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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

- 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
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- vi) She is severely suffering from fever
- viii) The valley is very steep. it is deadly dangerous.
- ix) Nalini sings well. She is a great 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** 12M L4
- 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.

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 :										
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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

- 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) 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 $\in \{19, 20, \dots, 24\}$

Category 3: Overweight if BMI $\in \{25, 26, \dots, 29\}$

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

- 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 (5X2= 10M)

CO Blooms Level

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 '}' such that the system $2x + y + 2z = 0, x + y + 3z = 0, 4x + 3y + \}z = 0$ 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

$$\text{of } A = \begin{bmatrix} 3 & 1 & 4 \\ 0 & 2 & 6 \\ 0 & 0 & 5 \end{bmatrix}$$

6M CO1 L2

UNIT-II

4. Verify Cayley – Hamilton theorem for

$$A = \begin{bmatrix} 2 & 1 & 1 \\ 0 & 1 & 0 \\ 1 & 1 & 2 \end{bmatrix} \text{ and hence find } A^{-1} \text{ and } A^6$$

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 $\text{Sin}x$ in powers of

$$\left(x - \frac{f}{4}\right)$$

6M CO3 L3

- b) If $U = f(2x - 3y, 3y - 4z, 4z - 2x)$ then find the

$$\text{value of } \frac{1}{2} \frac{\partial U}{\partial x} + \frac{1}{3} \frac{\partial U}{\partial y} + \frac{1}{3} \frac{\partial U}{\partial z}$$

6M CO3 L2

OR

7. a) If $x = r \text{Sin} \theta \text{ Cos} \phi, y = r \text{Sin} \theta \text{ Sin} \phi, z = r \text{Cos} \theta$,

$$\text{then find } \frac{\partial(x, y, z)}{\partial(r, \theta, \phi)}$$

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 $\int \int (x^2 + y^2) dx dy$ in the positive quadrant for

$$\text{which } x + y \leq 1$$

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 $\Gamma\left(\frac{1}{2}\right) = \sqrt{f}$

6M CO5 L3

b) Evaluate $\int_0^{\frac{f}{2}} \sqrt{\cot u} \, du$

6M CO5 L4

*** End ***

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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

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)

a) Define standard electrode potential.

b) List out any four merits of fuel cell

c) Name the catalyst used in cationic polymerisation?

d) Mention any two application of pH metry.

e) Define prototypes. Give examples

CO	Blooms Level
CO1	L1
CO2	L1
CO3	L1
CO4	L1
CO5	L1

PART-B

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

2. a) Discuss in brief about the construction, working principle with half-cell reactions of a Galvanic cell.

b) Explain the principle involved in potentiometric titrations. Write an experimental procedure for carrying out the titration of a precipitation reaction.

Marks	CO	Blooms Level
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6M	CO1	L4
----	-----	----

6M	CO1	L2
----	-----	----

OR

3. a) Derive Nernst equation and give its significance.

b) How Ion sensing electrodes are classified.

6M	CO1	L4
----	-----	----

6M	CO1	L1
----	-----	----

UNIT-II

4. a) Write a note on primary and secondary battery.

b) Mention the electrode reactions occurring in Zn/air cell.

6M	CO2	L1
----	-----	----

6M	CO2	L3
----	-----	----

OR

5. a) Mention the components of a Li-MnO₂ cell. Discuss the chemistry of the working of the cell.

b) With a neat sketch explain the functioning of H₂-O₂ fuel cell.

6M	CO2	L3
----	-----	----

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 ***