Total No. of printed pages = 4

CA 132304 NR

Roll No. of candidate

२/२/ 2021

M.C.A. 3rd Semester End-Term Examination

OBJECT ORIENTED PROGRAMMING AND DESIGN

(New Regulation (w.e.f. 2017 – 18))

Full Marks – 70   Time – Three hours

The figures in the margin indicate full marks
for the questions.

Answer question No. 1 and any *four* from the rest.

1.   Answer the following questions :   (10 × 1 = 10)

(i)   Use case descriptions consist of interaction among which of the following?

(a)   Product

(b)   Use case

(c)   Actor

(d)   Product and Actor

(ii)   What is a lifeline?

(a)   It is a frame consisting of a rectangle with a pentagon in its upper left-hand corner

(b)   It is a rectangle containing an identifier with a dashed line extending below the rectangle

(c)   It is a name compartment ; the interaction is represented inside the rectangle

(d)   None of the mentioned

[Turn over

(iii) Which of the below keyword must be used to inherit a class?

    (a)   super

    (b)   this

    (c)   extent

    (d)   extends

(iv) A class member declared protected becomes a member of subclass of which type?

    (a)   public member

    (b)   private member

    (c)   protected member

    (d)   static member

(v) A UML diagram that facilitates requirements gathering and interacts between system and external users, is called as

    (a)   Flowchart diagram

    (b)   Sequence diagram

    (c)   Use case diagram

    (d)   Data flow diagram

(vi) —————— diagram illustrates use case realization

    (a)   sequence

    (b)   class

    (c)   use case

    (d)   activity

(vii) What is the function of the dot (.) operator?

    (a)   It enables you to access instance variables of any objects within a class

    (b)   It enables you to store values in instance variable of an object

    (c)   It is used to call object methods

    (d)   All of the above

(viii) Boolean values can be cast into any other primitive type

    (a)   True

    (b)   False

(ix) Which of the following is a valid declaration of an object of class Employee

    (a)   Employee obj=new Employee ;

    (b)   Employee obj=new Employee ();

    (c)   obj=new Employee ();

    (d)   new Employee obj;

(x) Method overriding is determined at

    (a) run time

    (b) compile time

    (c) coding time

    (d) execution time

2. Answer the following questions :

    (a) How Object-Oriented Programming is different from Procedure-Oriented Programming? (5)

    (b) What is encapsulation in Java? Explain encapsulation with suitable Java Program. What do you mean by creating instance of a class and how can we create an instance in a Java Program? (5)

    (c) Explain the difference between a method and a constructor. How can we access a method and a constructor? (5)

3. Answer the following questions

    (a) What is an inheritance in Java? What are the different types of Inheritance possible in Java? Explain. (7)

    (b) What is default package name in Java? What is the difference between the two import statement given below: (3)

import java.io.*;

import java.io.DataInputStream;

    (c) What is the difference between a default constructor and parameterized constructor? Explain the difference with suitable Java Program (5)

4. Answer the following questions :

    (a) Explain the relationship between three models of UML (4)

    (b) What is the difference between Aggregation and Composition? (5)

    (c) Compare and Contrast between Interface and Abstract class in Java. (6)

5. Answer the following questions :

    (a) What is the difference between guard condition and change event in UML? (5)

    (b) Explain the difference between *include relationship* and *extend relationship* with suitable example. (5)

    (c) What is an Association class? How it is different from an ordinary class? (5)

6. Answer the following questions :

   (a) Prepare an activity diagram that elaborates the details of logging into an email system. Note that entry of the username and password can occur in any order. (7)

   (b) What are the different access-specifiers in Java? Explain the use of access-specifiers in Java? Explain. (5)

   (c) Explain the statement given below:

   public static void main(String args[ ]) (3)

7. Answer the following questions :

   (a) Prepare a State-diagram for phone line with activities. (7)

   (b) What are the different types of variable used in Java? Explain their use using a suitable Java Program. (4)

   (c) What is the difference between a concrete class (ordinary class) and abstract class? (4)