Enrollment No......................................

Faculty of Engineering
End Sem (Odd) Examination Dec-2017
CS3CO03 Object Oriented Technology

Programme: B.Tech.   Branch/Specialisation: CS

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.

Q.1   i.   Which of the following type of class allows only one object of it to be created?   **1**
(a) Virtual class   (b) Abstract class
(c) Singleton class   (d) Friend class

    ii.   Copy constructor must receive its arguments by: **1**
(a) Either pass-by-value or pass-by-reference
(b) Only pass-by-value
(c) Only pass-by-reference
(d) Only pass by address

    iii.   Which of the following is true?   **1**
(a) The aggregation association represents the part-whole relation between the instances of the associated classes
(b) In a composition association; each part can be related to only a single whole at one time.
(c) Both (a) & (b)
(d) None of these

    iv.   Which of the followings is not the property of aggregation: **1**
(a) Symmetry   (b) Anti-transitivity
(c) Isolation   (d) All of these.

    v.   For operators overloaded as non-static member functions: **1**
(a) Both binary and unary operators take one argument.
(b) Neither binary nor unary operators can have arguments.
(c) Binary operators can have two arguments and unary operators can have one.
(d) Binary operators can have one argument, and unary operators cannot have any.

vi. We can have virtual destructor but not have constructor. **1**
   (a) True   (b) False   (c) May be   (d) None of these
vii. The object whose lifetime does not extend beyond a single **1**
    program run:
    (a) Persistent object   (b) Transient object
    (c) Meta object   (d) None of these
viii. The Generic container classes can be constructed using: **1**
    (a) Abstract method   (b) Virtual methods
    (c) Interface methods   (d) None of these
ix. In object-oriented design **1**
    (a) Operations and methods are identical.
    (b) Methods specify algorithms whereas operations only state
        what is to be done.
    (c) Methods do not change values of attributes.
    (d) Methods and constructor are same.
x. An object is selected for modelling a system provided **1**
    (a) Its attributes are invariant during operation of the system.
    (b) Its attributes change during operation of the system.
    (c) It has numerous attributes.
    (d) It has no attributes relevant to the system.

Q.2 i. What characteristics may be different for all objects in a class **2**
        and what remains the same?
    ii. What do you understand by selector and modifier methods? **3**
        Write one example of each.
    iii. What are object persistence and visibility? Describe these for **5**
        different types of objects.
OR iv. What are metaclass and metaobject? Explain metaclass design **5**
        with suitable example.

Q.3 i. What is delegation? **2**
    ii. How might aggregation assist in making object oriented **3**
        programs?
    iii. What are different types of aggregations? Explain each with **5**
        suitable example.
OR iv. How different types of associations are modelled? Explain. **5**

Q.4 i. Define disinheritance. **2**
    ii. What is the role of an abstract method? Describe with suitable **3**
        example.
    iii. (a) Why are inherited overloaded operators often not very **5**
            useful in the derived class?
        (b) What might be the advantage of being able to overload the
            constructor?
OR iv. What are private and public derivations? What advantage do we **5**
        have when inheriting from a class whose attributes are
        protected?

Q.5 i. What must be underlies the public interface of any container **2**
        object?
    ii. Describe iterator methods with the help of examples. **3**
    iii. What role is played by streams and manipulators? How they are **5**
        used in object oriented programming.
OR iv. Describe the concept of template class. How they are used to **5**
        design containers? Explain with suitable example.

Q.6 i. What are the objectives of modelling? **2**
    ii. Enlist the desirable components of an object oriented analysis **3**
        and design method.
    iii. How do object model, dynamic model and functional model **5**
        differ from each other?
OR iv. Design and explain functional model for a student management **5**
        system of a university.

*****

CS3CO03 Object Oriented Technology
Marking Scheme

Q.1	i.	(c) Singleton class	1
	ii.	(c) Only pass-by-reference	1
	iii.	(c) Both A & B	1
	iv.	(d) All of the above.	1
	v.	(d) Binary operators can have one argument, and unary operators cannot have any.	1
	vi.	(a) True	1
	vii.	(b) Transient object	1
	viii.	(d) None of the above.	1
	ix.	(b) Methods specify algorithms whereas operations only state what is to be done	1
	x.	(b) Its attributes change during operation of the system	1

Q.2	i.	Different for all objects in a class - 1 mark Remains the same - 1 mark	2
	ii.	Selector and modifier methods – 2 marks Examples – 1 mark	3
	iii.	Object persistence and visibility – 2 marks Types of objects – 3 marks	5
OR	iv.	Metaclass and metaobject – 2 marks Metaclass design with example – 3 marks	5

Q.3	i.	Delegation Meaning	2
	ii.	How might aggregation assist in making object oriented programs?	3
	iii.	Types of aggregations – 3 marks Example – 2 marks	5
OR	iv.	Types of associations - 2 marks Modelled – 3 marks	5

Q.4	i.	Disinheritance	2
	ii.	Role of an abstract method – 1.5 marks Example – 1.5 marks	3
	iii.	Inherited overloaded operators? – 2.5 marks Advantage of being able to overload the constructor – 2.5 marks	5

OR	iv.	Private and public derivations – 3 marks Advantage - 2 marks	5

Q.5	i.	The public interface of any container object	2
	ii.	Iterator methods – 2 marks Examples – 1 mark	3
	iii.	Role is played by streams and manipulators – 3 marks Uses in object oriented programming – 2 marks	5
OR	iv.	Concept of template class – 2 marks Use to design containers – 2 marks Example – 1 marks	5

Q.6	i.	Objectives of modelling	2
	ii.	Minimum 6 components of an object oriented analysis and design method (0.5 mark * 6 = 3 marks)	3
	iii.	Differences between object model, dynamic model and functional model at least 5 points (1 mark * 5 = 5 marks)	5
OR	iv.	Design – 3 marks Model – 2 marks	5

*****