

CS/B.Tech/Even/IT/4th Sem/IT-401/2014

2014

Object Oriented Programming & UML

Time Allotted : 3 Hours

Full Marks : 70

**The figure in the margin indicate full marks.
Candidates are required to give their answers in their
own words as far as practicable**

GROUP - A

(Multiple Choice Type Questions)

Choose the Correct Alternatives for the following

10x1=10

I) Which one of the following statements is wrong?

- a) A base class reference can refer to an object of a derived class**
- b) The dynamic method dispatch is not carried out at the run time.**
- c) The super () construct refers to the base class constructor**
- d) The super.base-class-method-name() format can be used only within a derived class.**

II) A sub-class having more than one super class is called _____

- a) 1) Category**

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- b) ii) Classification
- c) iii)Combination
- d) iv) Partial participation

iii) Out of the following which one is not correctly matched?

a)	Int	24bits
b)	Short	16bits
c)	Double	64bits
d)	Byte	8bits

iv) What is the correct ordering for the import, class and package declarations when found in a single file?

- a) Package, import, class
- b) Class, import, package
- c) Import, package, class
- d) Package, class, import

v) Which one of the following statements is not correct?

- a) An interface can inherit another Interface.
- b) The package name and subdirectory name need not be identical.
- c) Only the classes declared as public in a package are accessible outside that package.
- d) The import java.awt.*; directive will not import classes in java.awt.event package.

vi) What results from the following fragment of code?

```
{int x = 1;
String [] names = {"Fred","Jim","Sheila"};
Names [- x] += ".";}
```

```
For (int i = 0; i < names.length; i++) {
System.out.println (names[i]);
}
```

- a) The output includes Fred. with a trailing period.
- b) The output includes Jim. with a trailing period.
- c) The output includes Sheila. with a trailing period.
- d) None of the outputs shows a trailing period.
- e) An ArrayIndexOutOfBoundsException is thrown.

Vii) What is the output of this code fragment?

```
1. int x=3; int y=10;
2. System.out.println(y%x);
```

- a) 0
- b) 1
- c) 2
- d) 3

Viii) Which of the following statements is correct?

- a) The 'try' block should be followed by a 'catch' block
- b) The 'try' block should be followed by a 'finally' block.
- c) The 'try' block should be followed by either a 'catch' block or a 'finally' block.
- d) The 'try' block should be followed by at least two 'catch' blocks.

ix) If a data-item is declared as a protected access specifier then it can be accessed:

- a) Anywhere in the program
- b) By the base and derived classes
- c) Only by base

d) iv. Only by derived classes

x) Which one of the following is wrong?

- a) 'Runnable' is a predefined interface
- b) The sleep () method instructs a thread to terminate it's execution
- c) The isAlive() method tells whether a thread has not yet died.
- d) MAX_PRIORITY represents the level 10

GROUP - B

(Short Answer Type Questions)

Answer any three of the following.

3x5=15

2. Explain the sequence diagram and its uses.

5

3. Distinguish between the following terms:

- a) Abstract Class and Interface
- b) 'throws' and 'throw'

2½+2½

4. What are the properties of a constructor? Explain the use of overloaded constructors with the help of an example.

1½+3½

5. Write a program in JAVA that creates a Child Thread of main using Runnable interface and uses the following methods:-

- (i) getName()
- (ii) setName()
- (iii) setPriority()

5

b) Explain different access specifiers in Java.

5

GROUP - C

(Long Answer Type Questions)

Answer any three of the following.

3x15=45

7. I) What is a package in JAVA?

II) What is the benefits of organizing classes into package?

III) How can you create your own package and add classes in that? Explain with the help an example.

IV) Explain how javaget benefited by using Interface with the help of an example.

1+2+ (3+3) +6

I) Explain the life cycle of an Applet.

II) List various attributes of Applet tag used in HTML. Explain the purpose of these attributes.

III) Write a Java program that uses the drawPolygon () method of Graphics class to draw a triangle with endpoints (25, 30);(75, 80) and (50, 50).

3+(3+3)+6

8. I. What are the uses of exception handling in JAVA?

II. Write a program using Java that handles an exception "Entry of negative age of a person".

III. Write a Multithreading program to generate the square roots of the first 30 natural numbers using Runnable interface.

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iv. What do you mean by 'Synchronization'? Why do we need it?
2+4+6+3

10. a) Differentiate between static model and dynamic model
b) Mention the different diagrams and their uses in UML.
c) Draw the
i) class diagram and
ii) sequence diagram of the following case study.

A computerized banking network including both human cashiers and automatic teller machines (ATM) to be shared by consortium of banks. Each bank provides its own computer to maintain its own accounts and process transactions against them. Cashier stations are owned by individual banks and communicate directly with their own bank's computers. Human cashiers enter account and transaction data. Automatic teller machines communicate with a central computer which clears transactions with the appropriate banks. An automatic teller machine accepts a cash card, interacts with the user, communicates with the central system to carry out the transaction, dispenses cash, and prints receipts. The system requires appropriate recordkeeping and security provisions. The system must handle concurrent accesses to the same account correctly. The banks will provide their own software for their own computers. You are to design the software for the ATMs and the network. The cost of the shared system will be apportioned to the banks according to the number of customers with cash cards.

(3+5+7)

11. Write short notes on any three of the following:

- i. Wrapper Class
- ii. Explain UML and its importance
- iii. Association & Recursive Association (in Class Diagram)
- iv. Object Oriented Concept

3 X 5= 15

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