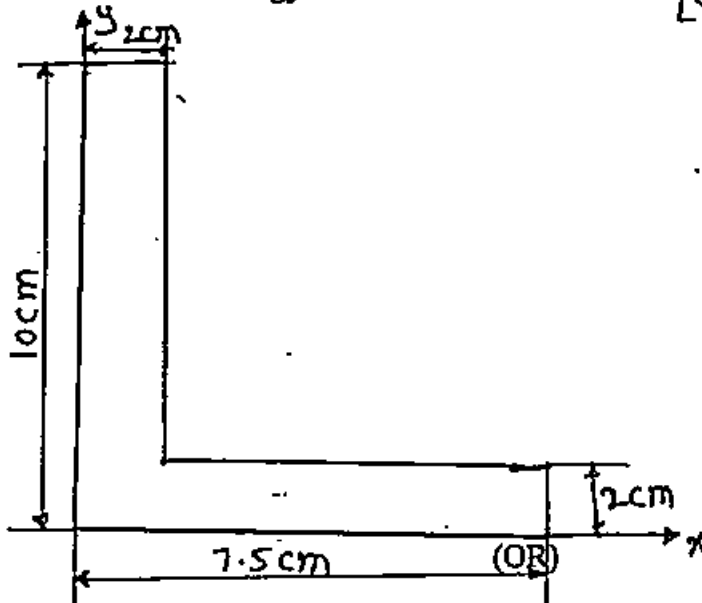
3. A) what are the standard sections for centroid. Draw any four sections, derive its derivation also?  $[10, 13]$

(OR)

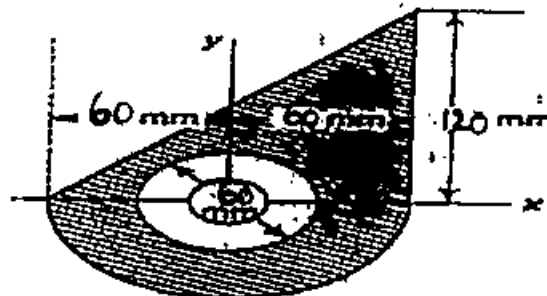
B) Determine the coordinates  $x_c$  and  $y_c$  of the centre of a 100 mm diameter circular hole cut in a thin plate so that this point will be the centroid of the remaining shaded area shown in Figure (All dimensions are in mm).  $[10, 13]$



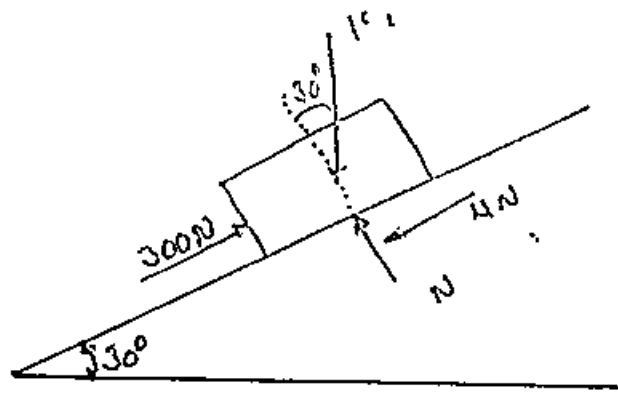
4. A) calculate moment of inertia of L section about horizontal and vertical axis passing through centroid. Also find the radius of gyration about centroid axis.  $[10, 13]$



B) Calculate the moment of inertia of the shaded area with respect to a centroidal axis parallel to the x-axis.  $[10, 13]$

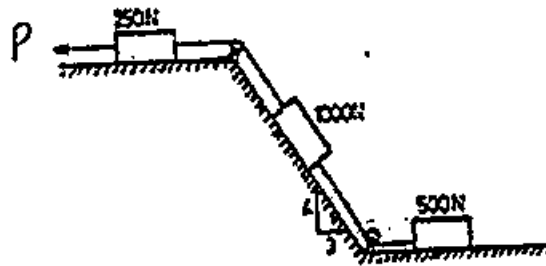


5. A) A body weighing 196.2 N slides up a  $30^\circ$  inclined plane under the action of an applied force 300N parallel to the plane. The coefficient of friction is 0.2. The body moves from rest. Determine at the end of 4 seconds, the acceleration, distance travelled, kinetic energy, work done, momentum and impulse applied on the body.  $[10, 13]$



(OR)

B) Determine force of  $p$  that will give the system of block shown fig 4.125 a velocity of  $3\text{m/s}$  after moving a distance of  $4.5\text{m}$  from the position of rest. Coefficient of friction =  $0.2$   $[\cos, \mu_s]$





I B.Tech I Semester Regular & Supple Examinations, April-2022

Subject Code: R20EC1108

Engineering Graphics

Time: 3 Hours

Program: B.Tech.

Branch: ECE.

Max.Marks:70.

