CLASS -10 (2025-26)

Elementary Concept of Objects and Class

CHAPTER 2

Assignments:-

A. Tick (✓) the correct answer

Question 1. If `Animal` is a class, then which of the following can be the object of the `Animal` class?
a. Tiger
b. Deer
c. Lion
d. All of these
Ans- d. All of these

Question 2. Which of the following can be defined as a user-defined data type?
a. Class
b. Object
c. Primitive
d. None of these
Ans- a. Class

Question 3. Which of the following keywords are used to define a class?
a. class
b. public
c. Both a and b
d. None of these
Ans- c. Both a and b

Question 4. Which of the following is the correct way to create an object of the class "Smartphone"?
a. Smartphone obj = new Smartphone;
b. Smartphone obj = new Smartp
c. Smartphone object = Smartphone();
d. None of these
Ans- d. None of these
Correct syntax: `Smartphone obj = new Smartphone();`

Question 5. Which of the following represents the constructor of the `ABC` class?
a. ABC()
b. ABC
c. ABCConstructor
d. None of these
Ans- a. ABC()

B. Short Answer Type Questions

Question 1. What is a class?
Ans- A class is a blueprint or template for creating objects. It defines properties (variables) and behaviors (methods) of an object.
Example:

```
class Animal {
    String name;
    void sound() {
        System.out.println("Animal makes a sound");
    }
}
```

Question 2. What is an object?
Ans- An object is an instance of a class. It represents a real-world entity that has state and behavior.
Example:

```
Animal tiger = new Animal();
```

Question 3. What is the process of creating instances of a class called?
Ans- The process of creating instances of a class is called **Instantiation**. It is done using the **new** keyword.
Example:

```
Smartphone myPhone = new Smartphone();
```

c. Question 1

Assertion (A): Data abstraction is a fundamental concept in OOP. ✓ (True)
Reason (R): It hides implementation details and shows only relevant information. ✓ (True)

☞ The reason correctly explains what data abstraction is and why it is fundamental.

✓ Correct Answer: (a)
Both A and R are true, and R is the correct explanation of A.

Question 2

Assertion (A): Encapsulation and data abstraction are often used interchangeably. ✗ (False)
Reason (R): Encapsulation hides internal workings, while abstraction shows only relevant details. ✓ (True)

☞ The reason clearly shows that they are **different concepts**, so they should **not be used interchangeably**.

✓ Correct Answer: (d)
A is false, but R is true.

Extra Questions – Chapter 2: Classes and Objects

1. Multiple Choice Questions
Q1. What keyword is used to create an object in Java?
a) object
b) create
c) new
d) instance
Ans: c) new
Q2. Which of the following is a special method used to initialize objects?
a) Setter
b) Constructor
c) Getter
d) Objectifier
Ans: b) Constructor

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2. Fill in the Blanks

Q3. A _____ is a blueprint for creating objects.

Ans: class

Q4. The process of creating an object from a class is called _____.

Ans: instantiation

Q5. A constructor must have the same _____ as the class.

Ans: name

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3. True or False

Q6. Every Java program must contain at least one class.

Ans: True

Q7. The `main()` method is required to run a Java program.

Ans: True

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4. Short Answer Questions

Q8. What is a constructor?

Ans: A constructor is a special method that is automatically called when an object is created. It is used to initialize objects.

Q9. Write the syntax to define a class named `Book`.

Ans:

```
class Book {
   // fields and methods
}
```

Q10. Create an object of a class named `Laptop`.

Ans:

```
Laptop myLaptop = new Laptop();
```

Assertion and Reasoning Questions – Chapter 2: Classes and Objects

Q1.

Assertion (A): A class is a user-defined data type.

Reason (R): It defines variables and methods under a single unit.

Options:

a) Both A and R are true and R is the correct explanation of A

b) Both A and R are true but R is not the correct explanation of A

c) A is true but R is false

d) A is false but R is true

Answer: a

Q2.

Assertion (A): Objects are created using the `new` keyword.

Reason (R): The `new` keyword allocates memory for the object.

Options:

a) Both A and R are true and R is the correct explanation of A

b) Both A and R are true but R is not the correct explanation of A

c) A is true but R is false

d) A is false but R is true

Answer: a

Q3.

Assertion (A): Constructors can have a different name than the class.

Reason (R): Constructors are used to destroy objects.

