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**Final Year B.Tech. (CSE(DS)) (Part - IV) (Semester - VII)
(CBCS) Examination, December - 2023**

ADVANCED DATABASE SYSTEMS

Sub. Code : 92230

Day and Date : Tuesday, 05 - 12 - 2023

Total Marks : 70

Time : 10.30 a.m. to 01.00 p.m.

- Instructions :**
- 1) All Questions are compulsory.
 - 2) Assume suitable data wherever necessary.
 - 3) Figures to the right indicate full marks.

Q1) Answer Multiple Choice Questions.

[7 × 2 = 14]

- i) What is I/O parallelism in the context of parallel database architectures?
 - a) Parallel execution of database queries
 - b) Parallel processing of input/output operations
 - c) Simultaneous access to a single database file
 - d) Distributed data storage
- ii) What does ‘inter-query parallelism’ refer to in parallel database architectures?
 - a) Parallel execution of multiple database queries within a single transaction
 - b) Concurrent execution of multiple queries by different users
 - c) Parallel processing of input/output operations
 - d) Synchronization of query execution
- iii) What is the purpose of the INTERSECT operator in SQL?
 - a) Combines all rows from two tables
 - b) Retrieves all rows that are in both result sets
 - c) Groups data based on specified columns
 - d) Returns a cross product of two tables

P.T.O.

- iv) In a correlated subquery, what is the characteristic that makes it ‘correlated’?
- a) It uses correlated database tables
 - b) It references columns from the outer query
 - c) It is executed in parallel with the outer query
 - d) It returns the same result for every row in the table
- v) What is a primary feature of Key/Value Stores in NoSQL databases?
- a) Strict schema requirements
 - b) High data complexity
 - c) Efficient key-based retrieval
 - d) Relational data storage
- vi) How has the role of the Database Administrator (DBA) evolved over time?
- a) DBAs are no longer needed in modern organizations
 - b) DBAs now focus solely on hardware maintenance
 - c) DBAs play a crucial role in data security and integrity
 - d) DBAs only handle data retrieval operations
- vii) What is the main objective of data mining in Business Intelligence?
- a) Data storage and retrieval
 - b) Data cleansing and transformation
 - c) Discovering meaningful patterns and insights in data
 - d) Real-time data processing

Q2) Answer any two for the following.

[2 × 7 = 14]

- a) Illustrate the general architecture of a Centralized computer system and Client-Server System with a neatly labelled diagram.
- b) Explain with a neat labelled diagram “commonly used types of interconnection networks in parallel systems.
- c) Explain Data Replication and data Fragmentation in Distributed data storage.

Q3) Answer any two for the following.

[2 × 7 = 14]

- a) Explain Relational Set Operators with help of syntax and example
- b) What three join types are included in the OUTER JOIN classification? Explain each in detail.
- c) Differentiate in detail, a regular subquery and a correlated subquery.

Q4) Answer any two for the following.

[2 × 7 = 14]

- a) What is NoSQL? What are the limitations of RDBMS?
- b) Draw a neat diagram and explain “data-information-decision-making cycle”.
- c) List and explain the activities a database must be able to perform at Top Level Management, Middle Level Management and Operational Level Management.

Q5) Answer any two for the following.

[2 × 7 = 14]

- a) Explain “Cycle of business Intelligence analysis”.
- b) List and explain Phases of the decision-making process in decision support systems.
- c) State applications of data mining in various domains.



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**Fourth Year B.Tech. (Computer Science and Engineering) (Data Science)
(Part - IV) (Semester - VII) (CBCS) Examination, November - 2023**

ARTIFICIAL INTELLIGENCE

Sub. Code : 92228

Day and Date : Wednesday, 29 - 11 - 2023

Total Marks : 70

Time : 10.30 a.m. to 1.00 p.m.

- Instructions :**
- 1) All questions are compulsory.
 - 2) Assume suitable data wherever necessary.
 - 3) Figures to the right indicate full marks.