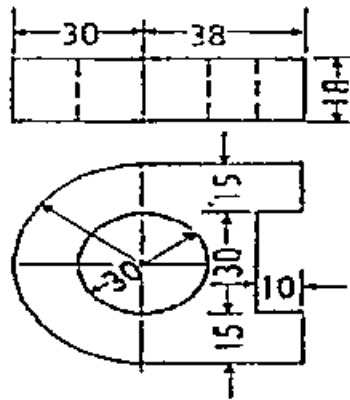
Note: Answer All FIVE Questions.

All Questions Carry Equal Marks (5 X 14 =70M)

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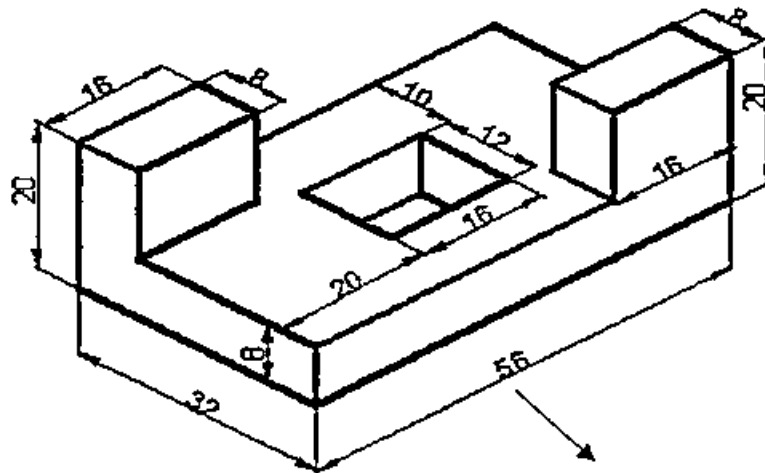
1. A) I) Draw a line AB, 125 mm long and divide it into 11 equal parts. [CO1,K3,7M]  
II) Construct a regular Pentagon of side 25 mm by using General Method. [CO1,K3,7M]  
OR  
B) The major axis of an ellipse is 120 mm long and the foci are at a distance of 20 mm from its ends. Construct the ellipse by arcs of circles method. [CO1,K3,14M]
2. A) I) Draw the projections of the following points. [CO2,K3,7M]  
a) 40 mm below H.P and 30 mm behind V.P  
b) 50 mm above H.P and on V.P  
c) On H.P and 35 mm in front of V.P  
II) A point A is 20 mm above H.P and in the first quadrant. Its shortest distance from the reference line XY is 40 mm. Draw the projections of the point and determine its distance from V.P. [CO2,K3,7M]  
OR  
B) A line CD, 90 mm long, measures 72 mm in FV and 65 mm in TV. Draw the two views of the line if it fully in first quadrant. Find the true inclinations of the line. Assume point C at 25 mm above H.P and 30 mm in front of V.P. [CO2 ,K3,14M]
3. A) A pentagonal plate of 35 mm side has one of its edges parallel to the V.P and inclined at  $45^\circ$  to the H.P. The plate is inclined at  $60^\circ$  to the V.P. Draw the projections of the plate. [CO3 ,K3,14M]  
OR  
B) Draw the projections of the regular hexagon of 25 mm side, having one of its sides on H.P and inclined at  $60^\circ$  to V.P and its surface making an angle of  $45^\circ$  with H.P. [CO3 ,K3,14M]
4. A) A hexagonal prism of side 25 mm and length of axis 70 mm is resting on the H.P on one of its rectangular faces. Draw its projections when its axis is inclined to the V.P at  $45^\circ$  [CO4 ,K3,14M]  
OR  
B) A cone of diameter 60 mm and height 60 mm is resting on the H.P on one of its generators. Draw its projections if its axis is parallel to the V.P. [CO4 ,K3,14M]

5. A) Draw the isometric view of the block, two views of which are shown in figure. All dimensions are in mm. [CO5,K4,14M]



OR

- B) Draw the Front View, Top view and side view of the figures shown below. All dimensions are in mm [CO5,K4,14M]





**I B.Tech I Semester Regular & Supple Examinations, April-2022**

Subject Code: R20EE1109      **Basics in Mechanical and Civil Engineering**

Time: 3 Hours

Program: B.Tech.

Branch: EEE.

Max.Marks:70.

Note: Answer All FIVE Questions.  
All Questions Carry Equal Marks (5 X 14 =70M)

1. A) I) Draw Schematic diagram of simple gas turbine power plant. State various application of Gas turbine Power Plant. [7M, CO1,K2]

II) Explain different type of Engines used in Diesel Power Plant. Explain working of any one in detail. [7M, CO1,K2]

OR

B) I) Draw the schematic diagram Diesel engine Power Plant and State various application of Diesel Engine Power Plant. [7M,CO1,K2]

II) Draw a general layout of steam power plant with neat diagram and Explain the working of different circuits. [7M,CO1,K2]

2. A) I) What are the advantages of chain drives. [3M,CO2,K2]

II) Write the advantages of V belts over flat belts. [4M,CO2,K2]

III) Design a chain drive to drive a centrifugal compressor from an electric motor 15 kW at 1000 rpm. The speed reduction ratio is 2.5. The compressor to work for 16 hours a day. State solutions for common problems encountered in continuous operation of the drive. [7M],CO2,K3]

