MASTER OF COMPUTER APPLICATIONS (CBCS - 2022 COURSE)
M.C.A. Sem-III : WINTER : 2023
SUBJECT : SOFTWARE DESIGN PATTERNS

Day : Tuesday

Time : 10:00 AM-01:00 PM

Date : 21-11-2023

W-26136-2023

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 Explain the use of patterns while solving problem. **[12]**

Q.2 Explain use of Proxy Design pattern with its Intent, Structure and its applicability. **[12]**

Q.3 Explain when to use Factory Method Design Pattern with its Intent, Structure and its applicability. **[12]**

Q.4 Discuss Observer Design Pattern with its Intent, Structure and its applicability. **[12]**

Q.5 Explain Abstract Factory Pattern with its Intent, Motivation and Structure. **[12]**

Q.6 Describe Composite Pattern with its Intent, Structure and its applicability. **[12]**

Q.7 Write short note on **ANY TWO** of the following: **[12]**
   a) Template Method
   b) Adapter Object
   c) List Creational Patterns
   d) Visitor Pattern

SECTION – II

Q.8 To implement a Movie Ticket Booking System which are the design patterns are required? Explain. **[20]**

Q.9 a) Differentiate between Iterator and Interpreter. **[10]**

   b) Describe in short Structural Patterns. **[10]**

Q.10 Explain various layers of J2EE Design Patterns. **[20]**

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MASTER OF COMPUTER APPLICATIONS (CBCS - 2022 COURSE)
M.C.A. Sem-III : WINTER : 2023
SUBJECT : ARTIFICIAL INTELLIGENCE

Day : Thursday   Time : 10:00 AM-01:00 PM

Date : 23-11-2023   **W-26137-2023**   Max. Marks : 100

N.B.
3. Attempt **ANY FIVE** questions from Section – I. Each question carries 12 marks.
4. Attempt **ANY TWO** questions from Section II. Each question carries 20 marks.

SECTION – I

Q.1 Define Artificial Intelligence. Explain its advantages and applications. **(12)**

Q.2 What is Heuristic search? Explain different heuristic search techniques. **(12)**

Q.3 List and explain various knowledge representation approaches with neat diagram. **(12)**

Q.4 What is Machine learning? Explain its types. **(12)**

Q.5 Explain the concept of Natural Language Processing. Elaborate steps Natural Language Processing. **(12)**

Q.6 Write short notes on **ANY TWO** of the following : **(12)**
  a) Semantic Network
  b) Decision trees
  c) Numpy Arrays

SECTION – II

Q.7 Write a python program to print Fibonacci series. **(20)**

Q.8 Cryptarithmatic   BASE **(20)**
  +   BALL
       GAMES

Q.9 Translate following statement into Predicate logic. **(20)**
  i)   Every child loves Santa.
  ii)   All purple mushrooms are poisonous.
  iii)   Not all students like both Mathematics and Science.
  iv)   John likes all kind of food.
  v)   No animal lover kills an animal.
  vi)   Every gardener likes Sun.
  vii)   All kings are persons.
  viii)   Each girl is younger than her mother.
  ix)   Jack owns a dog.
  x)   All Lions are Fierce.

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Day : Saturday   Time : 10:00 AM-01:00 PM

Date : 25-11-2023   **W-26138-2023**   Max. Marks : 100

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

SECTION – I

Q.1   What is Information? How does Information flow within organizations and between individuals?   **(12)**

Q.2   Discuss different types of Networks and their security issues.   **(12)**

Q.3   Explain Advanced Encryption Standard (AES) in details.   **(12)**

Q.4   Explain how Social Engineering works? What are common types of Social Engineering attacks?   **(12)**

Q.5   What is MAC process? Describe working of MAC in details.   **(12)**

Q.6   Write short notes on **ANY TWO.**   **(12)**
   a)   Software Assets
   b)   Rootkit
   c)   Spoofing
   d)   Ransomware

SECTION - II

Q.7   You are appointed as Information Security Officer in XYZ University, discuss which different measures you adopt to safe guard the important information in the University, and also prepare your own Information Security Policy.   **(20)**

Q.8   **a)**   What is Risk analysis? Discuss Risk involved in distribution of information on social media.   **(10)**

   b)   What is Cryptography? Differentiate between public key and private key.   **(10)**

Q.9   **a)**   What is Cyber – Crime? Illustrate types of Cyber – Crime.   **(10)**

   b)   What is the significance of Digital Signatures in the IT Act?   **(10)**

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Day : Monday   Time : 2:00 PM – 5:00 PM

Date : 04/12/2023   Max.Marks : 100 marks

Instructions :

1. Attempt any **Five** questions from SECTION-I and any **two** questions from SECTION –II.
2. Figures to the right indicate full marks.
3. Answers to both questions must be written in same answer book.

SECTION – I

Q. 1.What is virtualization? Explain in detail types of virtualization.   (12)

Q. 2. What is VMware? Explain Virtualization with VMware.   (12)

Q. 3.What is hypervisor? Describe its types with suitable diagram.   (12)

Q . 4 Describe the tools of virtualization in detail.   (12)

Q. 5. Explain the nine core key components of open stack.   (12)

Q.6. Write short note on   (12)

    a) The VmWare Approach to the Cloud
    b) Server Consolidation and Containment

SECTION – II

Q. 7. Explain the application of virtualization in business.   (20)

Q. 8. Discuss the difference between cloud and data center infrastructure.   (20)

Q. 9. Discuss how can you make better use of your Systems with Virtualization   (20)

MASTER OF COMPUTER APPLICATIONS (CBCS - 2022 COURSE)
M.C.A. Sem-III : Winter : 2023
SUBJECT : ELECTIVE (Cyber Security)

Day : Monday   Time : 10.00 AM - 01.00 PM
Date : 04-12-2023   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   What is CIA triad ? Explain its importance of IAA in details.   (12)

Q.2   Explain types of Fire protection & Fire suppression systems in detail.   (12)

Q.3   What are network threats ? Explain types and source of network threats.   (12)

Q.4   State and describe layers of OSI Model.   (12)

Q.5   What is IT ACT 2000 ? State its importance and explain sections under the act. (12)

Q.6   Write short notes on **ANY TWO**.   (12)
   a) VPN
   b) Database Security
   c) Secure Coding Techniques
   d) ISO 27001

SECTION - II

Q.7   You are a Penetration tester in one of forbes top 100 company. Design a Continuous
        risk assessment plan for your organization adhering with MITRE ATT&CK.   (20)

Q.8 a) What is OWASP ? State and explain OWASP top 5 vulnerabilities.   (10)

     b) What is System hardening ? Explain types and state system hardening process for
        Linux Server.   (10)

Q.9 a) You are a Physical Security Expert. state facility requirements and design a physical
        security plan for a sensitive R&D facility for a government entity.   (10)

     b) You are promoted newly to Data Center Systems Engineer, Draft a Data center plan
        for a company with employee size of 1,10,000. Consider all the physical and network
        and data center security aspects into account.   (10)