Options:
a) Both A and R are true and R is the correct explanation of A
b) Both A and R are true but R is not the correct explanation of A
c) A is true but R is false
d) A is false but R is true
Answer: d

Q4.
Assertion (A): An object is an instance of a class.
Reason (R): Objects cannot access class methods.
Options:
a) Both A and R are true and R is the correct explanation of A
b) Both A and R are true but R is not the correct explanation of A
c) A is true but R is false
d) A is false but R is true
Answer: c

Q5.
Assertion (A): A constructor can be overloaded.
Reason (R): Java allows multiple constructors with different parameter lists.
Options:
a) Both A and R are true and R is the correct explanation of A
b) Both A and R are true but R is not the correct explanation of A
c) A is true but R is false
d) A is false but R is true
Answer: a

Q6.
Assertion (A): The keyword `class` is used to define a class in Java.
Reason (R): Java does not support user-defined data types.
Options:
a) Both A and R are true and R is the correct explanation of A
b) Both A and R are true but R is not the correct explanation of A
c) A is true but R is false
d) A is false but R is true
Answer: c

Q7.
Assertion (A): `Smartphone phone = new Smartphone();` creates a new object.
Reason (R): This syntax calls the class's constructor.
Options:
a) Both A and R are true and R is the correct explanation of A
b) Both A and R are true but R is not the correct explanation of A
c) A is true but R is false
d) A is false but R is true
Answer: a

Q8.
Assertion (A): An object must be declared before it is used.
Reason (R): Declaration tells the compiler about the object type and name.
Options:

a) Both A and R are true and R is the correct explanation of A
b) Both A and R are true but R is not the correct explanation of A
c) A is true but R is false
d) A is false but R is true
Answer: a

Q9.
Assertion (A): A class cannot contain methods.
Reason (R): Only variables are allowed in a class.
Options:
a) Both A and R are true and R is the correct explanation of A
b) Both A and R are true but R is not the correct explanation of A
c) A is true but R is false
d) A is false but R is true
Answer: d

Q10.
Assertion (A): A constructor is automatically called when an object is created.
Reason (R): It initializes the state of the object.
Options:
a) Both A and R are true and R is the correct explanation of A
b) Both A and R are true but R is not the correct explanation of A
c) A is true but R is false
d) A is false but R is true
Answer: a

One-Word Questions and Answers

1. **Q:** What keyword is used to define a class in Java?
   A: `class`
2. **Q:** What keyword is used to create an object in Java?
   A: `new`
3. **Q:** What is the process of creating an object called?
   A: Instantiation
4. **Q:** Which method initializes objects in Java?
   A: Constructor
5. **Q:** What is an instance of a class called?
   A: Object
6. **Q:** Which user-defined data type is used to create objects?
   A: Class
7. **Q:** What is the blueprint of an object in Java?
   A: Class
8. **Q:** What keyword is used to make class members accessible outside the class?
   A: `public`
9. **Q:** What is the name of the default method that runs a Java program?
   A: `main`
10. **Q:** What is automatically called when an object is created?
    A: Constructor

Fill in the Blanks with Answers

1. A _____ is a blueprint for creating objects.
   Answer: class
2. An _____ is an instance of a class.
   Answer: object
3. The keyword used to create an object is _____.
   Answer: new
4. A _____ method is used to initialize an object.
   Answer: constructor
5. The process of creating an object is called _____.
   Answer: instantiation
6. A constructor must have the same _____ as the class.
   Answer: name
7. The keyword _____ is used to define a class in Java.
   Answer: class
8. Java allows multiple constructors in a class. This feature is called constructor _____.
   Answer: overloading
9. The _____ method is the entry point of a Java program.
   Answer: main
10. A class can contain both _____ and _____.
    Answer: variables, methods

Short Answer Questions with Answers

1. **Q1. What is a class in Java?**
   Ans: A class is a user-defined blueprint or prototype from which objects are created. It contains fields (variables) and methods to define behaviors.

2. **Q2. What is an object in Java?**
   Ans: An object is an instance of a class. It has its own identity, state, and behavior defined by the class.

3. **Q3. How is an object created in Java?**
   Ans: An object is created using the `new` keyword followed by the class constructor.
   Example: `Student s = new Student();`

4. **Q4. What is a constructor?**
   Ans: A constructor is a special method that is automatically called when an object is created. It is used to initialize the object.

5. **Q5. Can a constructor be overloaded?**
   Ans: Yes, constructors can be overloaded by defining multiple constructors with different parameter lists in the same class.

6. **Q6. What is instantiation?**
   Ans: Instantiation is the process of creating an object from a class using the `new` keyword.

7. **Q7. What is the syntax to define a class in Java?**
   Ans:

```
class ClassName {
    // fields and methods
}
```

8. **Q8. What is the role of the `main()` method in Java?**
   Ans: The `main()` method is the entry point of any Java program. It tells the JVM where to start execution.

9. **Q9. Can a class have more than one object?**
   Ans: Yes, a class can have multiple objects, each with its own data and state.

10. **Q10. What is the difference between a class and an object?**
    Ans: A class is a template or blueprint, whereas an object is an instance of the class created during runtime.

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