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Computer Science Grade 10 — Chapter 4

Data and Analysis

by Public Library

Independent practice MCQs from the supplied Class 10 Computer Science notes pack. Total: 50 questions.

A. Important / Main Topics

1. What is the primary goal of data science?

(A) To extract meaningful insights from data
(B) To create websites
(C) To design hardware
(D) To manage networks

Correct Answer: A

Explanation: Data Science uses scientific methods, algorithms, and systems to extract knowledge and insights from structured and unstructured data.

2. Which of the following is a subset of Artificial Intelligence?

(A) Data Science
(B) Machine Learning
(C) Cloud Computing
(D) Blockchain

Correct Answer: B

Explanation: Machine Learning is a subset of Artificial Intelligence that focuses on algorithms and statistical modeling to learn from data.

3. What does the Turing Test measure?

(A) Computer speed
(B) Data storage
(C) Machine intelligence
(D) Network security

Correct Answer: C

Explanation: Machine intelligence — this correctly answers the question.

4. In supervised learning, what type of data is used for training?

(A) Unlabeled data
(B) Random data
(C) No data
(D) Labeled data

Correct Answer: D

Explanation: Supervised learning uses labeled data, where questions with correct answers are provided to the machine.

5. Which machine learning model learns through rewards and penalties?

(A) Reinforcement Learning
(B) Supervised Learning
(C) Unsupervised Learning
(D) Deep Learning

Correct Answer: A

Explanation: Reinforcement learning trains machines with positive or negative feedback (rewards and penalties).

6. What is the technique to predict which customers might stop using a service called?

(A) Data Visualization
(B) Churn Prediction

(C) Market Validation
(D) Sentiment Analysis

Correct Answer: B

Explanation: Churn prediction is the technique to find out the possibility of a customer to stop taking the services or products of a company.

7. Which chart type is best for showing proportions of a whole?

(A) Bar Chart
(B) Line Chart
(C) Pie Chart
(D) Scatter Plot

Correct Answer: C

Explanation: Pie charts are used to represent proportions of various categories of data in a whole.

8. What does NLP stand for?

(A) Network Layer Protocol
(B) New Learning Program
(C) Numerical Logic Processing
(D) Natural Language Processing

Correct Answer: D

Explanation: NLP (Natural Language Processing) is a branch of AI that enables computers to understand human language.

9. Which of the following is a database management software?

(A) MySQL
(B) Microsoft Word
(C) Google Chrome
(D) Adobe Photoshop

Correct Answer: A

Explanation: MySQL is a well-known database management software used to create and manage databases.

10. What is the first stage of the data science life cycle?

(A) Data Collection
(B) Problem Definition
(C) Data Cleaning
(D) Model Deployment

Correct Answer: B

Explanation: The first stage of the data science life cycle is Problem Definition, where the business problem is defined with clear objectives.

11. What is a KPI in the data science life cycle?

(A) A type of data
(B) A visualization tool
(C) A measurable target to track progress
(D) A machine learning model

Correct Answer: C

Explanation: KPIs (Key Performance Indicators) are measurable targets that help track progress and success of a process.

12. Which of the following is a data visualization method?

(A) MySQL
(B) Python
(C) Windows
(D) Bar Chart

Correct Answer: D

Explanation: Bar Chart is a method of data visualization used to compare discrete values.

13. What is the primary purpose of a scatter plot?

(A) To show the relationship between numerical variables
(B) To show trends over time
(C) To show proportions
(D) To show distribution

Correct Answer: A

Explanation: To show the relationship between numerical variables — this correctly answers the question.

14. What is machine learning?

(A) A type of computer hardware
(B) A subset of AI that enables computers to learn from data
(C) A database management system
(D) A visualization tool

Correct Answer: B

Explanation: Machine Learning is a subset of AI that enables computers to learn from data without being explicitly programmed.

15. Which of the following is a use of data visualization?

(A) Business Intelligence
(B) Healthcare
(C) All of the above
(D) Education

Correct Answer: C

Explanation: Data visualization is used in business intelligence, healthcare, education, and many other fields.

16. What is the difference between AI, ML, and Data Science?

(A) AI is a subset of ML; ML is a subset of Data Science
(B) Data Science is a subset of AI
(C) They are all the same
(D) AI is the broadest field; ML is a subset of AI; Data Science overlaps both

Correct Answer: D

Explanation: AI is the broadest field. ML is a subset of AI. Data Science overlaps with both AI and ML but also includes statistics and data analysis.

17. Which of the following is an example of supervised learning?

(A) Predicting house prices
(B) Grouping customers by shopping habits
(C) Training a robot to walk
(D) Finding patterns in unlabeled data

Correct Answer: A

Explanation: Predicting house prices is a supervised learning task because it uses labeled data (historical prices) to predict a continuous value.

