Total No. of Questions: 6 *Total No. of Printed Pages:3*

Enrollment No.....

Faculty of Engineering / Science
End Sem Examination Dec-2023
CS3CO30 / BC3CO35 Object Oriented Programming

Programme: B.Tech. / B. Sc. Branch/Specialisation: CSE All / Computer Science

Duration: 3 Hrs. **Maximum Marks: 60**

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d. Assume suitable data if necessary. Notations and symbols have their usual meaning.

Q.1 i. The feature by which one object can interact with another object is _____. **1**

(a) Message reading (b) Message passing
(c) Data transfer (d) Data binding

ii. What is encapsulation in OOP? **1**

(a) It is a way of combining various data members and member functions that operate on those data members into a single unit.
(b) It is a way of combining various data members and member functions into a single unit which can operate on any data.
(c) It is a way of combining various data members into a single unit.
(d) It is a way of combining various member functions into a single unit.

iii. If data members are private, what can we do to access them from the class object? **1**

(a) Private data members can never be accessed from outside the class
(b) Create public member functions to access those data members
(c) Create private member functions to access those data members
(d) Create default member functions to access those data members

iv. Which of the following syntax is incorrect for the class definition? **1**
(a) student class{ };
(b) class student{ student(int (a){} };
(c) class teacher{ public: teacher(int (a){ } };
(d) None of these

v. Composition is also a type of _____ relationship. **1**
(a) Aggregation
(b) Association
(c) Inheritance
(d) Both (a) and (b)

vi. In which of the following relationship objects of related classes can occur independently? **1**
(a) Aggregation
(b) Association
(c) Composition
(d) Both (a) and (b)

vii. Which type of members can't be accessed in derived classes of a base class? **1**
(a) All can be accessed (b) Protected
(c) Private (d) Public

viii. Which of the following best describes member function overriding? **1**
(a) Member functions having the same name in derived class only
(b) Member functions having the same name and different signature inside main function
(c) Member functions having the same name in base and derived classes
(d) Member functions having the same name in base class only

ix. A template class can have _____. **1**
(a) More than one generic data type
(b) Only one generic data type
(c) At most two data types
(d) Only generic type of integers and not characters

x. Which header file is required to use file I/O operations? **1**
(a) <ifstream> (b) <ostream>
(c) <fstream> (d) <iostream>

Q.2 i. Write various applications of object-oriented programming. **3**
ii. Explain various object-oriented programming concepts in detail. **7**
OR iii. Differentiate object oriented and procedure-oriented programming paradigms. **7**

Q.3 i. Explain objects as software units. **3**
ii. Explain how objects of different classes interact with each other with the help of a program. **7**
OR iii. Show lifetime and scope of local and global objects with the help of a program. **7**

Q.4 i. What is navigability? How navigability is represented in class diagram? **3**
ii. What is aggregation? Show aggregation of objects in a program. **7**
OR iii. What is composition? Show composition of objects in a program. **7**

Q.5 i. How do you access private operations outside the class? **3**
ii. Write a program to show multiple inheritance. Also write about the use of virtual keyword. **7**
OR iii. Write a program to show operator overloading. **7**

Q.6 Write short note on any two:
i. Template functions **5**
ii. Container classes **5**
iii. Streams and files **5**

******

Marking Scheme
Object Oriented Programming (T) - CS3CO30 (T)- BC3CO35(T)

Q.1	i)	b) Message Passing	**1**
	ii)	a) It is a way of combining various data members and member functions that operate on those data members into a single unit.	**1**
	iii)	b) Create public member functions to access those data members.	**1**
	iv)	a) student class{ }; (b) ,(c) (Mutiple options are correct)	**1**
	v)	d) Both Aggregation an Association	**1**
	vi)	d) Both Aggregation an Association	**1**
	vii)	c) Private	**1**
	viii)	c) Member functions having the same name in base and derived classes.	**1**
	ix)	a) More than one generic data type	**1**
	x)	c) <fstream>	**1**

Q.2	i.	Applications	(As per explanation)	**3**
	ii.	Correctly explained concept	(1 Mark*7)	**7**
	iii.	1 mark per correct difference	(1 Mark*7)	**7**

Q.3	i.	Only theorem	2 Marks	**3**
		Diagram	1 Mark	
	ii.	Theory	3 Marks	**7**
		Program	4 Marks	
OR	iii.	Local	1.5 Marks	**7**
		Programs	4 Marks	
		Global	1.5 Mark	

Q.4	i.	What is navigability	2 Marks	**3**
		How navigability is represented in class diagram	1 Mark	
	ii.	What is aggregation	2 Marks	**7**
		Show aggregation of objects in a program.	5 Marks	
OR	iii.	What is composition	2 Marks	**7**
		Show composition of objects in a program.	5 Marks	

Q.5	i.	Private operations outside the class	(As per explanations)	**3**
	ii.	Write a program to show multiple inheritance.	5 Marks	**7**
		Also write about the use of virtual keyword.	2 Marks	
OR	iii.	Program to show operator overloading.	(As per explanations)	**7**

Q.6		Write notes on any two of the following:		
	i.	Template functions	(As per explanations)	**5**
	ii.	Container classes	(As per explanations)	**5**
	iii.	Streams and files.	(As per explanations)	**5**

******