[5919]-31
M.Sc. (Computer Science)
CSUT - 231 : SOFTWARE ARCHITECTURE AND DESIGN PATTERN
(2019 Pattern) (Semester - III) (CBCS)

Time : 3 Hours]   *[Max. Marks : 70*

Instructions to the candidates:

1)   *Q.1 is compulsory.*

2)   *Solve any five questions from Q2 to Q7.*

3)   *Q2 to Q7 carry equal marks.*

Q1) **Solve any five of the following :**   **[10]**

   a)   What are design patterns and why are they useful?

   b)   Explain unified modeling language.

   c)   What is Gang of Fouz (GOF)?

   d)   Define :

      i)   High coupling

      ii)   Low coupling

   e)   What is the purpose of swimlanes in activity diagram?

   f)   Can we create a clone of a singleton object?

Q2) Attempt the following :

   a)   What is abstract factory? Explain it's consequences in details.   **[7]**

   b)   How pattern interact in selected framework?   **[5]**

Q3) Attempt the following :

   a)   Explain different types of behavioral pattern.   **[7]**

   b)   Differentiate in between service oriented architecture (SOA) and microservices architecture.   **[5]**

Q4) Attempt the following :

    a)   Write a short note on blackboard model. **[7]**

    b)   Explain factory and decorator with suitable examples. **[5]**

Q5) Attempt the following :

    a)   i)   Assume a factory that manufactures teacups. There are about four types of teacups. They differ only by shape and colour. the ingredients and quality are the same. The factory manufactures around 1000 items in one batch for one type of teacup. In this case, creating 4000 teacups from the scratch is an inefficient task. Draw the UML diagram considering appropriate design pattern. **[5]**

         ii)   What is layered system in software architecture. **[2]**

    b)   What is facade? Explain the difference between facade pattern and normal pattern. **[5]**

Q6) Attempt the following :

    a)   What is unified process? Explain the phase of unified process. **[7]**

    b)   What are abstract classes and concrete classes. Explain with examples. **[5]**

Q7) Write a short notes on any two of the following : **[12]**

    a)   Proxy pattern.

    b)   Singleton pattern.

    c)   Builder pattern.

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