Q1) Multiple Choice Questions (2 Marks Each)

- a) Who is known as the “Father of AI”?
 - i) Fisher Ada
 - ii) Alan Turing
 - iii) John McCarthy
 - iv) Allen Newell

- b) Agent is in a _____ when it competes to optimize the output.
 - i) Collaborative environment
 - ii) Stochastic environment
 - iii) Deterministic environment
 - iv) Competitive environment

- c) GPS solved many simple problems, but GPS could not solve _____.
 - i) Any real-world problems
 - ii) Any computational problem
 - iii) Any classification problems
 - iv) None of the above

- d) To build a system to solve a particular problem, we need to:
 - i) Define the problem
 - ii) Analyse the problem
 - iii) Isolate the agent
 - iv) Option (i) & (ii)

- e) The output of ML is target value defined in the _____.
 - i) Available data
 - ii) Training data
 - iii) Test data
 - iv) Predicted data

P.T.O.

- f) _____deals with supervised learning problem that involves predicting a class label.
- | | |
|-----------------|--------------------|
| i) Regression | ii) Classification |
| iii) Supervised | iv) Hypothetical |
- g) From inbuilt libraries of Python take one out.
- | | |
|--------------------------|---------------|
| i) NumPy | ii) SciPy |
| iii) Matplotlib and nltk | iv) SimplerAI |

Q2) Solve any 2 of the following (7 Marks Each)

- a) What is knowledge based system? What are the different components of knowledge-based system?
- b) Explain problem solving by Search, Search Algorithm Terminologies, Properties of Search Algorithms.
- c) Explain Bayes Rule with proper example.

Q3) Solve any 2 of the following (7 Marks Each)

- a) Classification of AI systems with respect to environment.
- b) What is blind search? What are the problem solving techniques in blind search techniques? Explain any two.
- c) Explain Bayesian Network.

Q4) Solve any 2 of the following (7 Marks Each)

- a) Explain different Forms of machine Learning.
- b) What is passive reinforcement learning? Which one is an example of passive reinforcement learning?
- c) Explain important inbuilt libraries of Python NumPy, SciPy with examples.

Q5) Solve any 2 of the following (7 Marks Each)

- a) What are Expert Systems? Explain Stages in the development of an Expert System.
- b) What is the difference between passive and active reinforcement learning?
- c) Explain importance inbuilt libraries of Python matplotlib, nltk, Simple AI with examples.



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**B.Tech. (CSE (Data Science)) (Part - IV) (Semester - VII)
(CBCS) Examination, December - 2023**

EL-1 : NATURAL LANGUAGE PROCESSING

Sub. Code : 92233

Day and Date : Thursday, 07 - 12 - 2023

Total Marks : 70

Time : 10.30 a.m. to 01.00 p.m.

- Instructions :**
- 1) All questions are compulsory.
 - 2) Assume suitable data wherever necessary.
 - 3) Figures to the right indicate full marks.

Q1) MCQ Questions (2 Marks Each) :

- a) "The car hit the pole while it was moving." What type of ambiguity exists in above sentence?
 - i) Semantic
 - ii) Syntactic
 - iii) Lexical
 - iv) Pragmatic
- b) Which is example of homophony?
 - i) Homophony
 - ii) Synonymy
 - iii) Polysemy
 - iv) Hyponymy
- c) Spam email detection comes under which domain?
 - i) Text Categorization
 - ii) NER
 - iii) Text Classification
 - iv) Sentiment Analysis
- d) N-Gram language models cannot be used for _____.
 - i) Spelling Correction
 - ii) Predicting the completion of a sentence
 - iii) Removing semantic ambiguity
 - iv) Speech Recognition

P.T.O.

- e) Which of the following is efficient representation of text data?
- i) Bag of Word
 - ii) TF-IDF
 - iii) Word Vector
 - iv) BERT
- f) To automat HR recruitment process type of NLP application will be suitable
- i) Question Answering System
 - ii) Machine Transition
 - iii) Sentiment Analysis
 - iv) DOWN
- g) FST is used in Analysis.
- i) Lexical
 - ii) Morphological
 - iii) Semantic
 - iv) Syntactic

Q2) Solve any 2 of the following (7 Marks Each) :

- a) List and explain various levels of Natural Language Processing (NLP) with neat diagram.
- b) What is language model? How does language modeling work? List and explain examples of language models (min. 3).
- c) What is parts of speech tagging in Natural Language Processing? List technique of POS tagging. Explain rule-based tagging.

