

# CBCS SCHEME

USN

17IS72

## Seventh Semester B.E. Degree Examination, July/August 2022 Software Architecture and Design Patterns

Time: 3 hrs.

Max. Marks: 100

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

### Module-1

- 1 a. Discuss the step-by-step approach of applying a design patterns effectively. (06 Marks)
- b. Explain the benefits and drawback of object oriented development. (04 Marks)
- c. Illustrate how to maximize reusability of design patterns and explain common causes of redesign. (10 Marks)

OR

- 2 a. Discuss the approaches to find the right design pattern that is suitable for your pattern. (05 Marks)
- b. Explain the key concepts of object oriented diagram with suitable example and diagrams. (15 Marks)

### Module-2

- 3 a. Consider a hotel reservation system supports the following functionalities, write usecases for each and define business rules.
  - i) Room reservation
  - ii) Customer check-in
  - iii) Customer billing
  - iv) Room services. (12 Marks)
- b. Draw class diagram for library system and explain. (08 Marks)

OR

- 4 a. Discuss major steps involved in analysis phase with suitable example and diagram. (12 Marks)
- b. Compare functional requirements versus non-functional requirements with suitable example (library system). (08 Marks)

### Module-3

- 5 a. A system need to be created to manage the Soccer game. Generalize the game pattern for the following operations:
  - i) Start the game
  - ii) Select 2 teams
  - iii) Add or remove players to / from a team
  - iv) Pick playground
  - v) Start a match. (10 Marks)
- b. Describe the motivation, structure, participants and collaborations of composite pattern with suitable diagram and example. (10 Marks)

**OR**

- 6 a. "Decouple an abstraction from its implementation so that the two can vary independently"  
Justify the statement. (10 Marks)  
b. How do you define an Adapter pattern? Illustrate the motivation and structure of adapter  
pattern. (10 Marks)

**Module-4**

- 7 a. With a neat diagram, explain MVC architecture and alternative views of the MVC  
architecture. (10 Marks)  
b. Apply the MVC architectural pattern to the process of designing a simple program that  
allows us to create and label figures. (10 Marks)

**OR**

- 8 a. Draw and explain the sequence diagram for adding a line. (05 Marks)  
b. Draw and explain the sequence diagram for adding a label. (05 Marks)  
c. Show the designing of model, view and controller subsystems of simple drawing program.  
(10 Marks)

**Module-5**

- 9 a. Analyze how library subsystem can be deployed on www with suitable diagrams. (10 Marks)  
b. Write HTML code for entering the library information for books and members details. Also  
explain uses of GET and POST methods. (10 Marks)

**OR**

- 10 a. Explain the basic architecture of client/server systems and discuss the methods to overcome  
the difficulty in accessing objects running different JVM. (10 Marks)  
b. Draw and explain the following:  
i) State transition diagram for issuing books  
ii) State transition diagram for renewing books. (10 Marks)

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