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Question Paper Code:R4710

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2025

Fourth Semester

R21UME410- C PROGRAMMING FOR MECHANICAL ENGINEERS

Mechanical Engineering

(Regulations R2021)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

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| 1. Explain the Basic Organization of a Computer. | CO1- U |
| 2. Draw the flow chart to print N natural numbers. | CO2- App |
| 3. Write the syntax for nested if statement. | CO1-U |
| 4. Write a C program for if-else statement. | CO3-App |
| 5. Write the syntax for declaring the 2D array. | CO1- U |
| 6. Differentiate arrays and strings. | CO1- U |
| 7. Write a C program to add two numbers without using return type. | CO1- App |
| 8. Write the Syntax to initialize Union. | CO1- U |
| 9. Write a simple C function to calculate the Reynolds number for fluid flow. | CO2- App |
| 10. How does file handling in C help in storing and retrieving experimental data? | CO2- App |

PART – B (5 x 16= 80 Marks)

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|---|----------|------|
| 11. (a) Explain the basic organization of a computer with a neat block diagram. Discuss the functions of each unit in detail. | CO1- U | (16) |
| Or | | |
| (b) Write a C program to find the area and Circumference of a circle. Explain how the program works step by step. | CO1- U | (16) |
| Or | | |
| 12. (a) Write a C program to determine the Largest of Two Numbers using if-else condition statements. | CO3- App | (16) |

Or

- (b) Write a C program to read the age of a candidate and determine whether he is eligible to cast his/her own vote. CO3- App (16)
13. (a) Write a C Program to find the average of n numbers using arrays CO4- App (16)
Or
(b) Write a C program to generate the Fibonacci series using recursion CO4- App (16)
14. (a) Write a C program to find the sum of elements in an array using pointers. CO4- App (16)
Or
(b) Write a C program to calculate and display the gross salary of employees using a structure (basic pay, HRA, DA). CO4- App (16)
15. (a) Write a C program to calculate the material removal rate (MRR) in turning operation CO2- App (16)
Or
(b) Write a C program to determine the efficiency of a straight fin using the formula: $\eta_f = \tanh(mL)/mL$ where $m = \sqrt{hP/kA}$, h = heat transfer coefficient, P = perimeter, k = thermal conductivity, A = cross-section area, and L = fin length. CO2- App (16)