Hall Ticket Number :										

R-20

Code: 20AC13T

I B.Tech. I Semester Regular & Supplementary Examinations April/May 2022

Chemistry

(Common to CSE and AI&DS)

Max. Marks: 70 Time: 3 Hours

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Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. In Part-A, each question carries **Two mark.**
3. Answer **ALL** the questions in **Part-A** and **Part-B**

PART-A

(Compulsory question)

1. Answer ALL the following short answer questions (5 X 2 = 10M)	CO	Blooms Level
a) Define standard electrode potential.	CO1	L1
b) List out any four merits of fuel cell	CO2	L1
c) Name the catalyst used in cationic polymerisation?	CO3	L1
d) Mention any two application of pH metry.	CO4	L1
e) Define prototypes. Give examples	CO5	L1

PART-B

Answer *five* questions by choosing one question from each unit (5 x 12 = 60 Marks)

		Marks	CO	Blooms Level
	UNIT–I			
2. a)	Discuss in brief about the construction, working principle with half-cell reactions of a Galvanic cell.	6M	CO1	L4
b)	Explain the principle involved in potentiometric titrations. Write an experimental procedure for carrying out the titration of a precipitation reaction.	6M	CO1	L2
	OR			
3. a)	Derive Nernst equation and give its significance.	6M	CO1	L4
b)	How Ion sensing electrodes are classified.	6M	CO1	L1
	UNIT–II			
4. a)	Write a note on primary and secondary battery.	6M	CO2	L1
b)	Mention the electrode reactions occurring in Zn/air cell.	6M	CO2	L3
	OR			
5. a)	Mention the components of a Li-MnO_2 cell. Discuss the chemistry of the working of the cell.	6M	CO2	L3
b)	With a neat sketch explain the functioning of H_2-O_2 fuel cell.	6M	CO2	L1

UNIT–III

6.		Illustrate the Free radical, cationic and anionic mechanisms of addition polymerization.	12M	CO3	L4
		OR			
7.	a)	Discuss the preparation, properties and applications of the following: a. Buna-S, b. Buna-N	6M	CO3	L4
	b)	Describe the condensation polymerisation of phenol and formaldehyde and mention the products obtained with their applications.	6M	CO3	L2

UNIT–IV

8.		Describe the working principle of Thin layer chromatography (TLC)? Write its applications	12M	CO4	L4
		OR			
9.	a)	What is the principle of Potentiometry? Briefly describe its applications	6M	CO4	L2
	b)	Write in detail about the various application of IR spectroscopy	6M	CO4	L1

UNIT–V

10.		Write a note on the following i) In and out switching ii) Back and forth switching	12M	CO5	L1
		OR			
11.	a)	Explain the displacement switching with suitable applications	6M	CO5	L2
	b)	Describe the Cyclodextrin-based switches with an example.	6M	CO5	L2

*** End ***

Hall Ticket Number :										

R-20

Code: 20AC15T

I B.Tech. I Semester Regular & Supplementary Examinations April/May 2022

Communicative English

(Common to CE, ME, CSE and AI&DS)

Max. Marks: 70 Time: 3 Hours

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Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. In Part-A, each question carries **Two mark.**
3. Answer **ALL** the questions in **Part-A** and **Part-B**

PART-A

(Compulsory question)

		CO	Blooms Level
1.	**Answer ALL the following short answer questions** (5 X 2 = 10M)		
a)	Why does Hazlitt advise his son not to bend almost double ones his book?		L2
b)	Who is the speaker of the poem, "The Brook"?		L2
c)	How many characters are there in 'The Death Trap' by Saki?		L2
d)	What do you know about Mrinalini Sarabhai?		L2
e)	Why did Muhammad Yunus get the Nobel Prize?		L2

PART-B

Answer *five* questions by choosing one question from each unit (5 x 12 = 60 Marks)

		Marks	CO	Blooms Level
	UNIT–I			
2.	Describe how William Hazlitt advises the school boy to conduct himself in life?	12M		L3
	OR			
3.	**Change the following statements in to questions**	6M		L4
i)	I went home at 9.00p.m			
ii)	You will have to write an exam.			
iii)	I can do that.			
iv)	I will meet you today.			
v)	I am fine. Thank you.			
vi)	I am seven years old.			
	Identify the parts of speech of the underlined words.	6M		L2
vi)	She is <u>severely</u> suffering <u>from</u> fever			
viii)	The <u>valley</u> is very steep. it is <u>deadly</u> dangerous.			
ix)	Nalini sings well. <u>She</u> is a <u>great</u> singer			

UNIT–II

4.	How does Tennyson portray the beauty of “The Brook”	12M	L3
	OR		
5.	**Develop the following hints into a meaningful paragraph** India____unity in diversity_____many races, religions, castes, creeds, Multi-cultural_____cultural differences ___back grounds_____opinions _____ different ways of life. Ability to understand __ mutual respect ____ tolerance _____ units and Integrity.	12M	L4