18. Which of the following is an example of unsupervised learning?

(A) Email spam detection
(B) Customer segmentation
(C) Predicting stock prices
(D) Training a robot to navigate a maze

Correct Answer: B

Explanation: Customer segmentation is an unsupervised learning task because it groups customers based on similarities without predefined labels.

19. Which of the following is an example of reinforcement learning?

(A) Classifying emails as spam/not spam
(B) Grouping news articles by topic

(C) Training a robot to walk
(D) Predicting weather

Correct Answer: C

Explanation: Training a robot to walk is a reinforcement learning task because the robot learns through rewards and penalties.

20. What is churn prediction?

(A) Predicting which products will sell
(B) Predicting which employees will be hired
(C) Predicting which websites will be popular
(D) Predicting which customers will leave

Correct Answer: D

Explanation: Churn prediction is the technique to find out the possibility of a customer to stop taking the services or products of a company.

21. What is the primary purpose of sentiment analysis in NLP?

(A) To determine the emotional tone of a message
(B) To translate languages
(C) To filter spam emails
(D) To extract data from documents

Correct Answer: A

Explanation: Sentiment analysis analyzes text to determine if the emotional tone is positive, negative, or neutral.

22. Which type of data visualization is best for showing the distribution of a single numerical value?

(A) Bar Chart
(B) Histogram
(C) Pie Chart
(D) Heatmap

Correct Answer: B

Explanation: A histogram is used to show the distribution of a single numerical value over continuous intervals.

23. Which of the following is NOT a type of data visualization?

(A) Quantitative
(B) Categorical
(C) Numerical
(D) Temporal

Correct Answer: C

Explanation: The types of data visualization include Quantitative, Categorical, Temporal, Spatial, Multivariate, Interactive, Statistical, and Information. "Numerical" is not a type.

24. What is the primary benefit of using data visualization in business?

(A) It makes data more complex
(B) It replaces data analysis
(C) It eliminates the need for data
(D) It helps make faster, better decisions

Correct Answer: D

Explanation: It helps make faster, better decisions — this correctly answers the question.

25. In the data science life cycle, what is the purpose of data cleaning?

(A) To fix errors and prepare data for analysis
(B) To collect data
(C) To deploy the model
(D) To visualize data

Correct Answer: A

Explanation: Data cleaning (preprocessing) is about fixing data to make sure it's ready for analysis by removing errors and handling missing values.

B. Less Important / Secondary Topics

26. What is the relationship between a database and machine learning?

(A) Databases provide structured, clean data for ML models
(B) They are unrelated
(C) ML replaces databases
(D) Databases are only for storing images

Correct Answer: A

Explanation: Databases store structured, clean data that machine learning models need for training.

27. Which of the following is a tool used for data visualization?

(A) MySQL
(B) Tableau
(C) Apache
(D) Windows

Correct Answer: B

Explanation: Tableau — this correctly answers the question.

28. What is the primary purpose of a line chart?

(A) To compare discrete values
(B) To show proportions
(C) To show trends over time
(D) To show distribution

Correct Answer: C

Explanation: Line charts are used to display trends of data over a period of time.

29. What is the difference between a bar chart and a histogram?

(A) Bar charts show trends; histograms show proportions
(B) Bar charts show proportions; histograms show trends
(C) Bar charts and histograms are the same
(D) Bar charts compare discrete values; histograms show distribution

Correct Answer: D

Explanation: Bar charts compare discrete values; histograms show distribution — this correctly answers the question.

30. What is behavioral segmentation?

(A) Dividing customers into groups based on their behavior
(B) Dividing customers based on age
(C) Dividing customers based on location
(D) Dividing customers based on gender

Correct Answer: A

Explanation: Behavioral segmentation is the process of dividing customers into groups based on their behavior towards a service or product.

31. What is the key aspect of behavioral segmentation?

(A) Age
(B) Purchase frequency
(C) Gender
(D) Location

Correct Answer: B

Explanation: Purchase frequency — this correctly answers the question.

32. Which stage of the data science life cycle ensures the model's accuracy and reliability?

(A) Model Deployment
(B) Data Analysis
(C) Model Evaluation

(D) Maintenance and Monitoring

Correct Answer: C

Explanation: Model Evaluation — this correctly answers the question.

33. What is the purpose of a heatmap in data visualization?

(A) To show trends over time
(B) To show proportions of a whole
(C) To show distribution
(D) To represent data in matrix form using color intensity

Correct Answer: D

Explanation: Heatmaps represent data in matrix form, with values shown by color intensity.

