IS713

M S RAMAIAH INSTITUTE OF TECHNOLOGY

(AUTONOMOUS INSTITUTE, AFFILIATED TO VTU)

BANGALORE – 560 054

SEMESTER END EXAMINATIONS –JANUARY 2016

Course & Branch : **B.E.- Information Science & Engg.**   Semester : VII

Subject : **Software Design Patterns**   Max. Marks : 100

Subject Code : **IS713**   Duration : 3 Hrs

Instructions to the Candidates:
- Answer one full question from each unit.

UNIT – I

1. a) What are the limitations of functional decomposition? How can we deal with those problems? Give an example problem and its solution.   C01   (10)

   b) Which are the three perspectives in software development? Define object, class, abstract class in all three perspectives.   C01   (10)

2. a) What are the three reasons for the using UML standard? Explain.   C01   (06)

   b) Give the standard object oriented solution to CAD/CAM problem. Mention its limitations.   C01   (08)

   c) Write a sequence diagram for ATM withdrawl.   C01   (06)

UNIT – II

3. a) Define a pattern. List and describe key features of a pattern.   C02   (10)

   b) Explain the following object oriented principles with examples: C02   (10)
      i. Separate what varies from what remains constant.

      ii. Program to interface not to implementation.

      iii. Favor aggregation over inheritance.

4. a) Define adapter pattern. Demonstrate how can you adapt an incompatible class using this patter by taking shape as super class and XXCircle as incompatible class to be its(shape) sub class, with class diagram and code.   C02   (10)

   b) Explain how you make implementations vary independently of abstractions with an example problem and its solution.   C02   (10)

UNIT – III

5. a) Which pattern is used to solve modification problem created due to addition of new options in future? Explain with the problem of selecting device drivers based on machine capacity.   C03   (10)

   b) Explain steps of Alexander's approach to software design.   C03   (10)

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6. a) Define Decorator pattern. Explain the key features of the same. C03 (10)
   b) How do you solve CAD/CAM problem using commonality and variability C03 (10)
      analysis. Write the final class diagram.

UNIT – IV

7. a) Which are the three categories of patterns? Explain each of them with C04 (10)
      the list of patterns under them, their purpose and what they are used
      for .
   b) Define Observer Pattern. Explain four steps of implementing Observer C04 (10)
      pattern.

8. a) What are the limitations of singleton problem? Explain three methods to C04 (10)
      solve the same.
   b) What is the fundamental rule behind creating and using factories? C04 (10)
      Explain the two perspectives of the rule.

UNIT – V

9. a) How does environment affects software architectures developed and C05 (10)
      used with in it?
   b) List any five process and any five product recommendations for C05 (10)
      designing a good architecture.

10. a) Describe the relationship between architectural patterns, reference C05 (10)
       architectures and reference models with a neat diagram.
    b) Why is software architecture important? C05 (10)

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