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APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

FIFTH SEMESTER B.TECH DEGREE EXAMINATION, DECEMBER 2017

Course Code: ME305

Course Name: COMPUTER PROGRAMMING & NUMERICAL METHODS (MA, ME, MP, PE)

Max. Marks: 100 Duration: 3 Hours

PART A

Answer any three full questions, each carries 10marks. Marks

1 a) Explain how integer number and floating numbers are represented internally in a computer. (5)

b) Write an algorithm and draw a neat flowchart to find all the possible roots of a quadratic equation. (5)

2 a) Explain with examples the tokens in C++ (5)

b) Describe the structure of a C++ program with an example. (5)

3 a) Explain the use of a switch statement with an example. (5)

b) Explain the C++declaration and initialization of 2-D arrays with suitable examples. (5)

4 What are the different types of functions supported by C++ ? Give examples for each function. (10)

PART B

Answer any three full questions, each carries 10marks.

5 a) Discuss the advantage of using pointers with examples. (5)

b) Write a program to input two nXn matrices and display their product. (5)

6 a) Write a program to generate N^{th} Fibonacci number using arrays . (5)

b) Write a function big to find largest of two numbers and use this function in the main program to find largest of three numbers. (5)

7 a) Explain different types of inheritances in C++ (5)

b) Explain public inheritance and private inheritance with suitable examples (5)

8 Explain major features of OOP (10)

PART C

Answer any four full questions, each carries 10marks.

9 a) Give the step by step procedure for solving algebraic equations by Gauss elimination method (6)

b) What are the sources of error in numerical computations? Explain. (4)

10 Using Lagrange's formulae find the values of (10)

i) y_x if $y_1 = 4, y_3 = 120, y_4 = 340, y_5 = 2544$

ii) if $y_{-30} = 30, y_{-12} = 34, y_3 = 38, y_{18} = 42$

11 Solve by Gauss Siedel method the following system of equations (10)

$$8x - 3y + 2z = 20$$
$$6x + 3y + 12z = 35$$
$$4x + 11y - z = 33$$

12 a) Prepare a C++ program for fitting a parabola to a given set of data. (5)

b) In an organization, systematic efforts were introduced to reduce the employee absenteeism and results for the first 10 months are shown below. Fit a straight line to the data and from this equation, estimate the average weekly reduction in absenteeism. (5)

x	1	2	3	4	5	6	7	8	9	10
y	10	9	9	8.5	9	8.5	8	7	8	7.5

13 a) Interpolate the value of f at $x = 0.25$ using Newton's forward interpolation formula using the following data. (5)

x:	0.1	0.2	0.3	0.4	0.5
f:	0.11246	0.22270	0.32863	0.42839	.52050

b) What numerical methods are available for the solution of partial differential equations? (5)

14 a) Write a complete program to fit a straight line using n data values. (5)

b) Explain the terms: correlation and regression. (5)

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