34. What is the role of APIs in the data collection stage of the data science life cycle?

(A) To act as messengers between software for data collection
(B) To store data
(C) To visualize data
(D) To clean data

Correct Answer: A

Explanation: APIs are small programs that act like messengers between two or more software, allowing data collection from online services.

35. What is the primary purpose of the "Model Deployment" stage in the data science life cycle?

(A) To collect data
(B) To integrate the model into a system for use
(C) To clean the data
(D) To evaluate the model

Correct Answer: B

Explanation: Model deployment integrates the model into a website, application, or database for real-world use.

36. Which type of machine learning model would be most suitable for training a robot to navigate through a maze?

(A) Supervised Learning
(B) Unsupervised Learning
(C) Reinforcement Learning
(D) Deep Learning

Correct Answer: C

Explanation: Reinforcement Learning — this correctly answers the question.

37. What is the primary purpose of the "Model Evaluation" stage in the data science life cycle?

(A) To collect data
(B) To deploy the model
(C) To clean the data
(D) To measure the model's accuracy and reliability

Correct Answer: D

Explanation: Model evaluation measures how accurate and reliable the model is and whether it meets performance goals.

38. Which data visualization method is best for showing the relationship between three variables?

(A) Bubble Chart
(B) Bar Chart
(C) Pie Chart
(D) Scatter Plot

Correct Answer: A

Explanation: Bubble charts are similar to scatter plots but have a third variable represented by the size of the bubble.

39. In reinforcement learning, what is the role of the "Agent"?

(A) The environment where actions are taken
(B) The learner or decision-maker
(C) The reward received
(D) The penalty received

Correct Answer: B

Explanation: In reinforcement learning, the agent is the learner or decision-maker that takes actions in an environment.

40. What is the primary function of an analytics platform in IoT data processing?

(A) To store data
(B) To transmit data
(C) To connect, organize, visualize, and analyze data
(D) To collect data

Correct Answer: C

Explanation: To connect, organize, visualize, and analyze data — this correctly answers the question.

41. In behavioral segmentation, what does "purchase frequency" refer to?

(A) How loyal a customer is
(B) When a customer uses the product
(C) How a customer responds to promotions
(D) How often a customer buys

Correct Answer: D

Explanation: Purchase frequency refers to how often a customer buys a product or service.

42. Which of the following is a key benefit of data visualization?

(A) It helps detect errors and anomalies
(B) It makes data more complex
(C) It replaces data analysis
(D) It eliminates the need for data cleaning

Correct Answer: A

Explanation: Data visualization helps detect errors, anomalies, and outliers in data because unusual patterns stand out visually.

43. What is the primary purpose of a data warehouse in the context of machine learning?

(A) To store images only
(B) To provide a central repository of integrated data
(C) To replace ML models
(D) To visualize data

Correct Answer: B

Explanation: A data warehouse provides a central repository of integrated data from multiple sources, which is useful for ML model training.

44. Which NLP application is used to convert spoken words into text for medical reports?

(A) Email Filtering
(B) Sentiment Analysis
(C) Speech Recognition
(D) Document Analysis

Correct Answer: C

Explanation: Speech recognition systems are used in healthcare to convert speech into text for medical reports and updating electronic health records.

45. What is the main challenge of using public cloud for sensitive data?

(A) It is too fast
(B) It is too expensive

(C) It does not require internet
(D) It offers less control over data

Correct Answer: D

Explanation: Public cloud offers less control over data and security concerns, which can be a challenge for sensitive data.

46. What is the primary purpose of a customer profile?

(A) To describe the ideal customer
(B) To describe the product
(C) To describe the competition
(D) To describe the market

Correct Answer: A

Explanation: A customer profile is a detailed description of a business's ideal customer based on market research and real data.

47. Which of the following is a key component of a business pitch?

(A) Problem
(B) All of the above
(C) Solution
(D) Market

Correct Answer: B

Explanation: All of the above — this correctly answers the question.

48. What is the primary purpose of market validation?

(A) To create a product
(B) To market a product
(C) To determine if there is genuine demand
(D) To sell a product

Correct Answer: C

Explanation: Market validation is the process of determining whether there is a genuine demand for a product or service before launching it.

49. Which research method is best for exploring a new topic in depth?

(A) Quantitative Research
(B) Surveys
(C) Experiments
(D) Qualitative Research

Correct Answer: D

Explanation: Qualitative research is exploratory and provides rich, detailed data about human behavior, experiences, and opinions.

50. Which of the following is a key difference between qualitative and quantitative research in terms of sample size?

(A) Qualitative uses small samples; quantitative uses large samples
(B) Qualitative uses large samples; quantitative uses small samples
(C) Both use the same sample size
(D) Sample size is irrelevant

Correct Answer: A

Explanation: Qualitative research typically uses small samples for in-depth understanding, while quantitative research uses large samples for generalizable results.