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R-15

Code: 5GC14

I B.Tech. I Semester Supplementary Examinations March/April 2023

Engineering Mathematics-I
(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)

UNIT-I

1. Solve the differential equation $(x+1)\frac{dy}{dx} - y = e^{3x}(x+1)^2$

OR

2. Find the Orthogonal trajectories of the family of curves $y = ax$

UNIT-II

3. Using the method of variation of parameters, solve $(D^2 + 4)y = \tan 2x$

OR

4. Solve $(D^2 + 4)y = x^2 + \cos 2x$

UNIT-III

5. Test of convergence of the series $\frac{1}{1.2.3} + \frac{3}{2.3.4} + \frac{5}{3.4.5} + \dots \dots \dots \infty$

OR

6. Test for convergence of the series $\sum \frac{n^3}{3^n}$

UNIT-IV

7. If $u = x^2 - 2y, v = x + y + z, w = x - 2y + 3z$, then find $\frac{\partial(u, v, w)}{\partial(x, y, z)}$

OR

8. Find the maximum and minimum values of $x^3 + 3xy^2 - 15x^2 - 15y^2 + 72x$

UNIT-V

9. Trace the curve $x^3 + y^3 = 3axy$

OR

10. Trace the curve $r = a \sin 3\theta$

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R-15

Code: 5G111

I B.Tech. I Semester Supplementary Examinations March/April 2023

Problem Solving Techniques and Introduction to 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)

UNIT-I

Marks

1. a) Give a comparison between system and application software's with examples. 7M
- b) List and explain various symbols used in flowcharts with figures 7M

OR

2. a) Discuss about different computer languages with examples. 7M
- b) Explain in detail about the software development method. 7M

UNIT-II

3. a) What are bitwise logical operators? Explain about bitwise logical operators with suitable programming example. 7M
- b) Evaluate the following expressions:
(i) $a*(3+b)/2-c++ *b$ where $a=3, b=4$ and $c=5$ (ii) $!(4+5*0)>=6-4$ 7M

OR

4. a) What is the need of explicit type conversion in C? How to cast the data? 7M
- b) What is the need of escape sequence? Write a sample program to illustrate escape sequences. 7M

UNIT-III

5. a) Give the control flow diagram of the *for loop*. How is the execution of 'for' loop proceeds? 7M
- b) Write a C program to find biggest of three integer numbers. 7M

OR

6. a) Explain counter-controlled and condition-controlled loops with examples. 7M
- b) Write a C program to find the sum of first and last digit of a number 7M

UNIT-IV

7. a) What are the different types of arrays in C? Explain with a suitable example, array declaration, initialization and accessing of the elements for these different types. 7M
- b) Write a C program to accept 3x3 matrix and display elements of the matrix. 7M

OR

8. a) Explain any five string manipulation functions with example 10M
- b) Write a program to find highest and smallest number in the given array. 4M

UNIT-V

9. a) Write a C program to exchange the value of two integers using call by reference. 7M
 - b) Write a c program to find factorial of a number using recursive function 7M
10. a) Define scope. Briefly explain the scope, life time and visibility of Identifier. 7M
 - b) Explain about pre-processor commands with examples. 7M
