II Semester M.C.A. Degree Examination, November 2023
(CBCS Scheme) (Fresh + Repeater)
COMPUTER APPLICATIONS
2MCA4: Software Engineering

Time : 3 Hours

Max. Marks : 70

Instruction: Answer **all** the Sections.

SECTION – A

I. Answer **any five** questions. **Each** question carries **6** marks.　　　　(5×6=30)

1. What are the objectives of software engineering? Explain.

2. Write a note on application of agile software development.

3. Briefly explain process and product quality.

4. Write a note on test driven development.

5. Write a note on gradual learning process of agile software engineering.

6. Briefly explain the Globalization in software development process.

7. Write a note on Retrospective in software development.

8. Write a note on transition to an agile software development environment.

SECTION – B

II. Answer **any four** questions. **Each** question carries **10** marks.　　　　(4×10=40)

9. Explain Use Case Diagrams with the help of a suitable example.

10. Write a note on:

    a) Refinement　　　　5

    b) Design Classes　　　　5

11. Explain the various types of measures used in software development.

12. Briefly explain how agile software development supports learning processes.

13. a) Briefly explain the Design and Refactoring.　　　　5

    b) Write a note on game theory perspective in software development.　　　　5

14. a) Briefly explain reflection on learning in agile software development.　　　　5

    b) Write a note on delivery and cyclicality in learning environments.　　　　5

II Semester M.C.A. Degree Examination, November 2023
(CBCS) (Fresh + Repeater)
COMPUTER APPLICATIONS
2MCA2 : Database Management Systems

Time : 3 Hours

Max. Marks : 70

Instructions : *1) Answer **any five** questions from Section – **A**.*
*2) Answer **any four** questions from Section – **B**.*

SECTION – A

I. Answer **any five** questions. **Each** question carries **6** marks. (5×6=30)

1) Define DBMS. List out the advantages of using database approach.

2) What is Schema ? Explain with a neat diagram of three scheme architecture of DBMS.

3) Explain hashing techniques in DBMS.

4) Write an ER diagram for BANK Database Schema. (Assume that there are Bank, Bank_Branch, Account, Loan, Customer).

5) Explain the cardinality ratios for binary relationships.

6) Explain unary operations in relational algebra.

7) Discuss the ACID properties of a database transaction.

8) What is scheduling a transaction ? Describe serial, non-serial and conflict serializable schedules.

SECTION – B

II. Answer **any four** questions. **Each** question carries **10** marks. (4×10=40)

9) Explain Client-Server Architecture with a neat diagram.

10) What is data model ? Explain the different categories of data models.

11) Explain domain constraint, key constraint and referential integrity constraints.

12) Discuss the various types of JOIN and SELECT operations in relational algebra.

13) Explain two phase locking protocol used in concurrency control mechanism.

14) Write a note on :

   a) Multi-level indexing   5

   b) Triggers.   5

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II Semester M.C.A. Degree Examination, November 2023
(CBCS Scheme) (Fresh + Repeater)
COMPUTER APPLICATIONS
2MCA6: ARTIFICIAL INTELLIGENCE

Time : 3 Hours

Max. Marks : 70

Instruction: Answer **all** the Sections.

SECTION – A

I. Answer **any five** questions. **Each** question carries **6** marks.　　　(5×6=30)

1. What is rationality in artificial intelligence? Explain.
2. Explain A* search algorithm with example.
3. What is agent based on propositional logic? Explain.
4. What is truth maintenance system? Write the benefits of using truth maintenance system.
5. Write a note on K strips in artificial intelligence.
6. Write a note on non-monotonic reasoning.
7. Briefly explain semantic analysis in natural language processing.
8. Write a note on Artificial Neural Network.

SECTION – B

II. Answer **any four** questions. **Each** question carries **10** marks.　　　(4×10=40)

9. Explain Alpha-beta pruning with an example.

10. a) Write a note on structure of agents.　　　5
　　b) Write a note on forward chaining.　　　5

11. Explain syntax and semantics of first-order logic with example.

12. Discuss different forms of learning in artificial intelligence.

13. a) Briefly explain fuzzy logic in artificial intelligence.　　　5
　　b) Write a note on deep learning.　　　5

14. a) Briefly explain the architecture of an expert system.　　　6
　　b) Write the features of biological neural networks.　　　4

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!! Semester M.C.A Degree Examination, November 2023
(CBCS Scheme)
(Fresh + Repeater)
Computer Applications
2MCA5: The Design and Analysis of Algorithm

Max. Marks : 70

Time : 3 Hours

Instructions: *Answer all the sections.*

Section- A

I. Answer any **FIVE** questions. Each question carries **6** marks.   (5 x 6=30)

1. What is an algorithm? Explain the characteristics of algorithms.

2. Write a note on algorithm visualization.

3. Write the selection sort algorithm to sort list of N elements in ascending order.

4. Briefly explain the Strassen's Matrix Multiplication.

5. Write a note on Binomial Coefficient.

6. Explain the principle of optimality.

7. Explain in details Lower-Bounded arguments.

8. Explain the Hamiltonian Circuit Problem.

Section- B

II. Answer any **FOUR** questions. Each question carries **10** marks.   (4 x 10=40)

9. a) Explain in detail asymptotic notations of an algorithm.   5
    b) Write the recursive algorithm and explain Tower of Hanoi problem for n=3.   5

