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10MCA22

Second Semester MCA Degree Examination, December 2012
Object Oriented Programming with C++

Time: 3 hrs. Max. Marks:100

Note: ***Answer any FIVE full questions.***

1 a. What is object-oriented programming? Discuss the characteristics of an object-oriented programming. **(10 Marks)**

b. What are default arguments? Explain with an example. **(06 Marks)**

c. What are inline functions? Discuss the advantages of inline functions. **(04 Marks)**

2 a. What is function overloading? Explain with example. **(06 Marks)**

b. What are qualifiers? Illustrate them with examples. **(04 Marks)**

c. Write a C++ program using template function for quick sort and demonstrate sorting of integers and doubles. **(10 Marks)**

3 a. What are the differences between structures and classes in C++? Explain with an example. **(05 Marks)**

b. Explain constructor overloading with an example program. **(05 Marks)**

c. Define class and object. With an example, explain the concept of data encapsulation and accessing of member functions. **(10 Marks)**

4 a. Create a class STRING and implement the following. Display the result by overloading the operator << after every operation.

STRING S1 = "VTU"
STRING S2 = "BELGAUM"
STRING S3 = S1 + S2 ; - use copy constructor. **(10 Marks)**

b. Explain static members of a class. Write a C++ program to describe them. **(10 Marks)**

5 a. Write a C++ program to create a class called STUDENT with data members USN, Name and Age. Using inheritance, create the classes UGSTUDENT and PGSTUDENT having fields as Semester, Fees and Stipend. Enter the data for atleast 5 students. Find the semester-wise average age for all UG and PG students separately. **(10 Marks)**

b. What is the advantage of using array of pointers to objects? Explain with an example program. **(05 Marks)**

c. What is operator overloading? Write a C++ program to overload [ ] operator. **(05 Marks)**

6 a. Explain with an example program, the visibility of inherited members based on private, public and protected derivations. **(06 Marks)**

b. Explain with an example, how constructors and destructors are called in multilevel inheritance. **(06 Marks)**

c. Discuss the various types of inheritance. Write a program for multiple inheritance. **(08 Marks)**

7 a. Define virtual base class. Write a C++ program to illustrate virtual base classes. **(10 Marks)**

b. What is virtual function? Illustrate with an example, the usage of virtual functions. **(10 Marks)**

8 a. What are iostreams in C++? Give the stream class hierarchy. **(10 Marks)**

b. Write a note on file input and output operations. **(10 Marks)**

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