Master of Computer Application
Fourth Semester Examination, June-2021
Artificial Intelligence & Applications [MCA401]

Time: 3:00 Hrs   **Max Marks 70**

Note: **Answer any five questions out of seven.**
         All questions carry equal marks.

Q.1   (a) What is an AI Techniques? Explain characteristics of AI applications.
          (b) Explain branch and bound techniques. Why it's useful in computer programming?
                                 OR
          (a)Write a unification algorithm. Describe resolution with formula.
          (b)What are the various areas where AI (Artificial Intelligence) can be used? Explain one of them.

Q.2   (a) Explain Bayes theorem and Bayesian networks.
          (b) Explain Top-Down and Bottom – Up Parsing.
                                 OR
          (a) What is sentence level processing? Explain case grammars in detail.
          (b) Define artificial intelligence. Give the importance of the area of research.

Q.3   (a) Explain the three major factors, which contribute to the difficulty of natural language understanding.
          (b) State the Bays theorem for all problems with uncertainty .Give the concept of Bayesian network with example.

Q.4   (a) Write algorithm for depth first search and breadth first search?
          (b) Mention the difference between breadth first search and best first search in artificial intelligence.

Q.5   (a) Under what condition A* algorithm give optimal solution? Write down the A* algorithm to solve 4-queen puzzle.
          (b)What is FOPL stands for and explain its role in artificial intelligence?

Master of Computer Application
Fourth Semester Examination, June-2021
Information Storage & Management [MCA402]

Time: 3:00 Hrs   **Max Marks 70**

Note: Answer all questions. All question carry equal marks.

Q.1 a) What is information cycle? Explain with an example.
b) Compare the RAID level in terms of storage efficiency cost, read and write performance, write penalty and protection.
                                   OR
a) Explain the common Information Model (CIM).
b) Differentiate between DAS, CAS and SAN technologies.

Q.2 a) Explain Data categorization in details. Explain briefly about the evolution of storage technology and Architect?
b) Explain RAID Levels in details

Q.3 a) What is cloud computing? Explain the cloud computing security challenges?
b) How can a block-level virtualization implementation be used as a data migration tool? And also explain how data migration will be accomplished.

Q.4. a) Write in detail about the high level architecture and working of an intelligent storage system.
b) Explain evolution of various storage Technologies and architecture.
                                  OR
a) Explain Information Lifecycle Management in details. How its information is different from data?
b) Differentiate between Contrasts of integrated vs Modular array.

Q.5 Write Short note on (any 4)
   i) JBOD   ii) DAS
   iii) NAS   iv) Cloud vocabulary
   v) Services on cloud

Master of Computer Application
Fourth Semester Examination, June-2021
Computer Graphics & Multimedia [MCA403]

Time: 3:00 Hrs   **Max Marks 70**

Note: Attempt all questionsry. All question carry equal marks.

Q.1   (a) What is computer graphics? Define its classification and application briefly.
          (b) Write the steps required to scan-convert a circle using Bresenham's algorithm.
<div align="center">OR</div>

          (a) Differentiate between boundary-fill and flood-fill algorithms.
          (b) Explain various multimedia compression standards.

Q.2   (a) What are the steps involved in image preparation used in JPEG image compression? Explain them with the help of a diagram.
          (b) With the help of a block diagram, explain MPEG audio compression algorithm.

Q.3   (a) Derive window to viewport transformation.
          (b)What do you understand by homogeneous coordinates? What are their applications in computer graphics?
<div align="center">OR</div>

          (a) Explain multimedia authoring tools with block diagram?
          (b) Differentiate between Gouraud shading and phong shanding.

Q.4   (a) Describe Phong shading model. How is it more accurate than Gourand shading model?
          (b) Show that two-dimensional scale and rotation do not commute that is, scaling followed by rotation is not equivalent to rotation followed by scaling.

Q.5   List the operating characteristics of the following display technologies:-
          (i) Raster refresh systems.   (ii) Vector refresh systems.

Master of Computer Application
Fourth Semester Examination, June-2021
Design & Analysis of Algorithms [MCA404]

Time: 3:00 Hrs   **Max Marks 70**

Note: All questions compulsory. All question carry equal marks.

Q.1   (a) What is an algorithm? Explain six characteristics of an algorithm with the help of an example.
          (b) Explain 4-queen problems in details. Solve a problem to take 4 queen.

Q.2   (a) Define spanning tree. Discuss design steps in Prim's algorithm to construct minimum spanning tree with an example.
          (b) Explain divide-and-conquer algorithms in details with example.

Q.3   (a) Write binary search algorithm with the help of suitable example.
          (b) Explain 0/1 Knapsack problem in details with example.
                              OR
          (a) Explain searching and sorting algorithm in details. Explain types of searching and sorting.
          (b) Explain traveling salesman problem in detail with example.

Q.4   (a) What is greedy algorithm explain with example of optimization solution?
          (b) Explain knapsack problem with the help of example.

Q.5   Define the following:
          (i) NP completeness.
          (ii) Spanning tree
          (iii) String matching algorithm

Master of Computer Application
Fourth Semester Examination, June-2021
Java Programming & Technologies [MCA405E1(A)]

Time: 3:00 Hrs   **Max Marks 70**

Note: **All questions are compulsory. All questions carry equal marks.**

Q.1   (a) Explain OOPS in detail. What are differences between JAVA and C++?
      (b) What do you understand by inheritance and also define its types with example?

Q.2   (a) Write the steps of creating RMI application.
      (b) Describe socket, client server and proxy server.

Q.3   (a) What is constructor? Write a program to count no. of objects created for a class.
      (b) Explain the life cycle of thread with block diagram.

Q.4   (a) Explain exceptional handling in JAVA. Also write types of exception.
      (b) What is applet? What are different types of applets? Explain its security and restrictions.

Q.5   Define following:
      (i)   Method overriding
      (ii) Dynamics method dispatch
      (iii) Abstract classes
      (iv) AWT vs. Swings
      (v)   Stream classes