1M3N23046 (Pages : 1) Reg. No:.....

Name: .....

FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Third Semester M.Sc Computer Science Degree Examination, November 2023

MCS3C01 – Advanced Database Management System

(2022 Admission onwards)

Time: 3 hours Max. Weightage : 30

PART A

Answer any 4 questions. Each question carries 2 weightage

1. Compare conventional file systems and DBMS.
2. Define functional dependency with an example.
3. What is the need for OODBMS?
4. What is referential integrity?
5. What do you mean by distributed transactions?
6. What is a serializable schedule?
7. Write a note on DDL and DML.

(4x2 = 8 weightage)

PART B

Answer any 4 questions. Each question carries 3 weightage

8. What is normalisation? Briefly describe 1NF, 2NF, 3NF and BCNF with examples.
9. Briefly explain the fundamental operations of relational algebra.
10. What is a transaction? Give an example. Briefly explain the properties of transactions.
11. What is a database schema? Briefly explain the schema architecture.
12. Explain with examples the various anomalies in a relational database.
13. What are the advantages and disadvantages of OODBMS?
14. Write on semi structured and unstructured databases.

(4x3 = 12 weightage)

Part C

Answer any 2 questions. Each question carries 5 weightage

15. Explain various concurrency control schemes in RDBMS.
16. Explain the concepts of stored procedures, stored functions and triggers with examples.
17. Compare ER model and relational data model. Give an example that maps an ER model to a relational data model.
18. Describe the concept and architecture of Distributed Databases.

(2x5 = 10 weightage)

PART C

Answer any *two* questions.
Each question carries *five* weightage.

15.

a. Explain the term "Knowledge" with respect to a Knowledge Base System. How does "Knowledge" differ from "Intelligence" ? Distinguish between procedural and declarative knowledge, while citing an example for each.

b. What is meant by machine learning? What are the categories of learning algorithms? Explain any two learning methods.

16. Compare and contrast the given pairs from the following :

a. Predicate Logic and Propositional Logic

b. Frames and Scripts

c. Brute Force Search and Heuristic Search.

d. MYCIN and DENDRAL

17. Write a note on

a. Hill-climbing.

b. Forward and backward chaining

c. Artificial neural network.

d. Clustering

18.

a. Explain Expert System development life cycle.

b. Compare and contrast Supervised learning and Unsupervised Learning

(weightage 2 x 5 = 10)

1M3N23047 (Pages : 2) Reg. No:.....

Name: .....

FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Third Semester M.Sc Computer Science Degree Examination, November 2023

MCS3C02 – Fundamentals of Artificial Intelligence and Machine Learning

(2022 Admission onwards)

Time: 3 hours Max. Weightage : 30

PART A

Answer *all* questions.
Each question carries *two* weightage.

1. Define Artificial Intelligence? What are its primary objectives?
2. What is meant by problem reduction? Explain briefly.
3. Briefly explain the importance of knowledge acquisition.
4. Explain briefly informed search and uninformed search.
5. Give any four characteristics of AI problems.
6. What do you mean by Knowledge Representation?
7. Briefly explain Deep learning?

(weightage 4 x 2 =8)

PART B

Answer any *six* questions.
Each question carries *three* weightage.

8. State importance of State Space of a Problem? Give an Example.
9. Discuss various Knowledge representation issues?
10. Transform the following into Disjunctive Normal Form (DNF) :

    $(P \rightarrow (\sim(Q \rightarrow R)))$
11. What is rote learning? Explain.
12. Differentiate skolemisation, skolem constant and skolem function.
13. Compare and contrast BFS and DFS algorithms.
14. Express the following statement in propositional logic :

    (i) If you over sleep, you will be late

    (ii) If the humidity is high, it will rain either today or tomorrow.

(weightage 4 x 3 =12)

1M3N23048 (Pages : 1) Reg. No:.....

Name: .....

FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Third Semester M.Sc Computer Science Degree Examination, November 2023

MCS3C03 – Object Oriented Programming Concepts

(2022 Admission onwards)

Time: 3 hours Max. Weightage : 30

PART A

Answer any 4 questions. Each question carries 2 weightage

1. Mention various features of Java.
2. List and figure out the three components of JVM.
3. What is the importance of the keyword 'super'?
4. How Exceptions are handling in Java?
5. Distinguish between socket and server socket.
6. Draw a diagram for JSP life cycle.
7. Why activity diagrams are used in UML?

