



ENGINEERING & MANAGEMENT EXAMINATIONS, JUNE - 2009
OBJECT TECHNOLOGY & UML
SEMESTER - 6

Time : 3 Hours]

[Full Marks : 70

GROUP - A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for any ten of the following : 10 × 1 = 10

i) The method `int func(int i, int j) {}` can be overloaded using

- A) `int func (int i, int j, int k) {}`
- B) `int func (float i, int j) {}`
- C) `float func (int i, int j) {}`
- D) `int func (int a, int b) {}`
- E) `float func (int I, int j, float k) {}`

- a) (B) & (C) b) (C) & (D)
- c) (A), (B), (C) & (E) d) (A), (B) & (E).

ii) `int j;`

```
for ( int i = 0; i < 14; i ++ ) {
  if ( i < 10 ) {
    j = 2 + i;
  }
  System.out.println ( "j:" + j+" i:" + i );
}
```

What is WRONG with the above code ?

- a) Integer "j" is not initialized
- b) Nothing
- c) You cannot declare integer I inside th for-loop declaration
- d) The syntax of the "if" statement is incorrect
- e) You can not print integer values without converting them to strings.

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iii) What will happen if you compile / run this code ?

```
public class Q1 extends Thread
{
    public void run ()
    {
        System.out.println ( "Before start method" );
        this.stop ();
        System.out.println ( "After stop method" );
    }
    public static void main ( String [ ] args )
    {
        Q1 a = new Q1 ();
        a.start ();
    }
}
```

- a) Compilation error at line 7
- b) Runtime exception at line 7
- c) Prints "Before start method" and "After stop method".
- d) Prints "Before start method" only.

iv) Which one of the following is a valid declaration of an Applet ?

- a) Public class MyApplet extends java.applet.Applet {
- b) Public Applet MyApplet {
- c) Public class MyApplet extends applet implements Runnable {
- d) Abstract class MyApplet extends java.applet.Applet {
- e) Class MyApplet implements Applet {

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v) What is the range of the char type ?

- a) 0 to 2^{16}
- b) 0 to 2^{15}
- c) 0 to $2^{16} - 1$
- d) 0 to $2^{15} - 1$

vi) Aggregation (encapsulation) relationships are represented in the UML notation by

- a) nesting of classes
- b) lines with a solid diamond at one end
- c) lines with a hollow diamond at one end
- d) lines with an arrow at one end
- e) lines without an arrow at either end.

vii) A sequence diagram is

- a) a time-line illustrating a typical sequence of calls between object function members
- b) a call tree illustrating all possible sequences of calls between class function members
- c) a time-line illustrating the changes in inheritance and instantaneous relationships between classes and objects over time
- d) a tree illustrating inheritance and relationships between classes
- e) a directed cyclic graph illustrating inheritance and instantaneous relationships between classes and objects.

viii) Which of the following are true ?

- a) The InputStream and OutputStream classes are Byte-oriented.
- b) The ObjectInputStream and ObjectOutputStream do not support serialized object input and output.
- c) The Reader and Writer classes are Character-oriented.
- d) The Reader and Writer classes are the preferred solution to serialized object output.

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ix) What is an example of polymorphism ?

- a) Inner class
- b) Anonymous classes
- c) Method overloading
- d) Method overriding.

x) Exception is defined in which package ?

- a) java.util
- b) java.lang
- c) java.awt
- d) java.io.

xi) The relation between classes can be represented by

- a) polymorphism
- b) method
- c) message
- d) inheritance.

xii) switch (i) {

default:

System.out.println ("Hello");

}

What is the acceptable type (s) for the variable i ?

- a) int
- b) double
- c) object
- d) byte.

xiii) The import statement is always

- a) the first non-comment statement in a java program file
- b) the default non-comment statement in java program file
- c) a non-comment statement and can be defined anywhere in the program
- d) none of these.

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xiv) Method overloading occurs only when

- a) the names and the type signature of two methods are not identical
- b) the names and the type signature of two methods are identical
- c) the names and the return types of two methods are identical
- d) only the names are identical.

xv) An Actor is someone or something

- a) that must interact with the system
- b) that always external to the system
- c) that are not part of the system
- d) all of these.

GROUP - B

(Short Answer Type Questions)

Answer any *three* of the following.

3 × 5 = 15

- 2. What is byte code ? What does the JVM do ? Why is Java called compiler-interpret language ? 2 + 3
- 3. Discuss Applet life-cycle indicating the functions. 5
- 4. a) What is an Actor ?
- b) Describe the Metaclass. Is it different from Metadata ? 2 + 3
- 5. What is the base class of Error and Exception ? Differentiate between throw and throws. 1 + 4
- 6. a) What is Late binding ?
- b) Describe major and minor elements of Object Oriented Analysis. 1 + 4
- 7. a) Write down the similarities and differences between interfaces and classes.
- b) Discuss the various levels of access protection available for package and their implementation. 2 + 3

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GROUP - C

(Long Answer Type Questions)

Answer any *three* questions.

3 × 15 = 45

8. What are the primary goals of UML ? What is the difference between state chart diagram and activity diagram ? Model an activity diagram for the usecase of a driver starting a car. Explain the sequence diagram and collaboration diagram with an example used in UML. 5 + 5 + 5

9. a) What are Java "thread" and "monitor" ?
 b) Distinguish between "dynamic binding" and "Message passing"
 c) What is "Template" and "Package" with example. 5 + 5 + 5

10. a) What is meant by aggregation ? And explain the different types of aggregation.
 b) What are the differences between a sequence diagram and a collaboration diagram ?
 c) Draw a sequence diagram for the cellular phone connection.
 d) Draw object diagram for the following object classes, with association names attributes and additional object classes if required.

Object classes : college, playground, principal, classroom, board, book, student, faculty, cafeteria, ruler, door, swing. 4 + 3 + 3 + 5

11. What is multi-threading ? Write a program which can run a main thread and child thread simultaneously. What synchronized keyword does ? Briefly describe with example. 2 + 5 + 2 + 6

12. a) How inheritance is incorporated in Java ? Is it possible in Java to implement multiple inheritance ? If not then how is it possible explain ? 7
 b) What is an interface ? What are the differences between interface and abstract class ? Give one example in java to implement one interface. 8

END

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