

Reg No.: \_\_\_\_\_

Name: \_\_\_\_\_

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**  
**FIFTH SEMESTER B.TECH DEGREE EXAMINATION, APRIL 2018**

**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 10 marks*

Marks

- |   |  |     |
|---|--|-----|
| 1 | a) What is a flowchart? What are the notations used in flow charts?                                    | (6) |
|   | b) Draw the flow chart for finding factorial of N  | (4) |
| 2 | a) What are the various operators in C++?  | (6) |
|   | b) What is precedence of operators?  | (4) |
| 3 | a) What is the difference between the 'break' and 'continue' statements in C++?                        | (4) |
|   | b) Write a program which accepts a number from the user and print whether it is a prime number or not. | (6) |
| 4 | a) What is recursion?  | (5) |
|   | b) Write a program which accepts a string from the user and print whether it is a palindrome or not.   | (5) |

**PART B**

*Answer any three full questions, each carries 10 marks*

- |   |   |     |
|---|---|-----|
| 5 | a) With the help of an example explain the difference between call by value and call by reference method in C++?  | (5) |
|   | b) Write a program which accepts the coefficients of a quadratic equation from the user and print its roots. Write a sub-function for evaluating the roots. | (5) |
| 6 | a) Write a program which accepts 10 numbers from the user and print it in ascending order.  | (4) |
|   | b) Write a program which accepts two 3x3 matrices from the user and print its product   | (6) |
| 7 | a) Explain various access specifiers in C++.  | (6) |
|   | b) What is a constructor? Explain with a suitable example.  | (4) |
| 8 | a) What is inheritance? Explain with a suitable example.  | (5) |
|   | b) What is overriding of member functions? Explain with a suitable example.   | (5) |

**PART C**

*Answer any four full questions, each carries 10 marks*

- |    |   |      |
|----|---|------|
| 9  | Solve the following system of equations using Gauss elimination method. | (10) |
|    | $x + y + z = 9$   |      |
|    | $2x - 3y + 4z = 13$   |      |
|    | $3x + 4y + 5z = 40$   |      |
| 10 | Solve the following system of equations using Gauss Jordan method.      | (10) |
|    | $5x - 2y + 3z = 18$   |      |

$$x + 7y - 3z = -22$$

$$2x - y + 6z = 22$$

- 11 Using Lagrange's formula find the value of  $y$  at  $x = 6$  from the following data. (10)

x	3	7	9	10
y	168	120	72	63

- 12 By the method of least squares find the straight line that best fits the following data (10)

x	1	2	3	4	5
y	14	27	40	55	68

- 13 Fit a second degree polynomial of the form  $y = ax^2 + bx + c$  by taking  $x$  as the independent variable. (10)

x	0	1	2	3	4
y	1	5	10	22	38

- 14 The following table gives indices of industrial production verses registered unemployed people. Calculate the value of the co-efficient of correlation. (10)

Year	2008	2009	2010	2011	2012	2013	2014	2015
Index of Production	100	102	104	107	105	112	103	99
Number of Unemployed	15	12	13	11	12	12	19	26

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