Hall Ticket Number :										

R-17

Code: 7GC12

I B.Tech. I Semester Supplementary Examinations March/April 2023

Engineering Chemistry

(Common to CE, ME & CSE)

Max. Marks: 70 Time: 3 Hours

Answer *any five full questions* by choosing one question from each unit (5x14 = 70 Marks)

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UNIT–I

1. Give detailed procedure for the determination of dissolved oxygen in water.

OR

2. a) Explain the basic principle involved in the estimation of hardness by EDTA method?
   b) Why is sterilization of water necessary? Discuss any two methods of sterilization.

UNIT–II

3. Give reasons for the following
   (i) Corrosion of water-filled tank occurs below the waterline
   (ii) A Copper equipment should not possess a small Steel bolt

OR

4. Discuss various factors which influence the corrosion of metals?

UNIT–III

5. Write a note on processing of raw rubber? Explain the draw backs of raw rubbers.

OR

6. a) Differentiate Thermoplastic and Thermosetting plastics with suitable examples.
   b) Write a note on the classification of polymers with examples

UNIT–IV

7. The percentage composition of a sample of coal by weight was found to be: C = 76%, H = 5.2%, O = 12.8%, N = 2.7%, S = 1.2%, the remaining being ash. Calculate the minimum weight of air necessary for complete combustion of 1 kg of coal and percentage composition by weight of dry products, if 50% excess air supplied.

OR

8. a) Describe the determination of calorific value of a solid fuel using bomb calorimeter.
   b) Describe the Production and uses of water gas and Biogas.

UNIT–V

9. a) Explain the importance of refractories and their applications.
   b) Describe the mechanism of extreme pressure lubrication

OR

10. Describe the manufacture of Portland cement by wet method with a neat labelled diagram of rotary kiln.

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Hall Ticket Number :										

R-17

Code: 7GC14

I B.Tech. I Semester Supplementary Examinations March/April 2023

Engineering Mathematics-I

(Common to All Branches)

Max. Marks: 70 Time: 3 Hours

Answer *any five full questions* by choosing one question from each unit (5x14 = 70 Marks)

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UNIT–I

1. Define the rank of the matrix and find the rank of the following matrix
$$\begin{bmatrix} 2 & 1 & 3 & 5 \\ 4 & 2 & 1 & 3 \\ 8 & 4 & 7 & 13 \\ 8 & 4 & -3 & -1 \end{bmatrix}$$

OR

2. Investigate the values of ª *and* « so that the equations 2x+3y+5z=9, 7x+3y-2z=8, 2x+3y+ ªz = « , have (i) no solution, (ii) a unique solution and (iii) an infinite number of solutions.

UNIT–II

3. Show that the matrix
$$\begin{bmatrix} i & 0 & 0 \\ 0 & 0 & i \\ 0 & i & 0 \end{bmatrix}$$ is Skew-Hermitian and hence find eigen values

OR

4. Find the transformation that will transform $10x^2 + 2y^2 + 5z^2 + 6yz - 10zx - 4xy$ into a sum of squares

UNIT–III

5. Solve $(1+y^2)dx = (\tan^{-1} y - x)dy$

OR

6. Solve $\left(\frac{e^{-2\sqrt{x}}}{\sqrt{x}} - \frac{y}{\sqrt{x}}\right)\frac{dx}{dy} = 1$

UNIT–IV

7. In L-C-R circuit, the charge q on a plate of a condenser is given by Solve $L\frac{d^2q}{dt^2} - \frac{dq}{dt} + \frac{q}{C} = E\sin pt$ the circuit is turned to resonance so that $\frac{p^2}{LC}$. Find the current i

OR

8. Solve $\frac{d^2y}{dx^2} - 3\frac{dy}{dx} + 2y = xe^{3x} + \sin 2x$

UNIT–V

9. If $x + y + z = u, y + z = uv, z = uvw, then\ evaluate \frac{\partial(x,y,z)}{\partial(u,v,w)}$

OR

10. Verify Langrange's mean value theorem for $f(x) = \log_e x \ \ in\ [1,e]$

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Hall Ticket Number :										

R-17

Code: 7G111

I B.Tech. I Semester Supplementary Examinations March/April 2023

Problem Solving Techniques and C Programming

(Common to All Branches)

Max. Marks: 70 Time: 3 Hours

Answer *any five full questions* by choosing one question from each unit (5x14 = 70 Marks)

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Marks

UNIT–I

1. a) Give a comparison between system and application software's with examples. 7M

   b) List and explain various symbols used in flowcharts with figures 7M

OR

2. a) Discuss about different computer languages with examples. 7M

   b) Explain in detail about the software development method. 7M

UNIT–II

3. a) What are bitwise logical operators? Explain about bitwise logical operators with suitable programming example. 7M

   b) Evaluate the following expressions:
   (i) a*(3+b)/2-c++ *b where a=3,b=4 and c=5 (ii) !(4+5*0>=6-4) 7M

