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

DESIGN PATTERNS

Time : 3 Hours]   [Max. Marks : 60

Instructions to Candidates :—
    Due credit will be given to neatness.

1. Solve **(a)** OR **(b)**. **(c)** is compulsory :—

    (a)   What is a design pattern ? Explain the classification of design pattern on the basis of purpose and scope both.   4 (CO 1)

    (b)   Explain in short several approaches to find an appropriate design pattern to solve a problem.   4 (CO 1)

    (c)   List the common causes of redesign of an existing system.   6 (CO 1)

2.   (a)   Differentiate between abstract factory and builder design pattern.   5 (CO 2)

    (b)   Which design pattern refers to creating duplicate object while keeping performance in mind ? How ?   5 (CO 2)

3. Solve any **Two** :—

    (a)   Tight coupling can lead to an explosion in the number of classes. How does Bridge design pattern address this problem ?   5 (CO 2)

    (b)   In an application there exists a real subject 'Folder'. Contents of Folder should be accessible by authenticated users only. Which design pattern is appropriate to implement this authentication process ? Implement a Java program using the same design pattern.   5 (CO 2)

    (c)   Compare Class Adapter design pattern and Object Adapter design pattern.   5 (CO 2)

4.   (a)   Illustrate the use of interpreter design pattern to handle the language grammar.
                5 (CO 3)

        (b)   "Give more than one object an opportunity to handle a request by linking receiving objects together". This is the intent of which design pattern ? Also explain responsibility sharing using request passing approach using the same design pattern.   5 (CO 3)

5. Solve any **Two** :—

        (a)   In an auction each bidder possesses a numbered paddle that is used to indicate a bid. The auctioneer starts the bidding and observes when a paddle is raised to accept the bid. The acceptance of the bid changes the bid price which is then broadcast to all of the bidders in the form of a new bid. Which design pattern will be appropriate for this application ? Implement a Java program using the same design pattern.   5 (CO 3)

        (b)   Explain how Air traffic controller system can be a motivation to use mediator design pattern.   5 (CO 3)

        (c)   Explain structure, participants and collaborations of Strategy design pattern.
                5 (CO 3)

6.   (a)   Explain the methods used to analyze the complexity of design patterns.
                5 (CO 4)

        (b)   Explain the application of design pattern in product design.   5 (CO 4)