Course Code : CST 316 **AZBY/MS – 18 / 4059**

Fifth Semester B. E. (Computer Science and Engineering) Examination

DESIGN PATTERNS

Time : 3 Hours] [Max. Marks : 60

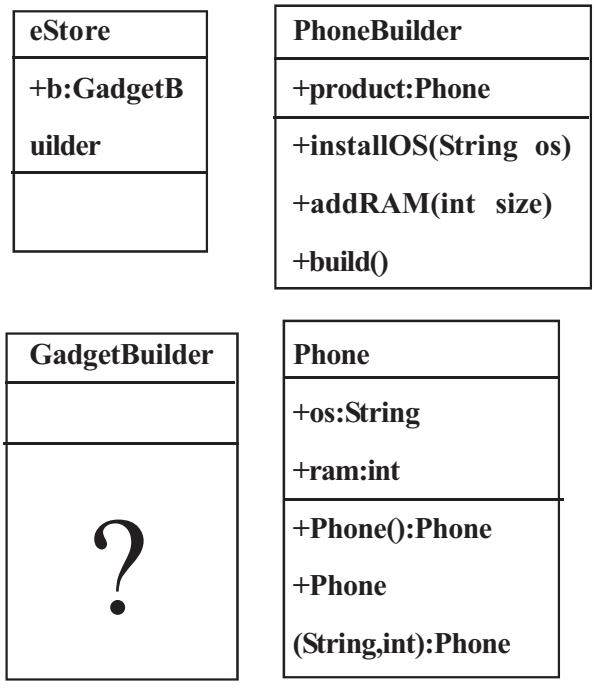
Instructions to Candidates :—

(1) Assume suitable data wherever necessary and clearly state the assumption made.
(2) Q. **Two** and Q. **Five** have internal choice as indicated.

1. (a) List out the SOLID Principles. Discuss Open Closed Principle and Dependency Inversion Principle in detail with an example. 6(CO 1)

   (b) Identify the role of design patterns in software design. 4(CO 1)

2. (a) Complete the given classes/interfaces and arrange to form UML diagram for Builder. Pattern. Identify the participants and implement it using java.



6(CO 2)

(b) Illustrate the working of Prototype pattern with its structure and collaboration between the participants. 4(CO 2)

OR

(c) Describe the various ways in which Factory Pattern can be implemented. 4(CO 2)

3. (a) Match the Pattern with its example :

EXAMPLE	PATTERN
i. java.rmi.*	a) Decorator
ii. java. to BufferedInputStream	b) Factory
iii. java.io.InputStreamReader	c) Bridge
iv. Class.forName()	d) Adapter
	e) Proxy

2(CO 2)

(b) Select **one** correct option :

(i) Select the situations where Prototype pattern can be used:

(a) When classes to instantiate are specified at runtime.

(b) When creation of objects is expensive.

(c) When a parallel hierarchy of factories and products must be avoided.

(d) All of these.

(ii) Adapter pattern can be used for :

(a) Changing names of operations.

(b) Supporting new operations.

(c) Both A and B.

(d) None of these. 2(CO 2)

(c) Demonstrate the use, application and types of Adapters with suitable class diagram. 6(CO 2)

4. (a) Explain in detail working of Observer Design Pattern with its intent, structure, participating entities and an example with sample code.

Also list out Java classes which are designed in accordance with Observer Pattern. 10(CO 3)

5. (a) Compare Interpreter and Iterator design patterns in detail in terms of: (CO 3)

(i) Intent. 2

(ii) Consequences. 3

(iii) Collaboration between participants. 2

(iv) Structure. 3

OR

(b) Explain working of Strategy pattern in detail with motivation, structure and an example. How is Strategy different from Bridge ? 10(CO 3)

6. (a) How and where can Composite pattern be used in a document editor application ? 5(CO 4)

(b) How can undoability be implemented in a document editor ? 5(CO 4)