Hall Ticket Number :										

R-19

Code: 19AC14T

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

Engineering Chemistry

(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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			Marks	CO	BL
		UNIT–I			
1.	a)	Discuss the construction and working of calomel electrode?	7M	CO1	L3
	b)	Write a short note on glass membrane electrode.	7M	CO1	L1
		OR			
2.	a)	Describe the construction and working principle of galvanic cell.	8M	CO1	L2
	b)	Why is anode of galvanic cell is –ve and cathode is +ve? Write its electrode reactions	6M	CO1	L1
		UNIT–II			
3.		Describe the working principle construction advantages and disadvantages of Dry cell.	14M	CO2	L3
		OR			
4.	a)	Define fuel cell. Classify different types of fuel cells.	7M	CO2	L4
	b)	Mention few applications of hydrogen and oxygen fuel cell.	7M	CO2	L1
		UNIT–III			
5.	a)	Write a short note on energy systems.	7M	CO3	L1
	b)	Explain doping concept of silicon semi-conductor.	7M	CO3	L2
		OR			
6.	a)	What is p-n junction? Mention its importance in pv cells.	7M	CO3	L1
	b)	What is the phenomenon of photo electric effect? Explain by taking silicon semiconductor.	7M	CO3	L2
		UNIT–IV			
7.	a)	Write a brief note on the classification of polymers.	7M	CO4	L1
	b)	Illustrate the cationic addition polymerization mechanism.	7M	CO4	L2
		OR			
8.	a)	Distinguish addition and condensation polymerization.	4M	CO4	L2
	b)	What is meant by conducting polymer? Explain synthesis and applications of poly aniline as conducting polymer.	10M	CO4	L3
		UNIT–V			
9.		Illustrate the working principle and applications of scanning electron microscope (SEM).	14M	CO5	L2
		OR			
10.		Explain the working principle and applications of Transmission electron microscope (TEM).	14M	CO5	L2

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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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