MASTER OF COMPUTER APPLICATIONS (CBCS - 2022 COURSE)
M.C.A. Sem-III : SUMMER : 2025
SUBJECT: SOFTWARE DESIGN PATTERNS

Day : Monday
Date : 19/05/2025

S-26136-2025

Time : 10:00 AM-01:00 PM
Max. Marks : 100

N.B.:

1) Attempt ANY FIVE questions from Section – I and ANY TWO questions from Section – II.
2) Answers to both the section should be written in SAME answer book.
3) Figures to the right indicate FULL marks.

SECTION – I

Q.1 Discuss the process of organizing design patterns and their classification. [12]

Q.2 Discuss the applicability and scenarios where the Abstract Factory pattern is most suitable. Provide a comparative analysis with the Factory Method pattern. [12]

Q.3 Describe the Bridge pattern and its advantages in decoupling abstractions from implementations. Provide a step-by-step implementation example. [12]

Q.4 Explain the Iterator pattern and its role in providing a uniform way to traverse collections. Provide a step-by-step implementation example. [12]

Q.5 Explain the Strategy pattern and its role in defining a family of algorithms. Provide a comparative analysis with the Command pattern. [12]

Q.6 Discuss the consequences of using JEE patterns in terms of scalability, performance and maintainability. [12]

Q.7 Write short notes on ANY THREE of the following: [12]

a) Reusability of design pattern
b) Singleton design pattern
c) Drawbacks of design pattern
d) Structural design pattern
e) Prototype design pattern

SECTION – II

Q.8 You are designing a parking lot management system for a shopping mall. The parking lot needs to handle a large volume of vehicles efficiently. The system should also provide features like reservation of parking spaces, real-time occupancy tracking and integration with payment gateways for seamless transactions. [20]

Q.9 a) Explain the intent and motivation behind the Chain of Responsibility pattern. [10]

b) Describe the structure of the Command pattern, including Command, Receiver and Invoker classes. [10]

Q.10 Describe the structure of the Presentation Layer Design Pattern, including View, Controller and Model components. [20]

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MASTER OF COMPUTER APPLICATIONS (CBCS - 2022 COURSE)
M.C.A. Sem-III : SUMMER : 2025
SUBJECT: INFORMATION SECURITY

Day : Tuesday
Date : 20/05/2025

S-26138-2025

Time : 10:00 AM-01:00 PM
Max. Marks : 100

N.B.
1. Attempt any **FIVE** questions from Section – **I.** Each questions carries **12** marks.
2. Attempt any **TWO** questions from Section – **II.** Each questions carries **20** marks.
3. Answers to both the sections should be written in **SAME** answer book

– SECTION – I

Q.1 Explain Information Security? Is Information security need for any organization explain in brief with example. **(12)**

Q.2 What are the different categories of threats commonly encountered in network security? Elaborate on physical threats, technical threats, and man-made threats with examples. **(12)**

Q.3 What are the various types of networks, and what specific security challenges or issues are associates with each type? **(12)**

Q.4 What are the key components involved in managing information according to an information security policy, including considerations for i) information assets , ii) physical security, and iii) software assets? **(12)**

Q.5 What factors should be considered when assessing human assets in the context of information security, including qualifications, skills, and experience? **(12)**

Q.6 Write a short note on any **TWO** of the following: **(6 marks × 2 = 12 Marks)** **(12)**

a) Types of Networks OS
b) DoS Attack
c) Digital Signature
d) Security Control Regulations

SECTION – II

Q.7 a) How do cyber laws address and mitigate Cyber threats in the digital realm? **(10)**
b) What are essential elements of an IT policy designed to safeguard information. **(10)**

Q.8 Explain the importance of information management regulations in ensuring the protection, privacy, and security of data. **(20)**

Q.9 a) Explain the ways in which information technology (IT) plays a role in information management. **(10)**
b) What steps are involved in risk analysis and evaluation particularly focusing on information asset? **(10)**

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MASTER OF COMPUTER APPLICATIONS (CBCS - 2022 COURSE)
M.C.A. Sem-III : SUMMER : 2025
SUBJECT: ARTIFICIAL INTELLIGENCE

Day : Wednesday
Date : 21/05/2025

S-26137-2025

Time : 10:00 AM-01:00 PM
Max. Marks : 100

N.B.

1. Attempt **ANY FIVE** questions from Section – I. Each question carries 12 marks.
2. Attempt **ANY TWO** questions from Section II. Each question carries 20 marks.

SECTION – I

Q.1 Define Artificial Intelligence. What are advantages of Artificial Intelligence? **(12)**

Q.2 Explain production system with it's characteristics. **(12)**

Q.3 Discuss Depth First Search Technique with example. **(12)**

Q.4 Differentiate between Procedural knowledge and Declarative knowledge. **(12)**

Q.5 Elaborate syntax and semantics of Propositional logic. **(12)**

Q.6 Write short notes on **ANY TWO** of the following : **(12)**

a) Baye's theorem
b) Applications of Neural network
c) Python list Vs Numpy arrays

SECTION – II

Q.7 Write a python program to find maximum from array. **(20)**

Q.8 Solve following cryptarithmatic **(20)**

```
  SEND
+ MORE
 MONEY
```

Q.9 Translate following statement into predicate logic **(20)**

i) Meena is a girl.
ii) All white birds are beautiful.
iii) Some girls are intelligent.
iv) Every man respects his parent.
v) Anyone who loves cricket also loves football.
vi) Not all girls like both cooking and travelling.
vii) Only one student failed in Mathematics.
viii) No student loves Amit.
ix) Amit has no brother.
x) Some teachers like shopping.

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