Hall Ticket Number :

R-20

I B.Tech. I Semester Supplementary Examinations September 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) Consider the following program
```
#include<stdio.h>
main()
{
   int a=5;
   b = a << 2;
   printf("a=%d b=%d \n", a,b);
}
```
What is the output of above program? Explain it in two lines.   1   L1

b) What is the difference between 'getchar()' and 'scanf()' in C   1   L1

c) What is meant by Scope of Variable in C?   2   L2

d) What is a void pointer?   4   L1

e) How do we identify the end of file in C. Illustrate with an example?   4   L2

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

		Marks	CO	Blooms Level

UNIT–I

		Marks	CO	Blooms Level
2. a)	Write briefly about the C Tokens with suitable examples	6M	1	L2
b)	How many keyword and identifiers does C Language support? Explain.	6M	1	L2

OR

		Marks	CO	Blooms Level
3. a)	Explain the Structure of C program.	6M	1	L2
b)	Describe the various operators in C language along with its priority.	6M	1	L2

UNIT–II

		Marks	CO	Blooms Level
4. a)	What are Multi-dimensional arrays? How do we represent a Matrix using arrays?	6M	3	L2
b)	Write a program to print the series in the following form for a number 'n' : Example(n=4)	6M	2	L3

```
1
1 2
1 2 3
1 2 3 4
1 2 3
1 2
1
```

OR

5. a) Explain Bubble sort algorithm with a suitable example.   6M   3   L3

    b) Your teacher has conducted a test having a total of N questions, each question carries 3 marks for a correct answer and −1 for an incorrect answer. Students have decided to attempt all the questions. It is known that each student got X questions correct and the rest of them incorrect. For student to pass the course he must score at least P marks. Write a C program to simulate the above.

    (Input: N, X, P

    Output: Marks Obtained:_____, Status: Pass/ Fail)   6M   2   L3

UNIT–III

6. a) What is recursion? What is the format of a recursive function? Explain its advantages and limitations?   6M   3   L2

    b) Explain any four basic string functions with examples.   6M   3   L2

OR

7. a) What are the various types of preprocessor directives?   6M   4   L2

    b) Write a program to find GCD of Two numbers using recursion.   6M   3   L3

UNIT–IV

8. a) Explain pointer to function and function returning pointer with example.   6M   3   L2

    b) Write a program to concatenate two strings using pointers.   6M   4   L3

OR

9. a) What is advantage of representing an array of string by an array of pointer to string?   6M   4   L3

    b) Distinguish between call by value and call by reference. Illustrate it with an example in C.   6M   4   L3

UNIT–V

10. a) Define a structure with the name 'student'. Assume appropriate fields in student structure. Develop a program which reads 'n' students data and displays all 'n' students' information.   6M   5   L3

    b) Write about different built-in functions used in Files concept.   6M   5   L2

OR

11. a) What are self-referential structures? Explain them with an example.   6M   4   L2

    b) Write a program to copy one file data into another file.   6M   5   L3

*** End ***

R-20

Code: 20AC11T

I B.Tech. I Semester Supplementary Examinations September 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 (5 X 2 = 10M)			

a) If $A = \begin{bmatrix} 1 & 2 & 5 \\ 0 & 3 & 2 \\ 0 & 0 & 4 \end{bmatrix}$ then find the Eigen values of A.

CO1   L3

b) Define quadratic form and Write matrix of a quadratic form of

$$Q = 6x_1^2 + 3x_2^2 + 3x_3^2 - 4x_1x_2 - 2x_2x_3 + 4x_3x_1$$

CO2   L2

c) Differentiate Taylor's and Maclaurin's power series expansion   CO3   L2

d) Evaluate $\int\limits_{z=0}^{1} \int\limits_{y=0}^{2} \int\limits_{x=1}^{2} xyz \, dzdydx.$

CO4   L3

e) Evaluate $\Gamma\left(-\frac{1}{2}\right)$

CO5   L3

PART-B

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

	Marks	CO	Blooms Level

UNIT–I

2.   Reduce the matrix $\begin{bmatrix} 2 & 3 & -1 & -1 \\ 1 & -1 & -2 & -4 \\ 3 & 1 & 3 & -2 \\ 6 & 3 & 0 & 7 \end{bmatrix}$ into normal form.

