Hall Ticket Number :										

R-19

Code: 19AC11T

I B.Tech. I Semester Supplementary Examinations June 2024

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 by matrix method $x+y+z=6, 2x+3y-2z=2, 5x+y+2z=13$	14M	CO1	L3
		OR			
2.		Find the Eigen values and Eigen vectors of the matrix A= $\begin{bmatrix} 2 & 2 & 0 \\ 2 & 5 & 0 \\ 0 & 0 & 3 \end{bmatrix}$	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.		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	CO2	L2
		UNIT–III			
5.		Find the minimum value of $x^2+y^2+z^2$ given $x+y+z=3a$	14M	CO3	L3
		OR			
6.	a)	Find the first and second partial derivatives of $z=x^3+y^3-3axy$	7M	CO3	L3
	b)	If $z=f(x+ct)+g(x-ct)$ then prove that $\frac{\partial^2 z}{\partial t^2}=c^2\frac{\partial^2 z}{\partial x^2}$	7M	CO3	L2
		UNIT–IV			
7.		Trace the curve $r^2=a^2\cos 2\theta$	14M	CO4	L4
		OR			
8.	a)	Using Maclaurin's series, expand $\sin x$ in powers of x.	7M	CO4	L3
	b)	Using Taylor's theorem, express the polynomial $2x^3+7x^2+x-6$ in powers of $(x-1)$.	7M	CO4	L3
		UNIT–V			
9.		Evaluate $\int_0^{\pi} \int_0^{a\sin\theta} r\,dr\,d\theta$	14M	CO5	L3
		OR			
10.		Evaluate $\int_0^{\pi/2} \sin^6\theta \cos^7\theta\, d\theta$	14M	CO5	L3

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Hall Ticket Number :										

R-19

Code: 19AC13T

I B.Tech. I Semester Supplementary Examinations June 2024

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.	a)	Define priming and foaming and how can they be prevented	7M	CO1	L1
	b)	Describe the treatment of saline water by reverse osmosis in detail	7M	CO1	L2
		OR			
2.	a)	Explain the principle involved in the estimation of hardness by EDTA method	7M	CO1	L2
	b)	Explain the principle involved in ion exchange process	7M	CO1	L2
		UNIT–II			
3.	a)	Define fuel cell and classify it. List advantages of fuel cell	7M	CO2	L1
	b)	Explain the working principle and construction of hydrogen electrode	7M	CO2	L2
		OR			
4.	a)	Draw and label Calomel electrode and standard hydrogen electrode	7M	CO2	L4
	b)	Discuss the measurement of single electrode potential	7M	CO2	L3
		UNIT–III			
5.	a)	Write short notes on i) Galvanizing ii) Tanning	7M	CO3	L1
	b)	Explain the constituents and functions of organic coatings	7M	CO3	L2
		OR			
6.	a)	Discuss impressed current cathodic protection with neat diagram	7M	CO3	L2
	b)	Differentiate dry and wet corrosion	7M	CO3	L3
		UNIT–IV			
7.	a)	Discuss the any alternate fuel in detail	7M	CO4	L1
	b)	Explain the preparation of PVC and polyphosphazine polymers	7M	CO4	L2
		OR			
8.	a)	Define Higher Calorific value (HCV) and Lower Calorific Values (LCV)	7M	CO4	L1
	b)	Differentiate thermosetting and thermoplastic polymers	7M	CO4	L3
		UNIT–V			
9.		Discuss the applications of nanomaterials in the waste water treatment, Lubricants and engine	14M	CO5	L3
		OR			
10.	a)	Discuss any one synthetic methods of nanomaterials	7M	CO5	L2
	b)	What are the uses of smart materials	7M	CO5	L1

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Important Note: 1. On completing your answers. Compulsorily draw diagonal cross line on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and/or equations written eg. 32+8=40, will be treated as malpractice.

Hall Ticket Number :										

R-19

Code: 19A511T

I B.Tech. I Semester Supplementary Examinations June 2024

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) Describe Structure of C Program 5M
   b) What are identifiers? What are the rules for declaring identifiers? Give example. 9M

OR

2. a) What is an algorithm? Describe the characteristics of an Algorithm 6M
   b) What is data type? Explain basic data types and their sizes used in a C Language 8M

UNIT–II

3. a) Describe Conditional Statements Used in C Language 7M
   b) Write a program on calculating area and perimeter of square 7M

OR

4. 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

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 using structures. 6M

OR

10. a) Define file. Write a C program copy contents from one file to another file. 8M
    b) Discuss about file operations. 6M

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