UNIT–III

6.	How does Munro reveal the conspiracy involved in The Death Trap	12M	L3
	OR		
7.	**Rearrange the jumbled sentences to form a meaningful paragraph**	7M	L4
	i) Invest your time wisely in learning to appreciate other’s strengths		
	ii) Embracing diversity helps one enhance the social abilities that contribute to success.		
	iii) Earning a degree with good grades is considered the primary goal of education		
	iv) Nurture relationship to ensure happiness,		
	v) Healthy socializing maximization learning		
	vi) Social skills are also equally important		
	vii) This would certainly enable us to attain success		
	Fill in the blanks using appropriate verb forms.	5M	L4
	viii) Ramesh _____(suffer) from fever since last Monday		
	ix) Meera _____(practice) the violin every day.		
	x) The Sun _____(rise) in the East.		
	xi) I never _____(try) skiing.		
	xii) We _____ (Watch) a line theatre performance the previous night.		

UNIT–IV

8.	Describe how Yunus strived for eradication of poverty.	12M	L3

OR

9.	Write an analytical essay on the topic " Role of People in the Conservation of Environment".	12M	L4

UNIT–V

10.	Explain how Mrinalini Sarabhai is a role model to the future generations.	12M	L3

OR

11.	**Correct the following sentences and rewrite the correct sentences.**	12M	L4

i) She is my cousin sister
ii) The United States have the largest share of the world's gold reserves.
iii) I prefer coffee than tea.
iv) She teaches English. Isn't it?
v) What is your good name?
vi) One must do his work.
vii) The sun is rising in the East.
viii) I am suffering with fever.
ix) Neither Usma nor Mohan are coming
x) My sister-in-laws are coming.
xi) The new section comprises of 20 students.
xii) It is a honest attempt.

*** End ***

Hall Ticket Number :										

R-20

Code: 20A511T

I B.Tech. I Semester Regular & Supplementary Examinations April/May 2022

Problem Solving through C Programming

(Common to All Branches)

Max. Marks: 70 Time: 3 Hours

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Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. In Part-A, each question carries **Two mark.**
3. Answer **ALL** the questions in **Part-A** and **Part-B**

PART-A
(Compulsory question)

			CO	Blooms Level
1.	**Answer ALL the following short answer questions**	(5 X 2 = 10M)		
a)	What is the difference between a pseudo code and flow chart? Show both notations for adding two natural numbers.		1	L2
b)	What is the difference between while and do-while?		2	L2
c)	Write the syntax of strlen( ) and strcat( ) functions.		3	L1
d)	What is pointer and declare pointer array?		4	L1
e)	What is the difference between structure and union?		5	L1

PART-B
Answer *five* questions by choosing one question from each unit (5 x 12 = 60 Marks)

			Marks	CO	Blooms Level
		UNIT–I			
2.	a)	What are the various steps to solve a problem? Explain them by taking an example.	6M	1	L2
	b)	Draw a flow chart to find the largest of three numbers in C.	6M	1,5	L2
		OR			
3.	a)	What are the various kinds of operators in C. Explain any four types with examples?	6M	1	L2
	b)	How can we classify different data types in C. Explain them.	6M	1	L2
		UNIT–II			
4.	a)	Explain selection sort algorithm with an example.	6M	2,5	L2
	b)	What is an Array? How to declare and initialize an Array. Explain with an example.	6M	2,5	L3
		OR			
5.	a)	Explain Binary Search Algorithm with an example.	6M	2,5	L2

	b)	You are given the height H (in metres) and mass M (in kilograms) of your friend. The Body Mass Index (BMI) of a person is computed as M/H^2. Report the category into which your friend falls, based on his BMI: Category 1: Underweight if BMI ≤18 Category 2: Normal weight if BMI ∈{19, 20,…, 24} Category 3: Overweight if BMI ∈{25, 26,…, 29} Category 4: Obesity if BMI ≥30	6M	2,5	L3

UNIT–III

6.	a)	What are the advantages of using Functions? How do we declare Functions in C.	6M	3	L2
	b)	Write a program to find the factorial of a given number using recursion.	6M	3,5	L3
		OR			
7.	a)	Explain various storage classes in C with an example.	6M	4	L2
	b)	What is the role of Preprocessor in the Compilation process and explain two preprocessor directives.	6M	4	L2

UNIT–IV

8.	a)	Define void pointer. Where we use this concept? Give an example for it.	6M	4	L2
	b)	Write a program to exchange two values using pointers.	6M	4	L3
		OR			
9.	a)	Distinguish between array of pointers and pointer to array with examples.	6M	4	L2
	b)	List the functions used in the dynamic memory allocation. Explain each function with an example.	6M	4	L2

