Course Code : CST 316 **ITSJ/RW – 17 / 1056**

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

DESIGN PATTERNS

Time : 3 Hours] [Max. Marks : 60

Instructions to Candidates :—

(1) Due credit will be given to neatness.

1. Solve any **Two** :—

   (a) Explain the characteristics of design pattern. 5 (CO 1)

   (b) What are the advantages of design pattern ? 5 (CO 1)

   (c) According to an OOP principle, we should “Favor object composition over class inheritance.” Justify the given principle. 5 (CO 1)

2. (a) Using builder design pattern implement a Java application to create a phone object of user’s choice which has OS, RAM, Screen_Size and Processor_Speed. User can change or specify any feature dynamically. 5 (CO 2)

   (b) With the help of the motivation, explain the applicability of singleton design pattern. 5 (CO 2)

3. (a) Illustrate with example where proxy design pattern can be applicable. Also list different types of proxy. 3 (CO 2)

   (b) Differentiate between composite and decorator design pattern. 3 (CO 2)

   (c) List any three applications of façade pattern. Explain structure and participants of façade pattern with applicable example. 4 (CO 2)

4. (a) Discuss implementation issues in Chain of responsibility design pattern. 5 (CO 3)

(b) "An aggregate object should give a way to user to access its elements without exposing its internal structure." How the same is supported by Iterator design pattern ? Explain with example. 5 (CO 3)

5. Solve any **Two** :—

(a) A cross compiler is capable of creating executable code for a platform other than the one on which the compiler is running. Define a template method crossCompile( ), and primitive methods collectSource( ), compileToTarget( ), writeToTarget( ). Using Template design pattern write a program to cross compile source code for android and iphone systems. Assume compileToTarget( ) method contains code for actual translation. 5 (CO 3)

(b) With an example explain motivation to use Memento design pattern. 5 (CO 3)

(c) Compare State and Strategy design patterns in terms of intent, motivation, applicability and consequences. 5 (CO 3)

6. Solve any **Two** :—

(a) Explain case study of Document editor in brief. 5 (CO 4)

(b) Explain how design patterns help to reduce complexity of a design. 5 (CO 4)

(c) Explain applications of various design patterns in product design. 5 (CO 4)