Course Code : CST 316 **EVFU/MW – 18 / 6057**

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.   Attempt any **Two** :—

   (a)   Describe the terms : rigid code and code refactoring.
         Explain the situations which lead to refactoring of code.   5(CO 1)

   (b)   What is the consistent format followed all over the world for describing
         a design pattern ?   5(CO 1)

   (c)   How a design pattern can be selected and used ?   5(CO 1)

2.   (a)   Design an application to manufacture Cars of two brands, Audi and Tata.
           A Car is composed of products like Doors, Wheels and Headlights. An
           Audi Car must be initialized with LiftUp Doors, Alloy Wheels and LED
           Headlights, whereas a Tata car must be initialized with Normal Doors, Steel
           Wheels and Halogen Headlights.
           Identify the design pattern that can be applied to the given problem and
           implement it using Java.   7(CO 2)

   (b)   Illustrate the working of Builder pattern with its structure.   3(CO 2)

3.   (a)   Which two patterns are also called as Wrapper and why ? Explain their
           similarities and differences with help of the structure.
           Also give examples of where these patterns have been implemented in J2SE.
                                                                          5(CO 2)

(b)   Provide the intent, application and implementation issues of Composite pattern with its structure.   5(CO 2)

OR

(c)   What is meant by class explosion problem ?
Explain with sample code how Bridge pattern successfully addresses this issue.   5(CO 2)

4.   (a)   Explain in detail working of Chain of Responsibility with its intent, structure, participating entities and an example with sample code.
Also list out Java classes which are designed in accordance with Chain of Responsibility Pattern.   10(CO 3)

5.   (a)   State and explain the consequences of applying Memento Pattern.   3(CO 3)

(b)   Strategy and Bridge Patterns have similar structures, so how can they be classified under behavioral and structural patterns respectively. Also explain the reason behind the difference in their working.   4(CO 3)

(c)   Give the intent and structure of Template method pattern. Also state the collaborations between the participants of Template method pattern.   3(CO 3)

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

(b)   How can we implement the formatting of a document in a document editor ?   5(CO 4)