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Seventh Semester B.E. Degree Examination, Dec.2019/Jan.2020

## Software Architecture and Design Patterns

Time: 3 hrs.

Max. Marks: 80

*Note: Answer any FIVE full questions, choosing ONE full question from each module.*

### Module-1

- 1 a. Define Design Pattern. Explain the four essential elements of pattern. (06 Marks)  
b. Explain, how design pattern help in specifying object implementations. (06 Marks)  
c. Write the advantages and disadvantages of delegation. (04 Marks)

OR

- 2 a. Describe the common causes of redesign along with the patterns that address them. (08 Marks)  
b. What is Object Oriented Development? Explain the key concepts of OOD. (06 Marks)  
c. Explain cohesion and coupling. (02 Marks)

### Module-2

- 3 a. Design the use case diagram of Library system and explain any two use case. (08 Marks)  
b. Define conceptual classes and relationships taking an example. (08 Marks)

OR

- 4 a. Explain the different questions need to be answered during design process. (06 Marks)  
b. Construct and explain the sequence diagram for returning books in Library System. (05 Marks)  
c. Briefly discuss Façade pattern with respect to design and implementation. (05 Marks)

### Module-3

- 5 a. Define structural patterns. Explain in detail the Adapter Pattern. (08 Marks)  
b. Explain the participants and consequences of Bridge Pattern. (04 Marks)  
c. Discuss the implementation steps of Bridge Pattern. (04 Marks)

OR

- 6 a. Explain the following with respect to the Composite pattern:  
i) Structure  
ii) Participants  
iii) Collaborations  
iv) Consequences (08 Marks)  
b. Briefly illustrate the Flyweight pattern in detail. (08 Marks)

### Module-4

- 7 a. What is Architectural Pattern? Explain the MVC pattern in detail. (08 Marks)  
b. Describe the process of designing the system in detail, taking a simple drawing program as example. (08 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.



OR

- 8 a. Explain the issues need to be highlighted, when implementing the Undo Operation. (05 Marks)
- b. Write a note on Drawing Incomplete Items. (05 Marks)
- c. What is Pattern Based Solution? Explain the characteristics of Architectural Pattern. (06 Marks)

Module-5

- 9 a. What are distributed systems? Explain the basic architecture of client/server system. (08 Marks)
- b. List and explain the steps to setup Remote Object System. (08 Marks)

OR

- 10 a. Draw and explain the State Transition Diagram for adding a book in Library System. (06 Marks)
- b. Draw and explain the Directory Structure for Servlets. (05 Marks)
- c. Write a short note on Input and Output. (05 Marks)

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