WEST BENGAL UNIVERSITY OF TECHNOLOGY

IT-401

OBJECT ORIENTED PROGRAMMING & UML

Time Allotted: 3 Hours   Full Marks: 70

The questions are of equal value.
The figures in the margin indicate full marks.
Candidates are required to give their answers in their own words as far as practicable.
All symbols are of usual significance.

GROUP A
(Multiple Choice Type Questions)

1. Answer *all ten* questions. $10 \times 1 = 10$

(i) Because finalize() belongs to the java.lang.Object class, it is present in all____ .

   (A) objects   (B) classes   (C) methods   (D) variables

(ii) Which of the following is a keyword in java?

   (A) NULL   (B) sizeof   (C) extends   (D) friends

(iii) The immediate super class of the Applet class is

   (A) Panel   (B) Interface   (C) Object   (D) Window

(iv) The method used in java which waits for the Thread to die is

   (A) wait()   (B) destroy()   (C) die()   (D) join()

(v) Size of UniCode is

   (A) 2 bits   (B) 8 bits
   (C) 16 bits   (D) none of the above

(vi) JVM is

   (A) A java package   (B) A java compiler
   (C) A java interface   (D) A system software

(vii) Dead thread can be accessed using

   (A) start()   (B) recreate()
   (C) notify()   (D) none of these

(viii) An interface can define only

   (A) abstract class   (B) final field
   (C) abstract method   (D) abstract method and final field

(ix) Delegation model is associated with

   (A) Exception handling   (B) AWT
   (C) Event handling   (D) None of the above

(x) The error on executing the following code snippet will be:-
Abstract class xy
{
Abstract sum (int x,int y){}
}

   (A) class header is not defined properly
   (B) no error
   (C) method is not defined properly
   (D) constructor is not defined

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GROUP B
(Short Answer Type Questions)

Answer any *three* questions.   3×5 = 15

2. Differentiate between composition and aggregation with suitable example.   5

3. Explain thread life cycle with suitable diagram.   5

4. What do you understand by synchronization? Explain how isAlive() and   2+
    join() methods are used for Multithreading program.   (1.5+1.5)

5. Define the following terms :   2+3
    (i) Object persistence
    (ii) Group construct

6. (a) Write a program to print "Happy New-Year X" where X is the year; it   3+2
        should be given interactively through the keyboard.

    (b) Differentiate between String class and StringBuffer class.

GROUP C
(Long Answer Type Questions)

Answer any *three* questions.   3×15 = 45

7. (a) Explain (i) Encapsulation (ii) Inheritance (iii) Polymorphism   3+9+1+2

    (b) Give the suitable example with small java program using above three
        principles.

    (c) What does it mean that a method or field is static?

    (d) What is User Defined Exception?

8. (a) What's the difference between normal methods and constructors?   3+2+2+8

    (b) What is the use of this keyword in java?

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    (c) What do you mean by variable hiding?

    (d) The abstract Bird class has four subclasses named Pelicans, BrownBooby,
        LittleBittern and Shikra. Write an application that demonstrates how to
        establish this class hierarchy. Define an argument constructor of super class
        Bird that has one String variable, which describes the list of the Bird as
        "This is a list of the bird species recorded in India." to be displayed by
        inheriting from one of its subclass. Declare one instance variable of type
        string that indicates the shape of each subclass of Bird. Create and display
        instances of these objects. Override the toString() method of object to return
        a string with the description of a Bird and its food.

9. (a) Differentiate between method overloading and method overriding.   4+8+3

    (b) Give examples with java programming of the above two forms of
        polymorphism.

    (c) What is the use of packages in java?

10. (a) What is the difference between an Abstract class and Interface in java?   3+6+6

    (b) Explain the mechanism of Dynamic Method Dispatch (give a coding
        example).

    (c) Write a program to show that java supports multiple inheritance by using
        interface.

11. (a) Write down the life cycle of Applet with suitable diagram.   5+3+7

    (b) What is Late binding?

    (c) Write an applet that sets the background color to cyan and draw a circle of
        radius 50 pixels centered in the middle of the applet. The dimensions of the
        applet should be 120 X 120 pixels. Fill the circle with the magenta color.