Code: 19A311T

I B.Tech. I Semester Supplementary Examinations December 2022

Engineering Graphics-I

(Common to CE & ME)

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	CO	BL

UNIT–I

1. 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   1   6**

OR

2. Construct a parabola, when the distance of the focus from the directrix is 50mm. Also draw tangent on normal to the curve at a point 35mm from the directrix.   **14M   1   6**

UNIT–II

3. Construct a cycloid having a rolling circle diameter as 50mm. Draw a normal and a tangent to a curve at a point 35mm above the base line.   **14M   2   6**

OR

4. Draw a hypocycloid of a circle of 40mm diameter, which rolls inside another circle of 160mm diameter, for one revolution counter clockwise. Draw a tangent & a normal to it at a point 65mm from the center of the directing circle.   **14M   2   3**

UNIT–III

5. a) A point is 50mm from both the reference planes. Draw its projections in all possible positions.   **7M   3   3**

   b) A point A is 25mm above the H.P & 35mm in front of the V.P. Another point is 40mm behind the V.P. & 30mm below the H.P. Draw the projections of these points taking the distance between the end projectors as 70mm.   **7M   3   3**

OR

6. The front view of a 75mm long line measures 55mm. The line is parallel to the H.P and one of its end is in the V.P and 25mm above the H.P. Draw the projections of the line and determines its inclination with the V.P.   **14M   3   3**

UNIT–IV

7. A square ABCD of 40mm side has a corner on the HP and 20mm in front of the VP. All the sides of the squares are equally inclined to the HP and parallel to the VP. Draw its projections.   **14M   4   3**

OR

8. Draw the projections of a regular hexagon of 25mm side, having one of its sides in the HP and inclined at 60° to the VP and its surface making an angle of 45° with the HP.   **14M   4   3**

UNIT–V

9. Draw the projections of a hexagonal prism of base 25mm side and axis 60mm long, when it is resting on one of its corners of the base on HP. The axis of the solid is inclined at 45° to the HP.   **14M   5   3**

OR

10. A hexagonal pyramid side of base 25mm and axis 50mm longs, rests with one of the corners of its base on HP, its axis is inclined at 30° to HP and 45° to VP. Draw its projections.   **14M   5   3**

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I B.Tech. I Semester Supplementary Examinations December 2022
Problem Solving 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) What are identifiers? What are the rules for declaring identifiers? Give example.   8M

   b) What is constant? Describe its classification with example   6M

OR

2. What is flowchart? Describe various symbols used in flowcharts and draw flowchart for reversing the digits of a given number.   14M

UNIT–II

3. a) Explain various iterative statements available in C language with examples.   8M

   b) Write a program to find out whether the given number is Armstrong or not?   6M

OR

4. a) What are the limitations of switch () case statement?   7M

   b) Write a program to calculate bill of a job work done as follows. Use if else statement.
      i.   Rate of typing 3 Rs. / page.
      ii. Printing of 1st copy 5 Rs. /page & later every copy 3 Rs. /page.   7M

UNIT–III

5. a) Explain any five string manipulation library functions with examples.   9M

   b) What is mean by recursion? Explain the purpose of recursive function.   5M

OR

6. What is function parameter? Explain different types of parameters in C functions.   14M

UNIT–IV

7. What is dynamic memory allocation? Write and explain the different dynamic memory allocation functions in C.   14M

OR

8. a) What is a pointer? Explain how the pointer variable declared and initialized.   7M

   b) Write advantages and disadvantages of pointers   7M

UNIT–V

9. a) Explain how the structure variable passed as a parameter to a function with example.   7M

   b) Write a C program to read and display a text from the file.   7M

OR

10. a) What is a self-referential structure? Give an example.   5M

    b) What is a file? Explain how the file open and file close functions   9M

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I B.Tech. I Semester Supplementary Examinations December 2022
Algebra and Calculus
(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 | CO | BL |