12M   L3

OR

3. Find the Eigen values and Eigen vectors of the matrix

$$A = \begin{bmatrix} 6 & -2 & 2 \\ -2 & 3 & -1 \\ 2 & -1 & 3 \end{bmatrix}$$

12M   L2

UNIT–II

4. Reduce the matrix $A = \begin{bmatrix} -1 & 2 & -2 \\ 1 & 2 & 1 \\ -1 & -1 & 0 \end{bmatrix}$ to a Diagonal form

12M   L2

OR   L2

5. Reduce the quadratic form

$$3x^2 + 3y^2 + 3z^2 + 2xy + 2xz - 2yz \text{ to}$$

canonical form by an orthogonal transformation   12M   L3

UNIT–III

6. a) If $u = f(e^{y-z}, e^{z-x}, e^{x-y})$, prove that
$$\frac{\partial u}{\partial x} + \frac{\partial u}{\partial y} + \frac{\partial u}{\partial z} = 0.$$

6M   L3

b) If $u = x^2 + y^2 + z^2$, $v = xy + yz + zx$, $w = x + y + z$, find $\frac{\partial(u,v,w)}{\partial(x,y,z)}$

6M   L2

OR

7. Find the minimum value of $x^2 + y^2 + z^2$, given that $xyz = a^3$

12M   L2

UNIT–IV

8. a) Evaluate $\displaystyle\int_0^\infty \int_0^\infty e^{-(x^2+y^2)} \, dx \, dy$ by changing to polar coordinates

6M   L3

b) Evaluate $\displaystyle\int_{y=1}^{e} \int_{x=1}^{\log y} \int_{z=1}^{e^x} \log z \, dz \, dx \, dy$.

6M   L4

OR

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

integration.   12M   L3

UNIT–V

10. a) Prove that $\int_{0}^{1} \frac{dx}{\sqrt{1-x^4}} = \frac{\sqrt{f}}{4}$

6M   L3

b) Evaluate $\int_{0}^{1} \left(\log\frac{1}{x} \right)^{n-1} dx, n > 0$ in terms of Gamma

functions.   L2

OR   6M

11. a) Symmetry of Beta function B(m, n)=B(n, m)   4M   L3

b) Prove that $\int_{0}^{\frac{f}{2}} Sin^2{}_{\prime\prime}\ Cos^4{}_{\prime\prime} = \frac{f}{32}$

8M   L2

*** End ***

Code: 20A312T

I B.Tech. I Semester Supplementary Examinations September 2022

Engineering Drawing

(Common to CE, EEE & ECE)

Max. Marks: 70

Time: 3 Hours

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Answer *any five* questions by choosing one question from each unit (5 x 14 = 70 Marks)

		Marks	CO	Blooms Level

UNIT–I

1. Draw the locus of a point P moving so that the ratio of its distance from a fixed point F to its distance from a fixed straight line is 4/3. Name the curve and draw a tangent and normal to the curve from any point on it. **14M** CO1 L1,L2

OR

2. Draw a hypocycloid generated by a rolling circle of diameter 50 mm and the diameter of the directing circle is 240 mm. Also draw a tangent and normal to the curve from any point on it. **14M** CO1 L1,L2

UNIT–II

3. Mark the projections of the following points on a common reference line:
   P, 40 mm in front of VP and 20 mm below the HP
   Q, 35 mm behind VP and 25 mm below the HP.
   R, 40 mm in front of VP and 20 mm above the HP.
   S, 30 mm above the HP and in the VP. **14M** CO2 L1,L2

OR

4. A line NS, 80 mm long has its end N 10 mm above the HP and 15 mm in front of VP. The other end S is 65 mm above the HP and 50 mm in front of VP. Draw the projections of the line and find its true inclination with HP and VP. **14M** CO2 L1,L2

