QUESTION BANK: MCQS
CHAPTER 04 : DATA AND ANALYSIS

What is Data Analysis?
A) Collecting raw data
B) Processing and inspecting data to extract useful insights
C) Creating visual charts
D) Storing data in a database

Which of the following is NOT a type of data analysis?
A) Descriptive analysis
B) Inferential analysis
C) Predictive analysis
D) Chemical analysis

What does 'Big Data' refer to?
A) A small data set
B) Large volumes of structured and unstructured data
C) Data that is easy to analyze
D) Data stored on a single machine

Which of these is a key challenge in analyzing big data?
A) Data privacy
B) Data consistency
C) Scalability
D) All of the above

Which of the following tools is commonly used for data analysis in data science?
A) Microsoft Word
B) Python
C) Photoshop
D) AutoCAD

What is the primary purpose of data types in data science?
A) To improve data storage
B) To organize data for analysis
C) To visualize data
D) To perform arithmetic operations

Which of the following data types is most commonly used for numeric data?
A) String
B) Integer
C) Boolean
D) List

In data analysis, which method is used to summarize data?
A) Regression
B) Descriptive statistics
C) Classification
D) Clustering

What is 'data cleaning' in data analysis?
A) Reducing the data size
B) Removing or correcting errors in the data
C) Formatting data for analysis
D) Encrypting data

Which of the following is a common technique in predictive data analysis?
A) Decision Trees

B) Histogram
C) Bar Chart
D) Pie Chart

Which of the following is NOT a typical source of big data?
A) Social media platforms
B) Business transactions
C) Weather data
D) Manual paper records

Which of the following is an example of unstructured data?
A) An Excel spreadsheet
B) Customer database
C) Social media posts
D) Relational database

What is the first step in data analysis?
A) Collecting data
B) Analyzing data
C) Visualizing data
D) Interpreting results

What type of analysis is used to predict future trends based on historical data?
A) Descriptive analysis
B) Predictive analysis
C) Diagnostic analysis
D) Prescriptive analysis

Which of the following is a common method of visualizing data?
A) Tables
B) Graphs and charts
C) Word clouds
D) All of the above

Which data type is used to represent 'True' or 'False' values?
A) String
B) Integer
C) Boolean
D) Float

What is the process of transforming data into useful information for decision-making called?
A) Data storage
B) Data visualization
C) Data analysis
D) Data mining

What is the goal of descriptive data analysis?
A) To predict future outcomes
B) To explain past data trends
C) To identify errors in data
D) To visualize data

Which technique is used for handling missing or incomplete data in a dataset?
A) Data imputation
B) Data encoding
C) Data normalization
D) Data encryption

What kind of data analysis would you use to detect relationships or patterns within a dataset?
A) Inferential analysis
B) Exploratory analysis

C) Predictive analysis
D) Descriptive analysis

What type of data is generally used in data science for statistical modeling?
A) Structured data
B) Unstructured data
C) Qualitative data
D) All of the above

What is 'data normalization' in data processing?
A) Changing data into a more readable format
B) Organizing data for faster access
C) Adjusting values in a dataset to fit a certain scale
D) Filtering irrelevant data

Which of the following is a method used in predictive data analysis?
A) Data visualization
B) Regression analysis
C) Data cleaning
D) Data compression

Which tool is commonly used for handling large datasets in data analysis?
A) Microsoft Excel
B) SQL databases
C) Apache Hadoop
D) Word processing software

What does the term 'data mining' refer to?
A) Storing data in cloud storage
B) Extracting patterns and knowledge from large datasets
C) Searching data in a search engine
D) Encrypting data for security

Which of these is an example of structured data?
A) Tweets on Twitter
B) A database of customer records
C) A collection of handwritten notes
D) Pictures stored in an image gallery

In the context of big data, what does 'velocity' refer to?
A) The size of data
B) The speed at which data is generated and processed
C) The value of data
D) The type of data

What is a major advantage of using cloud computing for data analysis?
A) It allows data to be stored locally
B) It makes data storage and processing highly scalable
C) It reduces data access speed
D) It requires no data security measures

Which technique helps in identifying the most important features in a dataset for analysis?
A) Feature extraction
B) Data imputation
C) Data cleaning
D) Data compression

What type of analysis examines the cause of a particular event or behavior?
A) Descriptive analysis

B) Predictive analysis
C) Diagnostic analysis
D) Prescriptive analysis

Which of these is the primary goal of big data analytics?
A) Storing large amounts of data
B) Increasing the complexity of analysis
C) Extracting actionable insights from massive datasets
D) Reducing the data processing time

Which data type is used to represent decimal numbers?
A) String
B) Integer
C) Float
D) Boolean

What is the main purpose of using descriptive statistics in data analysis?
A) To summarize the main characteristics of a dataset
B) To predict future trends
C) To classify data into categories
D) To identify patterns in data

Which of the following tools is commonly used for data visualization?
A) R
B) Python (matplotlib)
C) Tableau
D) All of the above

In data analysis, what does 'data wrangling' involve?
A) Creating complex reports
B) Cleaning and transforming raw data into a usable format
C) Storing data in a cloud environment
D) Predicting future data trends

Which of the following describes 'data scalability'?
A) The ability to encrypt data
B) The ability to handle increasing data sizes efficiently
C) The method of storing data on local servers
D) The organization of data into tables

