Course Code : CST 316 KRSJ/RS – 18 / 3056

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)