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R-19

Code: 19AC14T

I B.Tech. I Semester Supplementary Examinations December 2022

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)

	Marks	CO	Blooms Level
UNIT-I			
1. a) Define electrode potential? How is the standard electrode potential of a cell measured?	7M	1	L1
b) Calculate the emf of a following galvanic cell. the standard electrode potentials of Zn and Cu electrodes are -0.76v and +0.34v respectively for Zn/Zn ²⁺ [0.1M]/Cu ²⁺ [0.01M]/Cu.	7M	1	L3
OR			
2. What are ion selective electrodes? Classify various types of ion selective electrodes.	14M	1	L4
UNIT-II			
3. a) Distinguish between cell and a battery.	7M	2	L2
b) List out challenges of battery.	7M	2	L3
OR			
4. a) Classify different types of batteries.	7M	2	L4
b) What is working principle of secondary battery? Give one example	7M	2	L1
UNIT-III			
5. a) Write a short note on energy systems.	7M	3	L1
b) Explain doping concept of silicon semiconductor.	7M	3	L2
OR			
6. Define solar cell. Explain about solar cell manufacture by chemical vapour deposition technique.	14M	3	L2
UNIT-IV			
7. a) Write a brief note on the classification of polymers.	7M	4	L1
b) Illustrate the cationic addition polymerization mechanism.	7M	4	L2
OR			
8. a) What is Ziegler natta catalyst? Explain stereospecific polymerization with examples.	8M	4	L2
b) Explain about functionality and tacticity of polymer.	6M	4	L2
UNIT-V			
9. Illustrate the working principle and applications of scanning electron microscope (SEM).	14M	5	L2
OR			
10. a) Define rotaxane. Explain linear motion in rotaxanes.	7M	5	L2
b) Summarize few applications of scanning electron microscope.	7M	5	L2

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R-19

Code: 19A511T

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)

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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R-19

Code: 19AC11T

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)

	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 $\frac{\partial^2 z}{\partial t^2} = c^2 \frac{\partial^2 z}{\partial x^2}$	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 $\int_0^{f/2} \sin^2 u \cos^4 u du$	14M	5	3