Q3) Solve any 2 of the following (7 Marks Each) :

- a) What is ambiguity? List and explain different types of ambiguity.
- b) What is smoothing? List different types of smoothing. Explain one of them.
- c) What is parts of speech tagging in Natural Language Processing? List technique of POS tagging, Explain Transformation based tagging.

Q4) Solve any 2 of the following (7 Marks Each) :

- a) What is parsing? Explain types of parsing.
- b) What is Semantic Analysis? Explain Elements of Semantic Analysis.
- c) Explain NL Interfaces.

Q5) Solve any 2 of the following (7 Marks Each) :

- a) What is Treebanks? Explain in detail.
- b) Explain word-sense disambiguation.
- c) Explain types of Text Summarization Approaches.



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Fourth Year B.Tech. CSE (DS) (Semester - VII) (CBCS)**Examination, December - 2023****R PROGRAMMING****Sub. Code : 92229****Day and Date Friday, 01- 12- 2023****Total Marks : 70****Time : 10.30 a.m. to 1.00 p.m.**

- Instructions :**
- 1) All questions are compulsory.
 - 2) Figures to the right indicate full marks.
 - 3) Assume suitable data wherever necessary and mention it boldly.

Q1) Solve the MCQ. [14]

- a) Which of the following is the correct syntax for assigning a value to a variable in R?
- i) `var = 10`
 - ii) `10 = var`
 - iii) `var = = 10`
 - iv) `var := 10`
- b) What is the output of the following code in R?
- ```
x <-c(1, 2, 3)
y <- c(4, 5, 6)
z <- cbind(x, y)
```
- i) A matrix with two rows and three columns
  - ii) A matrix with three rows and two columns
  - iii) A list with two elements
  - iv) An error message
- c) Which of the following is a valid way to read in a CSV file in R?
- i) `read.csv ("data.csv")`
  - ii) `read.table ("data.csv")`
  - iii) `read.excel ("data.csv")`
  - iv) `load ("data.csv")`

**P.T.O.**

- d) Which of the following statements is true about factors in R?
- i) Factors are used to represent continuous variables
  - ii) Factors are used to represent categorical variables
  - iii) Factors are always stored as integers
  - iv) Factors can be used in mathematical calculations
- e) Which of the following functions in R can be used to create a histogram?
- i) scatterplot()
  - ii) boxplot()
  - iii) density()
  - iv) hist()
- f) Which of the following functions in R can be used to generate a sequence of numbers?
- i) rep()
  - ii) seq()
  - iii) sort()
  - iv) length()
- g) Which of the following functions in R can be used to calculate the standard deviation of a vector of numbers?
- i) mean()
  - ii) median()
  - iii) var()
  - iv) sd()

**Q2)** Solve any 2 (Two) of the following questions (7 Marks Each) [14]

- a) With examples explain various data types in R
- b) Difference between Data Frame and a Matrix in R?
- c) Explain Vectors with example in detail.

**Q3)** Solve any 2 (Two) of the following questions (7 Marks Each) [14]

- a) Illustrate R program to create two 2x3 matrix and add, subtract, and multiply the matrixes.
- b) Explain the following:
  - i) rbind() to merge two R data frames
  - ii) cbind() to merge two R data frames
- c) Explain any four Function related to list operation in R.

**Q4) Solve any 2 (Two) of the following questions (7 Marks Each) [14]**

- a) Explain in detail about Data Frame with example R Code.
- b) Explain the arithmetic and Boolean operators available in R
- c) Explain the concept of recursion in programming, emphasizing its role in solving Problem through self-referential functions.

**Q5) Solve any 2 (Two) of the following questions (7 Marks Each) [14]**

- a) Explain in detail about math function in R with an example each?
- b) Describe the process of reading and writing files in R with example.
- c) Explain the fundamentals of the plot () function in R for creating basic graphs. Provide examples demonstrating how plot() can be used to visualize different types of data (e.g., scatter plots, line plots)

