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Total No. of Pages : 02

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**B.Tech. (Artificial Intelligence & Machine Learning) /
AI and Data Science) / AI / (CSE) /
(Cyber Security) / (IOT) / (Data Science) /
(Internet of Things and Cyber Security including Block Chain
Technology) (Computer Engg) (Sem.-3)
OBJECT ORIENTED PROGRAMMING**

Subject Code : BTCS-302-18

M.Code : 76437

Date of Examination : 17-01-23

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. Write briefly :

- a. Advantage of copy constructors.
- b. What are the various access modifiers?
- c. Multilevel inheritance
- d. Differentiate between call by value and call by reference
- e. Need of abstract class
- f. Friend class
- g. Difference between equal to (==) and assignment operator (=).
- h. How will memory allocated to values of a 2D integer array?

- i. How global variable is difference from local variable?
- j. Illustrate difference in early and late binding.

SECTION-B

- 2. What is friend function? Explain by giving suitable example.
- 3. Write a program to read two numbers from the keyboard and display their average on screen.
- 4. How exception handling is beneficial for the programming? Write a program to multiply two arrays while catching and handling exceptions.
- 5. How procedural programming is different from object oriented programming? Explain.
- 6. Write a C++ program to overload the binary operator '+' to add two complex numbers.

SECTION-C

- 7. Design three classes – student, college and university where college is derived from university and student is derived from college. Write suitable function to initialize values and write a main function for execution by creating objects.
- 8. Write a C++ program by using classes in which user enter the three angles a1, a2, and a3 and then program will check that its valid triangle or not. If it's valid triangle, then find the factorial of a1 with while loop, and find that a2 is a palindrome number or not. If a2 is palindrome, then find the factorial of a2.
- 9. **Write short note on :**
 - a. Friend Function
 - b. Pure Virtual Function

Also write suitable program for each of these concepts to illustrate their usage.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.