OR

B) I) What factors will affect the working conditions of the chain drive?[3M,CO2,K2]

II) Design a flat belt drive for the following data: Power to be transmitted =22.5 kW; driver speed =740 rpm; speed ratio=3; distance between the pulleys=3m;larger pulley diameter=1.2m. [7M,CO2,K3]

III) Classification based on the type of gearing. [4M,,CO2,K4]

3. A) I) Obtain an expression for the force exerted by the jet of water on a fixed vertical plate in the direction of the jet. [7M,CO3,K3]

II) What is centrifugal pump? Explain the parts of centrifugal pump and derive the condition for work done. [7M,CO3,K2]

OR

B) I) Define slip, negative slip in reciprocating pump. [3M,CO3,K2 ]

II) Obtain an expression for the force exerted by the jet of water on a fixed curved plate in the direction of the jet. [7M,CO3,K3 ]

III) Explain difference between centrifugal pumps and reciprocating pumps. [4M,CO4,K2 ]

4. A) I) Explain a) Roads b) chimneys c) Railways. [7M,CO4,K2 ]

II) Explain the different ways of classification of surveys. [7M,CO4,K2 ]

OR

B) I) Define Surveying. What are the fundamental principles of surveying?[7M,CO4,K4]

II) Types of roads[7M,CO4,K2]

a) Based on material [3M] b) Based on location and function [4M]

5. A) I) Explain are the different tests on aggregates? [7M,CO5,K2]

II) Classify bricks and state its characteristics and uses of each one of them. [7M,CO5,K4]

OR

B) I) What are the qualities of stones? [3M,CO5,K2]

II) What do mean by preservation of timber & list the varies methods of preservation of timber? [4M,CO5,K2]

III) What are the ingredients of cement? What is their relevance in quality of the cement? [7M,CO5,K2]



**I B.Tech I Semester Regular & Supple Examinations, April-2022**

Subject Code: R20EE1110

**Engineering Drawing and Design**

Time: 3 Hours

Program: B.Tech.

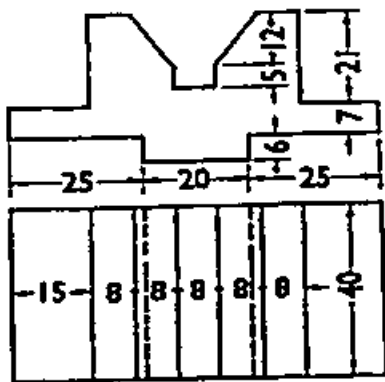
Max.Marks:70

Branch:EEE.

Note: Answer All FIVE Questions.  
All Questions Carry Equal Marks (5 X 14 =70M)

- 
1. A) I) Draw an arc, passing through three points, not in a straight line [CO1,K3,2M]  
II) Construct a regular Hexagon of side 30 mm by using General Method. [CO1,K3,12M]  
**OR**  
B) I) The Directrix of a hyperbola is 65mm from its focus. Draw the curve if the eccentricity is  $3/2$ .  
Draw a normal and a tangent at a point on the curve, 75 mm from the Focus. [CO1,K3,14M]
2. A) I) Draw the projections of th following points. [CO2,K3,7M]  
a) 50 mm above H.P and 30 mm behind V.P  
b) 50 mm below H.P and 35 mm in front of V.P  
c) On H.P and 30 mm behind of V.P  
II) Two points A and B are on the H.P. The point A is 30mm in front of the V.P., while B is behind the V.P. The distance between their projectors is 80mm and the line joining their top views makes an angle of  $45^\circ$  with xy. Find the distance of the point B form the V.P. [CO2,K3,7M]  
**OR**  
B) A line AB of 80 mm long has its end A, 15 mm from both H.P. and V.P. The other end B is 40 mm above H.P. and 50 mm in front of V.P. Draw the projections of the line an determine the inclinations of the line with H.P. and V.P. [CO2,K3,14M]
3. A) A regular pentagon of side 30 mm is inclined at  $45^\circ$  to the V.P and perpendicular to the H.P. The one of its sides is perpendicular to the H.P. Draw the projections of the pentagon. [CO3,K3,14M]  
**OR**  
B) A thin circular metal plate of 48 mm diameter, having its plane vertical and inclined at  $40^\circ$  to V.P. Its center is 33 mm above H.P. and 25 mm in front of V.P. Draw its projections.[CO3,K3,14M]
4. A) A Hexagonal pyramid, side of base 25mm & axis 50mm long rests with one of the edges of its base on HP & its axis is inclined at  $30^\circ$  to HP & parallel to HP. Draw its projections.[CO4,K3,14M]  
**OR**  
B) Draw the projections of a hexagonal prism of base 25 mm side and axis 60 mm long, when it is resting on one of its corners of the base on H.P. The axis of the solid is inclined at  $45^\circ$  to H.P. [CO4,K3,14M]

5. A) Draw the isometric view of the block, two views of which are shown in figure dimensions are in mm [CO5,K3,14M]



OR

- B) Draw the Front View, Top view & Both side views of the figures shown below. All dimensions are in mm [CO5,K3,14M]