10. a) Write a note on empirical analysis of algorithms.   5
    b) Write an algorithm and explain depth-first search with example.   5

11. a) Write an algorithm and explain sequential search with example.   5
    b) Explain quick sort with example using divide and conquer method.   5

12. a) Write a note on Floyd-Warshall algorithm.   5
    b) Explain the Kruskal's algorithm with example.   5

13. a) What is the Huffman Tree? Explain with example.   5
    b) Explain N-Queens problem using back tracking.   5

14. a) Explain in detail NP-Complete problems.   5
    b) Explain in detail Subset-Sum Problem.   5

II Semester M.C.A Degree Examination, November 2023
(CBCS Scheme)
(Fresh + Repeater)
Computer Applications
2MCA5: The Design and Analysis of Algorithm

Time : 3 Hours

Max. Marks : 70

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Section- B

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II Semester M.C.A. Degree Examination, November 2023
(CBCS Scheme) (Fresh + Repeater)
COMPUTER APPLICATIONS
2MCA6: ARTIFICIAL INTELLIGENCE

Time : 3 Hours

Max. Marks : 70

Instruction: Answer **all** the Sections.

SECTION – A

I. Answer **any five** questions. **Each** question carries **6** marks.   (5×6=30)

1. What is rationality in artificial intelligence? Explain.
2. Explain A* search algorithm with example.
3. What is agent based on propositional logic? Explain.
4. What is truth maintenance system? Write the benefits of using truth maintenance system.
5. Write a note on K strips in artificial intelligence.
6. Write a note on non-monotonic reasoning.
7. Briefly explain semantic analysis in natural language processing.
8. Write a note on Artificial Neural Network.

SECTION – B

II. Answer **any four** questions. **Each** question carries **10** marks.   (4×10=40)

9. Explain Alpha-beta pruning with an example.

10. a) Write a note on structure of agents.   5
    b) Write a note on forward chaining.   5

11. Explain syntax and semantics of first-order logic with example.

12. Discuss different forms of learning in artificial intelligence.

13. a) Briefly explain fuzzy logic in artificial intelligence.   5
    b) Write a note on deep learning.   5

14. a) Briefly explain the architecture of an expert system.   6
    b) Write the features of biological neural networks.   4

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II Semester M.C.A. Degree Examination, November 2023
(CBCS Scheme) (Fresh + Repeater)
COMPUTER APPLICATIONS
2MCA6: ARTIFICIAL INTELLIGENCE

Time : 3 Hours

Max. Marks : 70

Instruction: Answer **all** the Sections.

SECTION – A

I. Answer **any five** questions. **Each** question carries **6** marks.   **(5×6=30)**

1. What is rationality in artificial intelligence? Explain.
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SECTION – B

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    b) Write the features of biological neural networks.   4

II Semester M.C.A Degree Examination, November 2023
(CBCS Scheme)
(Fresh + Repeater)
Computer Applications
2MCA5: The Design and Analysis of Algorithm

Time : 3 Hours

Max. Marks : 70

Instructions: *Answer all the sections.*

Section- A

I. Answer any **FIVE** questions. Each question carries **6** marks.   (5 x 6=30)

1. What is an algorithm? Explain the characteristics of algorithms.

2. Write a note on algorithm visualization.

3. Write the selection sort algorithm to sort list of N elements in ascending order.

4. Briefly explain the Strassen's Matrix Multiplication.

5. Write a note on Binomial Coefficient.

6. Explain the principle of optimality.

7. Explain in details Lower-Bounded arguments.

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Section- B

II. Answer any **FOUR** questions. Each question carries **10** marks.   (4 x 10=40)

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13. a) What is the Huffman Tree? Explain with example.   5
    b) Explain N-Queens problem using back tracking.   5

14. a) Explain in detail NP-Complete problems.   5
    b) Explain in detail Subset-Sum Problem.   5

II Semester M.C.A. Degree Examination, November 2023
(CBCS) (Fresh + Repeater)
COMPUTER APPLICATIONS
2MCA2 : Database Management Systems

Time : 3 Hours

Max. Marks : 70

Instructions : 1) Answer any five questions from Section – A.
2) Answer any four questions from Section – B.

SECTION – A

I. Answer any five questions. Each question carries 6 marks.   (5×6=30)

1) Define DBMS. List out the advantages of using database approach.

2) What is Schema ? Explain with a neat diagram of three scheme architecture of DBMS.

3) Explain hashing techniques in DBMS.

4) Write an ER diagram for BANK Database Schema. (Assume that there are Bank, Bank_Branch, Account, Loan, Customer).

5) Explain the cardinality ratios for binary relationships.

6) Explain unary operations in relational algebra.

7) Discuss the ACID properties of a database transaction.

8) What is scheduling a transaction ? Describe serial, non-serial and conflict serializable schedules.

SECTION – B

II. Answer any four questions. Each question carries 10 marks.   (4×10=40)

9) Explain Client-Server Architecture with a neat diagram.

10) What is data model ? Explain the different categories of data models.

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11) Explain domain constraint, key constraint and referential integrity constraints.

12) Discuss the various types of JOIN and SELECT operations in relational algebra.

13) Explain two phase locking protocol used in concurrency control mechanism.

14) Write a note on :

   a) Multi-level indexing

                            5

   b) Triggers.

                            5

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