UNIT–V

10.	a)	Describe about various file opening modes in C.	6M	4	L2
	b)	Write a program to compare two files, printing the first line where they differ.	6M	4,5	L3
		OR			
11.	a)	What are the different ways to access the members of structure elements in C. Give example for each case?	6M	4	L2
	b)	Write a C program to perform average of three number using files. Assume input numbers are existing in a file with name input.txt and result need to be saved in another file with the name output.txt	6M	4,5	L3

*** End ***

Hall Ticket Number :										

R-20

Code: 20AC11T

I B.Tech. I Semester Regular & Supplementary Examinations April/May 2022

Algebra and Calculus

(Common to All Branches)

Max. Marks: 70 Time: 3 Hours

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Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. In Part-A, each question carries **Two mark.**
3. Answer **ALL** the questions in **Part-A** and **Part-B**

PART-A

(Compulsory question)

		CO	Blooms Level
1.	**Answer ALL the following short answer questions** (5X2= 10M)		
a)	Find the rank of $A=\begin{bmatrix} 0 & 1 & 2 \\ 1 & 2 & 3 \\ 0 & 4 & -8 \end{bmatrix}$	CO1	L3
b)	Define index and signature of a quadratic form.	CO2	L2
c)	Define total derivative in partial differentiation	CO3	L2
d)	Evaluate $\int_{x=0}^{1}\int_{y=0}^{2}\int_{z=0}^{2} x^2 yz\, dx\, dy\, dz$	CO4	L3
e)	Define beta function and explain two properties	CO5	L2

PART-B

Answer *five* questions by choosing one question from each unit (5 x 12 = 60 Marks)

		Marks	CO	Blooms Level
	UNIT–I			
2. a)	Find the value of 'a' such that the system $2x+y+2z=0,\ x+y+3z=0,\ 4x+3y+^{a}z=0$ has non trivial solutions	6M	CO1	L3
b)	Find the Eigen values and Eigen vectors of the matrix $A=\begin{bmatrix} 1 & 1 & 3 \\ 1 & 5 & 1 \\ 3 & 1 & 1 \end{bmatrix}$	6M	CO1	L2
	OR			
3. a)	Reduce the matrix $\begin{bmatrix} 1 & 3 & 4 & 3 \\ 3 & 9 & 12 & 3 \\ 1 & 3 & 4 & 1 \end{bmatrix}$ to normal form and find its rank.	6M	CO1	L3

b) Find the Eigen values and the corresponding Eigen vectors of $A=\begin{bmatrix}3 & 1 & 4\\ 0 & 2 & 6\\ 0 & 0 & 5\end{bmatrix}$ — 6M CO1 L2

UNIT–II

4. Verify Cayley – Hamilton theorem for $A=\begin{bmatrix}2 & 1 & 1\\ 0 & 1 & 0\\ 1 & 1 & 2\end{bmatrix}$ and hence find A^{-1} and A^{6} — 12M CO2 L3

OR

5. Reduce the quadratic form $Q=6x_1^2+3x_2^2+3x_3^2-4x_1x_2-2x_2x_3+4x_3x_1$ into canonical form and find its nature. — 12M CO2 L3

UNIT–III

6. a) Expand the Taylor's series expansion of $Sinx$ in powers of $(x-\frac{®}{4})$ — 6M CO3 L3

b) If $U=f(2x-3y,3y-4z,4z-2x)$ then find the value of $\frac{1}{2}\frac{\partial U}{\partial x}+\frac{1}{3}\frac{\partial U}{\partial y}+\frac{1}{3}\frac{\partial U}{\partial z}$ — 6M CO3 L2

OR

7. a) If $x=r\,Sin^{-}\,Cos¤, y=r\,Sin^{-}\,Sin¤, z=r\,Cos^{-}$ then find $\frac{\partial(x,y,z)}{\partial(r,^{-},¤)}$ — 6M CO3 L3

b) A rectangular open box of capacity 32 cubic units is to be prepared. Find the dimensions of the box, to minimize the cost of painting outside. — 6M CO3 L2

UNIT–IV

8. a) Evaluate $\int\int\left(x^2+y^2\right)dx\,dy$ in the positive quadrant for which $x+y\le 1$ — 6M CO4 L3

b) Evaluate $\int_{y=1}^{e}\int_{x=1}^{\log y}\int_{z=1}^{e^x} \log z \; dz\, dx\, dy$ 6M CO4 L2

OR

9. Evaluate $\int_{0}^{4a}\int_{\frac{x^2}{4a}}^{2\sqrt{ax}} dy\, dx$ by changing the order of the integration 12M CO4 L2

UNIT–V

10. a) Derive the relation between Beta and Gamma functions 6M CO5 L3

b) Evaluate $\int_{0}^{\infty} \sqrt{x}e^{-x^2} dx$ 6M CO5 L4

OR

11. a) Prove that $\Gamma\left(\frac{1}{2}\right) = \sqrt{®}$ 6M CO5 L3

b) Evaluate $\int_{0}^{\frac{®}{2}} \sqrt{\cot^{-}}\, d^{-}$ 6M CO5 L4

*** End ***