

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

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

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**

Fourth semester B.Tech examinations (S), September 2020

**Course Code: IT204****Course Name: OBJECT ORIENTED TECHNIQUES (IT)****Max. Marks: 100****Duration: 3 Hours****PART A***Answer any two questions, each carries 15 marks***Marks**

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|---|--|----|
| 1 | a) Create a class SHIP with the following specifications.<br>Private Members:<br>Ship_number            5 digit code<br>Ship_location           8 digit code<br>Public Members:<br>getdata( )                Read number and position<br>putdata ( )                Display number and position<br>Using static data find the number of objects created at the time of program execution.  | 7  |
|   | b) Explain const member functions.   | 4  |
|   | c) Differentiate between class and structure in C++.   | 4  |
| 2 | a) Design a class DATE containing day, month and year as its data members. Overload + and – operators to add and subtract two DATEs. Also overload = operator to assign the value of one DATE object to another.   | 10 |
|   | b) Distinguish between implicit and explicit data conversion.  | 5  |
| 3 | a) Define a class POINT with two attributes X_point ( integer ) and Y_point (integer). POINT class includes:<br>1. Default constructor to initialize attribute values to (0,0)<br>2. Read( ) function to read values of attributes<br>3. Norm( ) function to return the point's distance from the origin (0,0)<br>4. Print( ) function to display the value of attributes<br>5. Distance( ) function to find distance between two POINT objects<br>Implement a C++ program with class POINT to invoke the functions considering 5 POINT objects. Find the closest among these 5 objects. | 10 |
|   | b) List functions for finding string objects.  | 5  |

**PART B***Answer any two questions, each carries 15 marks*

- 4 a) What are various types of inheritance? Give the syntax of each. 10  
 b) Differentiate between inheriting a class with public and private visibility mode. 5
- 5 a) Explain array of pointers and pointer to an array using examples. 7  
 b) Define runtime memory management? What support is provided by C++ for runtime memory management and how does it differ from C's memory management. 8
- 6 a) Design a class STUDENT with data member roll\_no and name. Derive two classes TEST and SPORTS from STUDENT. Marks scored in six subjects are stored in TEST class. Mark for student's performance is stored in SPORTS class. RESULT class is derived from TEST and SPORTS. Total mark is calculated based on TEST marks and SPORTS mark. Write a program to model the above relation. 9  
 b) Write a C++ program for sorting names of persons by swapping pointers instead of data. 6

**PART C***Answer any two questions, each carries 20 marks*

- 7 a) Compare *assignment* and *copy initialization* operators with example. How can we prohibit copying using assignment operator? 10  
 b) Describe *error status bits* and functions of *error flags*. 10
- 8 a) Write a short note on exceptions with arguments. 5  
 b) Describe Rethrowing an exception with the help of a program. 5  
 c) Write a C++ program that instantiates a function template to implement Insertion Sort on array of objects. 10
- 9 a) Explain File I/O with member functions using an example program. 8  
 b) Write a program for matrix multiplication. The matrix multiplication function should notify if the order of matrix is invalid using exceptions. 6  
 c) Differentiate between (i) function template and template function 6  
 (ii) class template and template class