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21CS741

Seventh Semester B.E./B.Tech. Degree Examination, June/July 2025

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. What is design pattern? Explain how design patterns solve design problems. (10 Marks)
- b. Explain four essential elements of design pattern. (04 Marks)
- c. Explain how design patterns and frameworks are different. (06 Marks)

OR

- 2 a. What is object oriented development? Explain the key concepts of OOD. (08 Marks)
- b. Describe the common causes of redesign. (08 Marks)
- c. Define:
 - i) Cohesion
 - ii) Coupling
 - iii) Modularity
 - iv) Modifiability. (04 Marks)

Module-2

- 3 a. Explain the consequences and implementation issues of bridge pattern. (10 Marks)
- b. Explain the motivation, applicability and structure of adapter pattern. (10 Marks)

OR

- 4 a. Explain the consequences and implementation issues of decorator pattern. (10 Marks)
- b. Give the structure of proxy pattern and explain it. (05 Marks)
- c. Explain the implementation issues of composite design pattern. (05 Marks)

Module-3

- 5 a. Define behavioral patterns. Explain the motivation applicability and structure of chain of responsibility. (10 Marks)
- b. Explain the structure, implementation and consequences of iterator pattern. (10 Marks)

OR

- 6 a. Explain the consequences and participants of mediator and interpreter patterns. (10 Marks)
- b. Explain the intent, motivation and applicability of state and memento patterns. (10 Marks)

Module-4

- 7 a. Explain MVC architecture and its alternate view. (10 Marks)
- b. Mention the characteristics of architectural patterns. (05 Marks)
- c. Draw the use case for drawing a line and explain it. (05 Marks)

OR

- 8 a. Explain the scheme of implementing undo operation with issues. (10 Marks)
b. What are the benefits of design of a sub system? (05 Marks)
c. Draw and explain the sequence diagram for adding a line. (05 Marks)

Module-5

- 9 a. With a neat diagram, explain basic architecture of client/server systems. (10 Marks)
b. Explain GET and post methods. (05 Marks)
c. Explain the state transition diagram for adding a book in library system. (05 Marks)

OR

- 10 a. Explain the steps to set up a remote object system. (08 Marks)
b. Explain how the library system is deployed on the world wide web. (06 Marks)
c. Explain how to implement object oriented systems on the web. (06 Marks)

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