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| **APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**  SIXTH SEMESTER B.TECH DEGREE EXAMINATION, MAY 2019 | | | | | |
| **Course Code: CE306** | | | | | |
| **Course Name: COMPUTER PROGRAMMING AND COMPUTATIONAL TECHNIQUES**  **SCHEME OF VALUATION** | | | | | |
| Max. Marks: 100 | | |  | Duration: 3 Hours | |
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| **PART A** | | | | | |
|  |  | ***Answer any two full questions, each carries 15 marks.*** | | | Marks |
| 1 | a) | (i) Preprocessor directives - 2 marks (ii) using directives. – 2 marks | | | (4) |
|  | b) | Manipulators – description – 1 marks  Detail on any two manipulators (such as setw(), endl etc) its uses and format – 1.5 marks each | | | (4) |
|  | c) | program to accept the height of a person in cms and convert and  display the height in feet and inches  Logic: 2 marks  Input/output statements :2  Variable declarations: 1  Overall Syntax: 2 | | | (7) |
| 2 | a) | use of *break* and *continue* statements in C++.  Description on use with format and sample program statements for each – 3 ½ marks each | | | (7) |
|  | b) | Logic: 2 marks  Input/output statements :1  Variable/matrix declarations: 1 mark  Matrix handling : 2  Overall Syntax: 2 | | | (8) |
| 3 | a) | Explain any four string handling functions.  Details such as use, syntax and sample statement of four string handling functions  (strcat(), srtcpy(), strcmp(), strlen() etc) 2 marks each  NB: **Two marks** alone be given if four string handling function names are listed alone without suitable details. | | | (8) |
|  | b) | Logic: 3 marks  Input/output statements :1  Declaration of variables/strings: 1  String handling : 1  Overall Syntax: 1 | | | (7) |
| **PART B** | | | | | |
| ***Answer any two full questions, each carries 15 marks.*** | | | | | |
| 4) | a) | Detailed explanation bringing out the differences in function declaration, function call and function definition statements for both – 5 marks | | | (5) |
|  | b) | Logic: 3 marks  Function : 3  Main program: 2  Overall Syntax: 2 | | | (10) |
| 5 | a) | Structure definition with/using a suitable example – 4 marks  Structure variable declaration with/using suitable examples - 1½ marks  Structure variable initialization with/using suitable examples - 1½ marks | | | (7) |
|  | b) | Logic: 2 marks  Structure handling : 3  Structure:2  Overall Syntax: 1 | | | (8) |
| 6 | a) | Explanation on various file i/o streams – 7 marks  NB : 3 marks only for simple listing of i/o streams | | | (7) |
|  | b) | Characteristics of procedure oriented programming and its limitations – 4 marks  Basic concept of object oriented programming and its key features such as  objects, classes and data encapsulation (detailed description and program statements not expected) – 4 marks | | | (8) |
| **PART C** | | | | | |
| ***Answer any two full questions, each carries20 marks.*** | | | | | |
| 7 | a) | Using **method of successive approximations** find a real root of the equation. For iteration the trial value of root may be taken as 1.0.  Rewriting the given equation to make it convenient for iteration - 2 marks  Iteration steps in successive approximations method - 5 marks  **Converged root: 1.497** (3 marks)  Note: Credit (60%) marks may be given if the student has solved the problem correctly using any other method for transcendental equation solution such as method of false position or Newton Rapson method | | | (10) |
|  | b) | Program to fit a straight line.  Logic :6 marks  Synax:4 marks  NB: 50 % credit of marks for logic may be given if the student has written and explained the least square fit expressions for straight line fit. | | | (10) |
| 8 | a) | Listing the normal equations of the method of least squares to fit a parabola of the form R =a + bV + cV2 - 2 marks  Computation of various coefficients of the normal equations using the given data – 4 marks  Solution of the simultaneous equations to obtain the unknown coefficients a, b and c - 2 marks  **Solution R = 3.48 – 0.002 V + 0.003 V2**- 2 marks | | | (10) |
|  | b) | Logic :6 marks  Synax:4 marks  NB: 50 % credit of marks for logic may be given if the student has written and explained the least square fit expressions for straight line fit. | | | (10) |
| 9 | a) | Solve the following simultaneous system of equations using Gauss elimination method. ;  ; .  Triangularisation - 5 marks  Back substitution - 3 marks  **Solution x1 = 3.0; x2 = -2.5; x3 = 7.0** (2 marks) | | | (10) |
|  | b) | Finite difference approximations for first and second derivatives of a function- 4 marks  Reduction of given Laplace equation to linear algebraic equations by application  of difference equations for a 2 dimensional mesh - 6 marks | | | (10) |
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