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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 marksDetail 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 anddisplay the height in feet and inchesLogic: 2 marksInput/output statements :2Variable declarations: 1Overall 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 marksInput/output statements :1Variable/matrix declarations: 1 markMatrix handling : 2Overall 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 eachNB: **Two marks** alone be given if four string handling function names are listed alone without suitable details. |  (8) |
|  | b) | Logic: 3 marksInput/output statements :1Declaration of variables/strings: 1String handling : 1Overall 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 marksFunction : 3Main program: 2Overall Syntax: 2 | (10) |
| 5 | a) | Structure definition with/using a suitable example – 4 marksStructure variable declaration with/using suitable examples - 1½ marksStructure variable initialization with/using suitable examples - 1½ marks | (7) |
|  | b) | Logic: 2 marksStructure handling : 3Structure:2Overall Syntax: 1 |  (8) |
| 6 | a) | Explanation on various file i/o streams – 7 marksNB : 3 marks only for simple listing of i/o streams | (7) |
|  | b) | Characteristics of procedure oriented programming and its limitations – 4 marksBasic concept of object oriented programming and its key features such asobjects, 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$x- sinx- ^{1}/\_{2}=0$. For iteration the trial value of root may be taken as 1.0. Rewriting the given equation to make it convenient for iteration - 2 marksIteration 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 marksSynax:4 marksNB: 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 marksSolution 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 marksSynax:4 marksNB: 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. $3x\_{1}-0.1x\_{2}-0.2 x\_{3}=7.85$ ;$0.1 x\_{1}+7 x\_{2}-0.3 x\_{3}= -19.3$; $0.3 x\_{1}-0.2 x\_{2}+10 x\_{3}=71.4$ .Triangularisation - 5 marksBack 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 marksReduction of given Laplace equation to linear algebraic equations by applicationof difference equations for a 2 dimensional mesh - 6 marks | (10) |
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