UNIT–III

5. A regular hexagonal lamina of 40 mm side is resting on one its corner on HP. Its surface is inclined at 45º to HP. The plan of the diagonal through the corner which is on HP makes an angle of 45º with XY. Draw its projections. **14M** CO3 L2,L4

OR

6. Rectangle 30 mm and 50 mm sides is resting on HP on one small side which is 30º inclined to VP, while the surface of the plane makes 45º inclination with HP. Draw its projections. **14M** CO3 L2,L4

UNIT–IV

7. A right pentagonal pyramid of side 20 mm and altitude 50 mm rests on one of its edges of the base in the HP. The base being tilted up such that the apex is 30 mm above HP. Draw the projection of the pyramid when the edge on which it is resting is perpendicular to VP.   14M   CO4   L2,L3

OR

8. A cylinder of diameter 30 mm and axis length 50 mm is resting on the HP on a point so that its axis is inclined at 45° to HP and parallel to VP. Draw its top and front views.   14M   CO4   L2,L3
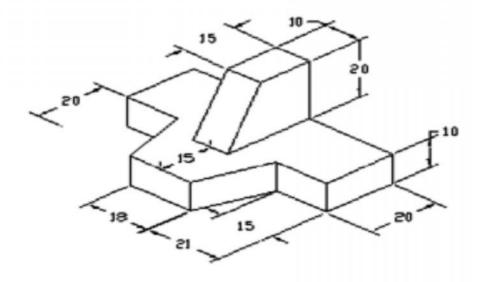
UNIT–V

9. A frustum of a square pyramid of bottom edge 50 mm, top edge 25 mm and height 50 mm. Draw the isometric projection of the frustum.   14M   CO5   L2,L3

OR

10.

Draw the Front view, Top view and Right side view of the above figure.   14M   CO5   L2,L3

*** End ***

Hall Ticket Number :

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    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) Distinguish Scale and Sludge.	CO1	L1
b) List any three advantages of Lithium batteries.	CO2	L1
c) What are thermosetting resins? Give example.	CO3	L1
d) Mention any three properties of lubricant oils.	CO4	L1
e) Briefly write about Nano materials.	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 the method of estimation of total hardness of water by EDTA method.	6M	CO1	L4
b)	Explain the WHO standards of drinking water.	6M	CO1	L2
	OR			
3. a)	Discuss the various methods of formation and removal of sludges.	6M	CO1	L4
b)	Describe the desalination of blackish water process.	6M	CO1	L2
	UNIT–II			
4. a)	Derive Nernst's equation for determination of single electrode potential.	6M	CO2	L4
b)	Discuss the working function of H_2-O_2 fuel cell.	6M	CO2	L4
	OR			
5. a)	Explain the mechanism of Electro Chemical theory of corrosion with suitable example.	6M	CO2	L2
b)	Write note on anodic inhibitors.	6M	CO2	L1

UNIT–III

6. a) Define Polymerization and explain the different types of polymerization reactions with suitable examples.   6M   CO3   L1

    b) Write note on Cetane values.   6M   CO3   L1

OR

7. a) Describe the determination of calorific value of fuel using Bomb calorimeter.   6M   CO3   L2

    b) What are the differences between thermo plastics and thermo setting plastics?   6M   CO3   L2

UNIT–IV

8. a) Write note on Constituents of composites.   6M   CO4   L1

    b) Describe the properties of refractories.   6M   CO4   L2

OR

9. a) Describe the manufacture of Portland cement.   6M   CO4   L2

    b) Write note on classification of lubricants.   6M   CO4   L1

UNIT–V

10. a) Write the applications of nano material in waste water treatment.   6M   CO5   L1

    b) Describe the uses of smart materials.   6M   CO5   L2

OR

11. a) Describe the chemical synthesis of nano materials by SOL-gel method.   6M   CO5   L2

    b) Write note on Self-healing materials.   6M   CO5   L1

*** End ***