UNIT–I

1. Solve the system of equations
$x + 3y + 2z = 0, 2x - y + 3z = 0, 3x - 5y + 4z = 0, x + 17y + 4z = 0$ 14M   1   3

OR

2. Find the rank of $A = \begin{bmatrix} 1 & 2 & 3 & 4 \\ -2 & -3 & 1 & 2 \\ -3 & -4 & 5 & 8 \\ 1 & 3 & 10 & 14 \end{bmatrix}$ 14M   1   3

UNIT–II

3. Verify Cayley-Hamilton theorem for the matrix A= $\begin{bmatrix} 1 & 2 & -1 \\ 2 & 1 & -2 \\ 2 & -2 & 1 \end{bmatrix}$ and hence find A^{-1}

using Cayley-Hamilton theorem.   14M   2   2

OR

4. Diagonalize the matrix A= $\begin{bmatrix} 1 & 1 & 1 \\ 0 & 2 & 1 \\ -4 & 4 & 3 \end{bmatrix}$ 14M   2   2

UNIT–III

5. a) Find the first and second partial derivatives of $z = x^3 + y^3 - 3axy$ 7M   3   3

   b) If $z = f(x + ct) + g(x - ct)$ then prove that $\dfrac{\partial^2 z}{\partial t^2} = c^2 \dfrac{\partial^2 z}{\partial x^2}$ 7M   3   2

OR

6. Find the maximum and minimum values of $x^3 + y^3 - 3axy$ 14M   3   3

UNIT–IV

7. a) Expand $\log_e x$ in powers of $(x-1)$ 7M   4   3

   b) Using Maclaurin's series , expand $\sin x$ in powers of x.   7M   4   3

OR

8. Trace the curve $y^2(a - x) = x^2(a + x)$ 14M   4   4

UNIT–V

9. Evaluate $\int_0^{4a} \int_{x^2/4a}^{2\sqrt{ax}} dy\,dx$ by changing the order of integration.   14M   5   3

OR

10. Evaluate $\int_0^{\pi/2} \sin^2 x \cos^4 x \, dx$ 14M   5   3

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Code: 19AC13T

I B.Tech. I Semester Supplementary Examinations Nov/Dec 2022
Chemistry of Materials
(Common to CE & ME)

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	CO	Blooms Level
	UNIT–I				
1. a)	Write short notes on scales and sludge		7M	CO1	L2
b)	Define priming and foaming and how can they be prevented		7M	CO1	L1
	OR				
2. a)	Explain the formation and preventing methods of boiler troubles		7M	CO1	L1
b)	Explain the principle involved in ion exchange process		7M	CO1	L2
	UNIT–II				
3.	Define electrode potential. Derive the Nernst equation for single electrode potential.		14M	CO2	L1
	OR				
4. a)	Discuss the measurement of single electrode potential		7M	CO2	L3
b)	How many types of reference electrodes are there list out reference electrode applications		7M	CO2	L1
	UNIT–III				
5. a)	Define corrosion and classify it with example		7M	CO3	L1
b)	Distinguish between galvanizing and tinning		7M	CO3	L3
	OR				
6. a)	Explain the mechanism of dry corrosion		7M	CO3	L3
b)	Discuss the functions of paints and varnish on corrosion protection		7M	CO3	L2
	UNIT–IV				
7. a)	Describe the preparation, properties and applications of PVC		7M	CO4	L2
b)	Discuss the any alternate fuel in detail		7M	CO4	L1
	OR				
8.	Explain the synthesis of propane fuel and summarize important applications of it?		14M	CO4	L3
	UNIT–V				
9. a)	What is meant by nanomaterial explain some important applications		7M	CO5	L1
b)	Discuss any one synthetic methods of nanomaterials		7M	CO5	L2
	OR				
10. a)	Explain the surface analysis of nanomaterials		7M	CO5	L2
b)	Describe the chemical synthesis of nanomaterials with example		7M	CO5	L2

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