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RAN-2111040103020002

M. C. A. (Sem. - III) Examination April - 2025

Design Patterns

Time: 3 Hours]

[Total Marks: 70

સૂચના : / Instructions

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નીચે દર્શાવેલ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fill up strictly the details of signs on your answer book

Name of the Examination:
☛

Name of the Subject :
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Subject Code No.:

Seat No.:

Q. 1. A. Answer the following in short (Any TWO)

08

1. State and explain the situations where the Singleton pattern is suitable. Use examples to explain your points.
2. Show the classification of design patterns; using a diagram.
3. What are the levels of code reuse and show how the concept of code reuse is incorporated in a design pattern.
4. Give examples where we can use the flyweight design pattern.

Q. 1. B. List the advantages and disadvantages of the Prototype design pattern?

06

Q. 2. Attempt the following:

- A. Explain the standard template of the Design Pattern, as made by the GOF. **07**
- B. Explain how design patterns are used to solve design problems. **07**

OR

- B. Explain the situations where the factory method is very appropriate in designing a system.

- Q. 3. Attempt the following (Any TWO):** **14**
1. Which pattern can be used for developing a Calculator? Explain, showing its class structure.
 2. Compare the uses of the Chain of Responsibility pattern with the uses of the decorator pattern.
 3. Explain MVC pattern; using relevant examples.
- Q. 4. Attempt the following:**
- A. Briefly explain the Adapter structural design pattern, along with its structure. **07**
- OR**
- A. The adapter design pattern is not suitable for many problems. Justify the statement.
- B. Explain Composite design pattern; highlighting the steps to implement it. **07**
- Q. 5.** For a School Library Application, we need to maintain the details of the Books, the Members, their membership fees' details, the issue and return of books. Show how the above system can be designed using a Structural design pattern and/or Behavioral design pattern. **14**
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