OR

4. a) What is the need of explicit type conversion in C? How to cast the data? 7M

   b) What is the need of escape sequence? Write a sample program to illustrate escape sequences. 7M

UNIT–III

5. a) Give the control flow diagram of the *for loop*. How is the execution of 'for' loop proceeds? 7M

   b) Write a C program to find biggest of three integer numbers. 7M

OR

6. a) Explain counter-controlled and **c**ondition-controlled loops with examples. 7M

   b) Write a C program to find the sum of first and last digit of a number 7M

UNIT–IV

7. a) What are the different types of arrays in C? Explain with a suitable example, array declaration, initialization and accessing of the elements for these different types. 7M

   b) Write a C program to accept 3x3 matrix and display elements of the matrix. 7M

OR

8. a) Explain any five string manipulation functions with example 10M

   b) Write a program to find highest and smallest number in the given array. 4M

UNIT–V

9. a) Write a C program to exchange the value of two integers using call by reference. 7M

   b) Write a c program to find factorial of a number using recursive function 7M

OR

10. a) Define scope. Briefly explain the scope, life time and visibility of Identifier. 7M

    b) Explain about pre-processor commands with examples. 7M

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Hall Ticket Number :										

R-17

Code: 7G513

I B.Tech. I Semester Supplementary Examinations March/April 2023

Basic Engineering Drawing

(Computer Science and Engineering)

Max. Marks: 70 Time: 3 Hours

Answer *any five full questions* by choosing one question from each unit (5x14 = 70 Marks)

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UNIT–I

1. a) Bisect a straight line AB of length 65 mm 7M

   b) Divide a line AB of length 100mm into 9 equal parts 7M

OR

2. Construct an ellipse, when the distance of the focus from the directrix is equal to 65mm and Eccentricity is 2/3. Also draw tangent and normal to the curve at a point 40mm from the directrix 14M

UNIT–II

3. A point is 50mm from both the reference planes. Draw its projections in all possible positions 14M

OR

4. a) A line PQ, 50mm long is perpendicular to H.P. and 15mm in front of V.P. The end P, nearer to H.P is 20mm above it. Draw the projections of a line 7M

   b) A line PQ, 50mm long is perpendicular to V.P and 15mm above H.P. The end P, nearer to V.P. is 20mm infront of it. Draw the projections of a line 7M

UNIT–III

5. a) A pentagonal plane of side 30mm is perpendicular to H.P. and parallel to V.P. The plane is 30mm infront of V.P. Draw its projections 7M

   b) A Circular plane of diameter 50mm is perpendicular to V.P. and parallel to H.P. The plane is 30mm above the H.P. Draw its projections 7M

OR

6. A triangular plane of side 30mm is perpendicular to H.P. and parallel to V.P. The plane is 15mm infront of V.P. Draw its projections when a side is i) Perpendicular to the H.P. ii) Parallel to H.P. iii) Inclined to H.P. at angle of 30^0 14M

UNIT–IV

7. a) Draw the projections of a cylinder of base 30mm diameter and axis 50mm long, when it is resting on HP on its base 7M

   b) A cube of 40mm side, is resting with a face on HP such that when one of its vertical faces is inclined at 30^0 at VP. Draw its projections 7M

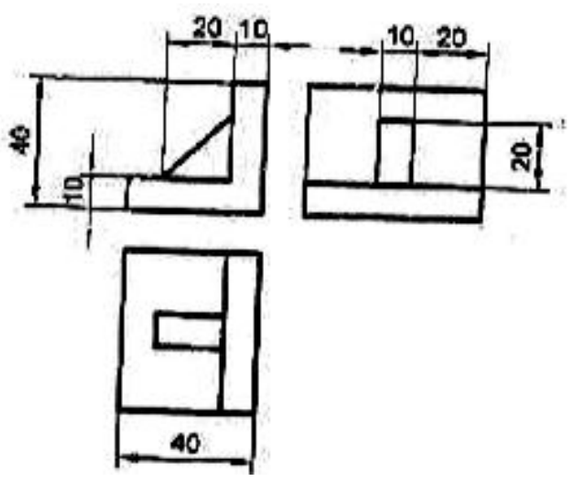
OR

8. a) A square prism of side 30mm and axis length 60mm long is resting on H.P. on its base. Draw its projections 7M

   b) A pentagonal pyramid of side 30mm and axis length 50mm long is resting on H.P. on its base with a side perpendicular to the V.P. Draw its projections 7M

UNIT–V

9. Convert the following orthographic views to isometric view



14M

OR

10. Draw the isometric projection of a hexagonal plane of side length 30mm when the plane is Horizontal 14M

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