B.TECH/IT/4TH SEM/INFO 2204 (BACKLOG)/2022

OBJECT ORIENTED PROGRAMMING
(INFO 2204)

Time Allotted : 3 hrs **Full Marks : 70**

Figures out of the right margin indicate full marks.

Candidates are required to answer Group A and any 5 (five) from Group B to E, taking at least one from each group.

Candidates are required to give answer in their own words as far as practicable.

Group – A
(Multiple Choice Type Questions)

1. Choose the correct alternative for the following: **10 × 1 = 10**

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

(A)int fun() (B)int fun(int a, int b)
(C)float fun(int a,int b) (D) int fun(float i,float j)

(a) (A) (b) (A),(D) (c) All of the above (d) None of the above.

(ii)
```
class t{
public static void main(String args[]){
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 above code?
(a) i not declared properly (b) Nothing
(c) j is not initialised properly (d) for loop is wrong.

(iii) What is the maximum value of shortest integer in JAVA?
(a)127 (b) 255 (c) 64 (d) 2,147,483,647.

(iv) What is the default value of Object variable?
(a) Undefined (b) 0 (c) Null (d) Not defined.

(v) Method Overriding is an example of
(a) static binding (b) dynamic binding
(c) both (a) & (b) (d) none.

(vi) What is Abstraction?
(a) Abstraction is a technique to define different methods of same type
(b) Abstraction is the ability of an object to take on many forms
(c) It refers to the ability to make a class abstract in OOP
(d) None of the above.

(vii) What is JIT compiler?
(a) JIT improves the runtime performance of computer programs based on byte code
(b) JIT is an application development framework
(c) JIT is an implementation of the Java Virtual Machine which executes Java programs
(d) None of the above.

(viii) What is true about a final class?
(a) Class declared final is a final class
(b) Final classes are created so the methods implemented by that class cannot be overridden
(c) It can't be inherited
(d) All of the above.

(ix) Which of the following is true about StringBuffer?
(a) StringBuffer is mutable
(b) String is immutable
(c) String is a data type
(d) None of the above.

(x) What is NullPointerException?
(a) A NullPointerException is thrown when calling the instance method of a null object or modifying/accessing field of a null object
(b) A NullPointerException is thrown when object is set as null
(c) A NullPointerException is thrown when object property is set as null
(d) None of the above.

Group- B

2. (a) What is meant by aggregation? Explain with a relevant example and implement that hierarchy at Java Platform. [(CO1)(Analyze/IOCQ)]
(b) Differentiate between object-oriented programming and procedural programming. [(CO1)(Understand/LOCQ)]
(2 + 4) + 6 = 12

3. (a) Discuss about the different properties of Object Oriented Programming. [(CO1)(Remember/LOCQ)]
(b) What is Meta class, Role-Name of the class? What is link association? [(CO1)(Understand/LOCQ)]
6 + (3 + 3) = 12

Group - C

4. (a) What is Byte code? How it helps to make Java Architectural Neutral language? [(CO3)(Remember/LOCQ)]

   (b) What is dynamic method dispatch in Java? Explain briefly. How it is related to Polymorphism- Explain. Differentiate between method overloading and method overriding. [(CO3)(Analyze/LOCQ)]

(2 + 2) + (2.5 + 2.5 + 3) = 12

5. (a) How inheritance is incorporated in Java? Is it possible to implement multiple inheritances? If not, then how it is possible explain briefly with example. [(CO3)(Analyze/IOCQ)]

   (b) What will be the memory allocation for the objects, method and static attributes and data members for the following class, if in main we have created three objects ob1, ob2 and ob3?

```
class Obj    {
             int x,y;
             static int z;
             int Objx()   {
                    //body
             }
}
```

[(CO2)(Analyze/IOCQ)]

(3 + 2 + 3) + 4 = 12

Group – D

6. (a) Write a program in Java which will copy the content of one file to another file. Why BufferedReader is used to take input from user? [(CO4)(Apply/IOCQ)]

   (b) What are exceptions? Explain programmer defined exception and system defined exception with suitable example. [(CO5)(Remember/LOCQ)]

(4 + 2) + (2 + 4) = 12

7. (a) Differentiate between 'Final',' Finalize' and 'Finally'. What is wrapper class? [(CO5)(Remember/LOCQ)]

   (b) Write a program in Java to implement dynamic stack. Program will take input from keyboard. If the stack is full it will double its size. [(CO4)(Apply/IOCQ)]

(4 + 2) + 6 = 12

Group - E

8. (a) Discuss Applet life cycle indicating the function which are used. [(CO6)(Remember/LOCQ)]

   (b) What is thread? Explain thread creation method(s). [(CO6)(Analyze/IOCQ)]

7 + (2 + 3) = 12

9. (a) How parameter are passed in Applet-Explain with example. Distinguish between 'notify' and 'notify all'. [(CO6)(Apply/IOCQ)]

   (b) What is the use of 'synchronized' keyword? Briefly describe with example. [(CO6)(Apply/IOCQ)]

(4 + 2) + 6 = 12

Cognition Level	LOCQ	IOCQ	HOCQ
Percentage distribution	43	57	0

Course Outcome (CO):

After the completion of the course students will be able to

1. Recall the knowledge of procedural language and map it to paradigm of Object-oriented concept.
2. Relate the real-world problem with object-oriented approach.
3. Describe and illustrate the features of object-oriented programming.
4. Analyze any real-world problem with object-oriented approach and formulate a solution for the same.
5. Manage the complexity of procedural language by using the concept polymorphism, inheritance,abstraction, encapsulation.
6. Create and explain some GUI and thread-based application.

*LOCQ: Lower Order Cognitive Question; IOCQ: Intermediate Order Cognitive Question; HOCQ: Higher Order Cognitive Question