

CMR ENGINEERING COLLEGE: : HYDERABAD**UGC AUTONOMOUS****IV–B.TECH–II–Semester End Examinations (Advanced Supply) – June- 2025****DESIGN PATTERNS****(CSE)****[Time: 3 Hours]****[Max. Marks: 70]****Note:** This question paper contains two parts A and B.

Part A is compulsory which carries 20 marks. Answer all questions in Part A.

Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART-A**(20 Marks)**

1. a) What are the main components of a design pattern? [2M]
- b) What is the role of Smalltalk MVC in design patterns? [2M]
- c) How does formatting affect the usability of a document editor? [2M]
- d) What is the purpose of spell checking in a document editor? [2M]
- e) How does the Builder pattern differ from the Factory Method pattern? [2M]
- f) What is the key characteristic of the Singleton pattern? [2M]
- g) How does the Bridge pattern help in reducing code dependencies? [2M]
- h) What are structural design patterns? [2M]
- i) How does the Iterator pattern simplify collection traversal? [2M]
- j) What is the role of the Interpreter pattern in software design? [2M]

PART-B**(50 Marks)**

- 2.a) How the design patterns are classified? Explain with examples. [5M]
- b) Discuss the importance of organizing the catalog of design patterns. [5M]

OR

- 3.a) Discuss how design patterns help in solving software design problems. [5M]
- b) What are the steps involved in selecting an appropriate design pattern? Explain. [5M]

4. Describe the different user operations in a document editor and their significance. [10M]

OR

- 5.a) Discuss the necessity of supporting multiple window systems in a document editor. [5M]
- b) Explain the challenges and solutions in supporting multiple look-and-feel standards. [5M]

- 6.a) The Singleton uses a special method to instantiate objects. What is special about this method? [5M]

- b) What are the implementation issues of prototype design pattern? Discuss. [5M]

OR

7. With a neat diagram, explain the motivation of builder design pattern and consequences of builder pattern? [10M]

8. What are the applications of Flyweight Pattern? Explain the structure & participants of Flyweight pattern with suitable example. [10M]

OR

- 9.a) Explain the implementation issues of Visitor pattern with sample code. [5M]

- b) Mention the participants of bridge pattern and explain the functions of each. [5M]

10. Explain the Strategy pattern with an example and its implementation issues of Strategy behavioral pattern. [10M]

OR

11. What is Command Pattern? Describe in detail about structure, participants and collaborations of Command pattern. [10M]
