Hall Ticket Number :										

R-19

Code: 19A311T

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

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 a hyperbola, when the distance of the focus from the directrix is 65mm and eccentricity is 3/2. Also draw tangent and normal to the curve as a point 45mm from directrix.	14M	CO1	L6
	OR			
2.	The major and minor axes of an ellipse are 120mm and 80mm. Draw an ellipse by Oblong method.	14M	CO1	L3
	UNIT–II			
3.	Show by means of a drawing when the diameter of the rolling circle is twice that of the generating circle, the hypocycloid is a straight line. Take the diameter of the generating circle equal to 60mm.	14M	CO2	L3
	OR			
4.	Draw the involute of a circle of 40mm diameter. Also draw a tangent & a normal to the curve at a point 95mm from the center of the circle.	14M	CO2	L3
	UNIT–III			
5.	Two pegs fixed on a wall are 4.5m apart. The distance between the pegs measured parallel to the floor is 3.6m. If one peg is 1.5m above the floor, find the height of the second peg and the inclination of the line joining the two pegs, with the floor.	14M	CO3	L6
	OR			
6.	A line AB, 50mm long, has its ends A in both the H.P and the V.P. It is inclined at 30° to the H.P and at 45° to the V.P. Draw the projections.	14M	CO3	L3
	UNIT–IV			
7.	A hexagonal plate of side 30mm is placed with a side on VP and surface inclined at 45° to VP and perpendicular to HP. Draw the projections.	14M	CO4	L3
	OR			
8.	A circular plate of negligible thickness and 50mm diameter appears as an ellipse in the front view, having its major axis 50mm long and minor axis 30mm long. Draw its top view when the major axis of the ellipse is horizontal.	14M	CO4	L3
	UNIT–V			
9. a)	Draw the projections of a cone of base 30mm diameter and axis 50mm long, when it is resting on HP on its base.	7M	CO5	L3
b)	Draw the projections of a cylinder of base 30mm diameter and axis 50mm long, when it is resting on HP on its base.	7M	CO5	L3
	OR			
10.	Draw the projections of a pentagonal pyramid axis 60mm long, base 30mm side having base on the ground and one of edges of base inclined at 45° to VP.	14M	CO5	L3

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Hall Ticket Number :										

R-19

Code: 19A511T

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

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) Define Algorithm. Explain the characteristics of algorithm. 6M
   b) What is meant by flow chart? Explain the symbols used in flowchart with an example. 8M

OR

2. a) Explain the structure of C program with an example program. 7M
   b) Discuss about C data types. 7M

UNIT–II

3. a) Explain conditional statements with an example. 8M
   b) Write a c program to find whether the given year is leap year or not. 6M

OR

4. a) What is meant by searching? Explain binary search algorithm. 7M
   b) Write a c program to print array of elements in ascending order using selection sort. 7M

UNIT–III

5. a) Define string. Explain declaration of string. Explain any three string handling functions with neat syntax and example. 8M
   b) Write C program to concatenate two strings without using strcat( ) function 6M

OR

6. a) Explain the following key words with example. i) auto ii) register iii) static iv) extern. 8M
   b) Write a c program to illustrate functions with arguments and returning value. 6M

UNIT–IV

7. a) Define pointer. Explain pointer arithmetic operations. 7M
   b) Explain call by reference with an example program. 7M

OR

8. a) Explain dynamic memory allocation functions. 7M
   b) Write a C program to demonstrate array of pointers. 7M

UNIT–V

9. a) Define structure and union. Explain the syntax and accessing elements from structure and union with an example. 8M
   b) Write a C program to maintain a record of n students with four fields (Roll no, name, marks and grade). Print the student details. 6M

OR

10. a) Define file. Write a C program to write character to a file and reading character from file. 8M
    b) Discuss about file operations. 6M

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Hall Ticket Number :										

R-19

Code: 19AC11T

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

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. Find the Eigen values and Eigen vectors of the matrix

$$A=\begin{bmatrix} 6 & -2 & 2 \\ -2 & 3 & -1 \\ 2 & -1 & 3 \end{bmatrix}$$ 14M CO1 L3

OR

2. Prove that the following set of equations are consistent and solve them

$3x+3y+2z=1,\ x+2y=4,\ 10y+3z=-2,\ 2x-3y-z=5$ 14M CO1 L3

UNIT–II

3. Diagonalize the matrix $A=\begin{bmatrix} 8 & -8 & -2 \\ 4 & -3 & -2 \\ 3 & -4 & 1 \end{bmatrix}$ 14M CO2 L2

OR

4. Reduce the quadratic form $3x^2+5y^2+3z^2-2xy-2yz+2zx$ to canonical form by using orthogonal transformation. 14M CO2 L3

UNIT–III

5. a) If $z=u^2+v^2$ and $u=at^2, v=2at$, then find $\frac{dz}{dt}$ 7M CO3 L3

   b) Evaluate $\frac{\partial z}{\partial x}$ and $\frac{\partial z}{\partial y}$, if $z=\log(x^2+y^2)$ 7M CO3 L3

OR

6. A rectangular box open at the top is to have volume of 32 cubic ft. Find the dimensions of the box requiring least material for its construction. 14M CO3 L3

UNIT–IV

7. Trace the curve $a^2y^2=x^2(a^2-x^2)$ 14M CO4 L4

OR

8. Using Taylor's theorem, express the polynomial $2x^3+7x^2+x-6$ in powers of $(x-1)$. 14M CO4 L3

UNIT–V

9. Evaluate $\int_0^1\int_0^1 \frac{dxdy}{\sqrt{(1-x^2)(1-y^2)}}$ 14M CO5 L3

OR

10. Evaluate $\int_0^a\int_0^{\sqrt{a^2-x^2}} y\sqrt{x^2+y^2}\,dxdy$ by changing into polar coordinates. 14M CO5 L3

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Hall Ticket Number :										

R-19

Code: 19AC13T

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

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	BL
		UNIT–I			
1.		Differentiate between Bureau of Indian Standards (BIS) and World health organization(WHO) standards of drinking water	14M	CO1	L2
		OR			
2.	a)	Define cation exchanger and anion exchanger with neat diagram	7M	CO1	L4
	b)	List out standard specifications for drinking water	7M	CO1	L1
		UNIT–II			
3.	a)	Explain the working principle and construction of hydrogen electrode	7M	CO2	L2
	b)	Draw the structure of calomel electrode and explain the working principle of it?	7M	CO2	L4
		OR			
4.	a)	Explain any five applications of solar cells	7M	CO2	L1
	b)	What is mean by photovoltaic cell? How it works?	7M	CO2	L2
		UNIT–III			
5.		Define dry corrosion and explain mechanism of oxidation corrosion with example	14M	CO3	L3
		OR			
6.		Define electrochemical corrosion? Explain the mechanism of electrochemical corrosion	14	CO3	L3
		UNIT–IV			
7.	a)	Differentiate thermosetting and thermoplastic polymers	7M	CO4	L3
	b)	Define polymer with example and classify it	7M	CO4	L1
		OR			
8.		Define biofuel? Explain the preparations of ethanol fuel and summarize important applications of it?	14M	CO4	L3
		UNIT–V			
9.	a)	Discuss the working principle of TEM with neat diagram	7M	CO5	L3
	b)	List out the applications of SEM	7M	CO5	L1
		OR			
10.		Define reverse micellar method? Explain the synthesis of nanomaterial by using reverse micellar method	14M	CO5	L1

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