(4x2 = 8 weightage)

PART B

Answer any four questions. Each question carries 3 weightage

8. Explain about Encapsulation in Java.
9. Distinguish between BREAK & CONTINUE statements.
10. How 'static' and 'final' keywords are used in Java?
11. Write down about any three packages.
12. Explain about File and Standard Streams.
13. Summarize Swing and AWT in Java.
14. Discuss about Object Interaction Diagrams.

(4x3 = 12 weightage)

Part C

Answer any two questions. Each question carries 5 weightage

15. Describe about Method Overloading and Method Overriding.
16. Neatly present Inter Thread Communication.
17. Illustrate JDBC architecture.
18. Write notes on:

    (a) Class Diagrams (b) Component Diagrams

(2x5 = 10 weightage)

13

1M3N23050 (Pages : 1) Reg. No:.....

Name: .....

FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Third Semester M.Sc Computer Science Degree Examination, November 2023

MCS3E01(b)– Introduction to soft computing

(2022 Admission onwards)

Time: 3 hours Max. Weightage : 30

PART A

Questions 1 to 7. Answer any *four*. Each question carries *two* weightage.

1. What is the process of feature extraction?
2. What do you mean by discriminant functions?
3. What is the process of mutation in genetic Algorithm?
4. Explain any one crossover technique.
5. What do you mean by activation function?
6. What do you mean by defuzzification?
7. What do you mean by ASI?

PART B

Questions 8 to 14. Answer any *four*. Each question carries *three* weightage

8. What do you mean by minimum error rate classification?
9. What are the implementation issues associated with GA?
10. What are fuzzy relations? Explain with an example.
11. Describe important terminologies associated with ANN.
12. Explain the working of evolutionary algorithms.
13. Describe Hopfield networks.
14. Briefly explain support vector machine algorithm.

PART C

Questions 15 to 18. Answer any *two*. Each question carries *five* weightage

15. Explain Bayes decision theory in detail with examples.
16. Describe the various genetic algorithm operators in detail.
17. What are the different models of ANN? Explain with illustrations.
18. i) Explain Ant Colony optimisation algorithm.

    ii) Explain Support vector machine algorithm.

12

1M3N23049 (Pages : 2) Reg. No:.....

Name: .....

FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Third Semester M.Sc Computer Science Degree Examination, November 2023

MCS3E02(f)– Data ware housing and Data Mining

(2022 Admission onwards)

Time: 3 hours Max. Weightage : 30

PART A

Answer any Four (4) questions. Each question carries 2 weightage

1. Differentiate Data Warehouse and Data Mart.
2. Define the terms Data Extraction and Data Transformation with examples.
3. What is Data Mining? Why Data Mining is required in the present Information Age?
4. Briefly describe different ways to represent the output of data characterization.
5. Define Association Rule mining with an example.
6. Discuss any two techniques to improve classification accuracy.
7. Define the concept of Graph Mining.

PART B

Answer any Four (4) questions. Each question carries 3 weightage

8. Illustrate the three-tier data warehousing architecture with a neat block diagram.
9. Explain various data mining functionalities.
10. Recall any three methods for Concept Hierarchy Generation for Nominal Data.
11. Explain the FP-Growth approach for the Mining of Frequent Item sets.
12. Elaborate on various methods to evaluate the accuracy of a classifier in Data Mining.
13. Explain the method of classification by back propagation.
14. Describe the Density Based Cluster Analysis Technique.

PART C

Answer any Two (2) questions. Each question carries 5 weightage

15. Explain the K- mean and K-mediod algorithms for clustering.

16. Enumerate various schemas for multi-dimensional databases.

17. Define Support and Confidence.

Consider the following items set

Transaction No.	Item
1	Tea, Cake, Cold Drink
2	Tea, Coffee, Cold Drink
3	Eggs, Tea, Cold Drink
4	Cake, Milk, Eggs
5	Cake, Coffee, Cold Drink, Milk, Eggs

(a)Calculate the support that a person buys Tea, also buy Cold Drink.

(b)Calculate the confidence that if a person buy Tea, also buy cake.

18. Summarize various complex data types for data mining.