Which of the following is a core element of big data analytics?
A) Structured data
B) Real-time data processing
C) Data encryption
D) Relational databases

What is the role of artificial intelligence in data analysis?
A) It can automate the process of data cleaning
B) It can make predictions based on historical data
C) It can extract meaningful insights from large datasets
D) All of the above

Which is an example of semi-structured data?
A) JSON files
B) A relational database
C) Handwritten notes
D) An image file

What is a key characteristic of the data type 'timestamp'?
A) It represents numeric data
B) It holds text values
C) It stores date and time information
D) It stores true/false values

Which tool can help in managing big data efficiently?
A) Hadoop
B) Excel
C) Python
D) SQL Server

Which of these is an example of real-time data processing?
A) Analyzing a historical dataset
B) Streaming sensor data to monitor equipment health
C) Backing up data for disaster recovery
D) Sorting a large batch of data into categories

What does 'data redundancy' refer to in data analysis?
A) Storing the same data multiple times in a database
B) Removing unnecessary data points
C) Encrypting sensitive data
D) Visualizing data for easier access

Which of the following is an example of predictive data analytics?
A) Describing past customer behavior
B) Analyzing trends to forecast future sales
C) Identifying outliers in a dataset
D) Visualizing customer data in charts

What is the role of a data scientist?
A) To create visualizations
B) To clean and process data for analysis
C) To extract insights and make predictions using data
D) To store data in a database

What does the term 'data analytics lifecycle' refer to?
A) The stages of storing data
B) The phases of collecting and analyzing data
C) The lifecycle of a data scientist
D) The growth of a dataset over time

Which of these is NOT a common method of visualizing data?
A) Pie charts
B) Word clouds
C) Network diagrams
D) Code execution traces

What does 'data encryption' help protect?
A) Data quality
B) Data security
C) Data storage
D) Data visualization

Which of these methods is used for identifying patterns in big data?
A) Data mining
B) Data cleansing

C) Data normalization
D) Data security

QUESTIONS BANK: SHORT QUESTIONS
CHAPTER 04 : DATA AND ANALYSIS

1. What is the primary goal of artificial intelligence?
2. Define machine learning.
3. What is the difference between supervised and unsupervised learning?
4. How does a neural network function in AI?
5. What is deep learning, and how does it relate to AI?
6. What are some common applications of AI in healthcare?
7. What is reinforcement learning in AI?
8. Explain the concept of "data mining" in the context of AI.
9. What is a decision tree algorithm used for?
10. What is the role of natural language processing (NLP) in AI?
11. How does a chatbot utilize AI to interact with users?
12. What is a support vector machine (SVM) used for in machine learning?
13. What is a classification problem in machine learning?
14. What is the function of a convolutional neural network (CNN)?
15. How is AI used in self-driving cars?
16. What is the importance of training data in machine learning models?
17. Explain the concept of overfitting in machine learning models.
18. What is underfitting, and why is it a problem?
19. What is the difference between regression and classification tasks?
20. What role does AI play in fraud detection?
21. How does AI improve customer service through automation?
22. What is a generative adversarial network (GAN)?
23. Define reinforcement learning and give an example of its application.
24. What is the purpose of feature extraction in machine learning?
25. How are neural networks different from traditional machine learning algorithms?
26. What is the importance of model evaluation in machine learning?
27. What is the difference between batch processing and real-time processing in AI?
28. How do unsupervised algorithms group data?
29. How does AI help in image recognition tasks?
30. What is the purpose of sentiment analysis in NLP?
31. What are the main challenges in implementing AI in businesses?
32. How is AI used in marketing to personalize customer experiences?
33. What is edge computing, and how does it relate to AI?
34. What is the purpose of clustering in unsupervised learning?
35. What role do algorithms play in AI decision-making?
36. How does AI use data to predict trends and behaviors?
37. What is the difference between AI and expert systems?
38. How does AI contribute to the development of virtual assistants?
39. What is the significance of cloud computing in AI applications?

How is AI applied in the field of entertainment?

QUESTIONS BANK: LONG QUESTIONS
CHAPTER 04 : DATA AND ANALYSIS

1. Explain the role of data analysis in artificial intelligence. How do data preprocessing techniques like normalization and feature scaling contribute to machine learning models?
2. Discuss the different types of machine learning algorithms. Provide examples of real-world applications where supervised, unsupervised, and reinforcement learning are used.
3. Describe the structure and working of a neural network. How do deep learning models such as Convolutional Neural Networks (CNNs) differ from traditional machine learning algorithms?
4. What is natural language processing (NLP)? Discuss its significance and applications in modern AI systems such as chatbots and sentiment analysis.
5. What are decision trees, and how are they used in data analysis for classification tasks? Explain the process of creating a decision tree and discuss its advantages and limitations.
6. Explain the concept of overfitting in machine learning. How can overfitting be detected, and what techniques can be used to prevent it in a machine learning model?
7. Discuss the differences between supervised and unsupervised learning. Provide examples of when each technique would be most appropriate, and how they impact the quality of the analysis.
8. How does reinforcement learning work, and what are its applications in real-world systems such as robotics or gaming? Provide a detailed example of a reinforcement learning model.
9. Discuss the role of AI in healthcare data analysis. How are AI models used in medical image processing, diagnosis, and treatment prediction?
10. What is the significance of big data in machine learning? Explain how large datasets are processed and analyzed, and discuss the challenges faced by data scientists when working with big data.