Chapter 1 Principles of Object Oriented Programming

A. Tick (✓) the correct option.

1. A set of instructions given to a computer to do a particular task.

   a. Program
   b. High level Language
   c. Object
   d. None of these

Ans. a. Program

2. An object is represented by two attributes, out of which one is characteristics and the other one is _____.

   a. Behaviour
   b. Situation
   c. Abstraction
   d. Encapsulation

Ans. a. Behaviour

3. Name the programming technique that implements programs as an organized collection of interactive objects.

   a. Procedure Oriented Programming
   b. Modular Programming
   c. Object Oriented Programming
   d. None of these

Ans. c. Object Oriented Programming

4. Name the programming technique that specifies a series of well-structured steps and procedures within its programming context to compose a program.

   a. Procedure Oriented Programming
   b. Modular Programming
   c. Object Oriented Programming
   d. None of these

Ans a. Procedure Oriented Programming

5. Name the characteristics of Object Oriented Programming that hides the complexity and provides a simple interface.

   a. Encapsulation
   b. Polymorphism
   c. Abstraction
   d. Inheritance

Ans. c. Abstraction

6. What is the behaviour aspect of an object represented by?

   a. Member Functions
   b. Data Members
   c. Both a and b
   d. None of these

Ans. a. Member Functions

7. What is the ability of an object to take on many forms called?

a. Polymorphism
b. Encapsulation
c. Abstraction
d. Inheritance

Ans. a. Polymorphism

8. What is the term that is used to represent hierarchical relationship of generalization?

a. Polymorphism
b. Encapsulation
c. Abstraction
d. Inheritance

Ans. d. Inheritance

9. Name the art of implementing Encapsulation in Object Oriented Programming.

a. Polymorphism
b. Encapsulation
c. Abstraction
d. class

Ans. d. class

10. What is meant by state of an object?

a. Functions of the object
b. Data Members of the object
c. Content of an object
d. All of these

Ans. c. Content of an object

B. State whether the following statements are True (T) or False (F).

1. Encapsulation refers to the art of hiding the complexities and giving a simple interface. **F**
2. Procedure Oriented Language follows top down approach. **T**
3. Java is an example of Object Oriented Language. **T**
4. Hiding the complexity and giving a simple interface is called Inheritance. **F**
5. Abstraction is same as Encapsulation. **F**

C. Fill in the blanks.

1. An object is an identity with certain **characteristic** and **behaviour**.
2. The values/attributes of the characteristics of an object are called the **state** of an object.
3. All the complexities of a program should be **encapsulated** in such a way so that **Abstraction** is obtained.
4. **Inheritance** allows us to encompass the parent class' state and behaviours into its child.
5. Poly-means **many** and Morphism means **forms**.
6. **Encapsulation** is a principle of Object Oriented Programming (OOP) that binds together characteristics and behaviour of an object.
7. **Abstraction** is the reduction of a particular body of data to a simplified representation of the whole.

8. The characteristics of an object are represented through **data members** and behaviour is represented through **member functions**.
9. A program written in a high level language is also called **Source Code**.
10. All **objects** have identity and are distinguishable even if the constituent components are same.

SECTION A

Answer the following questions.

1. Give two examples of real world objects. Also specify their characteristics and behaviour.

Ans. The *book* that you are reading now is also an example of an object. Its characteristics is represented by the information it holds, size, volume and its colour. The behavioural aspect is referred by the methods for accessing the information it contains.

A pen is also an example of object. Its characteristics is represented by its colour, shape, brand, etc., and its behaviour is represented by its use such as writing, drawing, etc.

2. What do you understand by state of an object? Explain with an example.

Ans. The *state* of an object is the particular condition it is in. For example, a lamp can be on or off. The lamp's switch (methods) turn lamp on and turn lamp off are used to access the state of the lamp.

3. How are objects implemented in Software?

Ans. In a software the characteristics of an object are represented through data members and behaviour is represented through member functions.

4. What is abstraction? How is encapsulation related to it?

Ans. Abstraction is a principle of Object Oriented Programming (OOP) that hide certain details and only show the essential features of the object.

Encapsulation is also frequently confused with abstraction, since the two concepts are closely related. Abstraction is a process of hiding the complexity and giving a simple interface. Encapsulation on the other hand is the mechanism by which the abstraction is implemented.

5. Define Encapsulation.

Ans. Encapsulation is a principle of Object Oriented Programming (OOP) that binds together characteristics and behaviour of an object into a single unit represented by a class.

6. Explain the term object using an example.

Ans. The book that you are reading now is also an example of an object. Its characteristics is represented by the information it holds, size, volume and its colour. The behavioral aspect is referred by the methods for accessing the information it contains. For example, you can open the book, turn a page, read a paragraph, and search the table of contents, and so on. The information contained

in the book along with the methods for accessing it for gaining information is what comprises the object known as this book.

7. What is Object Oriented Programming?

Ans. Object Oriented Programming (or OOP) is a technique of implementing programs which are organized as a co-interactive collection of objects, each of which represents an instance of a class.

8. State three differences between Procedure Oriented Language and Object Oriented Languages.

Ans.

Procedure Oriented Programming	Object Oriented Programming
A large program is divided into smaller segments or procedures.	A program is represented as an object.
More importance is given to the program rather than the data.	More importance is given to the data rather than the program.
It follows top down approach.	It follows bottom up approach.

9. State the four characteristics/principles of Object Oriented Programming.

Ans. Encapsulation, Abstraction, Polymorphism and Inheritance.

10. Give a real life example of Polymorphism.

Ans. Example in real life of polymorphism- Shobha is a married girl and mother of 2 children doing teaching job then she is a women first, teacher in a school when she is at school, wife of someone at home, mother of her children and obvious daughter of someone. Thus you can see that Shobha plays different roles at different times that is what polymorphism is.