

Unit-II

- 1. What is the primary function of a business expert system?**
 - a. Automating routine tasks
 - b. Facilitating group decision-making
 - c. Mimicking human expertise in a specific domain
 - d. Managing customer relationships
- 2. Which component of an expert system is responsible for storing and managing the knowledge base?**
 - a. Inference engine
 - b. User interface
 - c. Knowledge base
 - d. Explanation system
- 3. What is the purpose of the inference engine in an expert system?**
 - a. Interacting with users
 - b. Generating reports
 - c. Applying rules to draw conclusions and make decisions
 - d. Managing the knowledge base
- 4. In the context of expert systems, what does the term 'knowledge acquisition' refer to?**
 - a. The process of transferring knowledge from one system to another
 - b. The process of gathering and formalising expertise from human experts
 - c. The process of updating the user interface
 - d. The process of troubleshooting system errors
- 5. What type of knowledge representation is commonly used in Expert Systems to express facts and rules in a structured manner?**
 - a. Semantic Networks
 - b. Decision Trees
 - c. Natural Language Processing
 - d. Random Forests
- 6. Which of the following is a limitation of Expert Systems?**
 - a. Lack of speed in decision-making
 - b. Inability to handle complex and uncertain situations
 - c. Difficulty in acquiring and representing knowledge
 - d. Limited ability to interact with users
- 7. What is the purpose of the explanation system in an expert system?**
 - a. Managing the knowledge base
 - b. Interacting with users
 - c. Generating reports
 - d. Providing justifications for the system's conclusions
- 8. Which phase of the knowledge engineering process involves testing and refining the Expert System to ensure its accuracy and effectiveness?**
 - a. Knowledge Acquisition
 - b. Knowledge Representation
 - c. Knowledge Refinement
 - d. Knowledge Deployment
- 9. What is the term for an Expert System that continually learns and adapts its knowledge base based on new information and experiences?**
 - a. Static expert system
 - b. Dynamic expert system
 - c. Rule-based expert system
 - d. Inference-based expert system
- 10. In the development of Expert Systems, what role does a domain expert play?**
 - a. Writing code for the system
 - b. Testing the system
 - c. Providing expertise and knowledge in a specific field
 - d. Managing the user interface
- 11. What is the primary goal of Artificial Intelligence (AI)?**
 - a. Mimicking human behaviour
 - b. Replicating natural ecosystems
 - c. Enhancing computer processing speed
 - d. Automating routine tasks and intelligent decision-making
- 12. Which subfield of AI is focused on creating systems that can perform tasks that would typically require human intelligence, such as understanding natural language or recognising patterns?**
 - a. Machine learning
 - b. Natural Language Processing (NLP)
 - c. Robotics
 - d. Expert systems
- 13. What does the term 'Machine Learning' refer to in the context of AI?**

- a. Programming computers to follow specific rules
 b. Allowing computers to learn from data and improve performance over time
 c. Designing robots with advanced sensory capabilities
 d. Emulating human expertise in a specific domain
- 14. Which type of machine learning algorithm learns from labelled training data and makes predictions on new, unseen data?**
- Supervised learning
 - Unsupervised learning
 - Reinforcement learning
 - Semi-Supervised learning
- 15. In the context of AI, what does the acronym 'NLP' stand for?**
- Neural Language Processing
 - Natural Learning Platform
 - Neuro-linguistic Programming
 - Natural Language Processing
- 16. What is the purpose of an 'Artificial Neural Network' in Machine Learning?**
- To simulate human thought processes
 - To store and retrieve large datasets
 - To classify and recognise patterns
 - To manage decision-making processes
- 17. Which AI approach involves creating algorithms inspired by the structure and function of the human brain?**
- Symbolic AI
 - Evolutionary Algorithms
 - Connectionist AI (Neural Networks)
 - Fuzzy Logic
- 18. What does the term 'Reinforcement Learning' refer to in AI?**
- Learning from labelled training data
 - Learning through trial and error, receiving rewards or penalties
 - Learning by extracting rules from expert knowledge
 - Learning from unstructured data
- 19. Which type of AI system is designed to emulate the decision-making abilities of a human expert in a specific domain?**
- Expert systems
 - Genetic algorithms
 - Swarm intelligence
 - Natural language processing systems
- 20. What is the primary challenge associated with the development of 'Strong AI' or 'Artificial General Intelligence' (AGI)?**
- Limited processing power
 - Lack of specialised applications
 - Replicating human-like reasoning across diverse tasks
 - Dependence on labeled training data
- 21. What is the primary purpose of Online Transaction Processing (OLTP)?**
- Analysing historical data
 - Supporting day-to-day transactional operations
 - Providing strategic insights
 - Generating executive reports
- 22. Which of the following best describes the workload in OLTP systems?**
- Complex queries on large datasets
 - Read-heavy operations
 - Write-intensive operations with many small transactions
 - Batch processing of data
- 23. In OLAP, what does the term 'cube' refer to?**
- A fundamental unit of data storage in a database
 - A three-dimensional data structure for multi-dimensional analysis
 - A method for data encryption
 - A type of data normalisation technique
- 24. What is the primary goal of Online Analytical Processing (OLAP)?**
- Supporting transactional operations
 - Analysing historical data
 - Facilitating day-to-day operations
 - Enforcing data integrity constraints
- 25. Which type of OLAP system pre-aggregates data into a multi-dimensional cube for faster query performance?**
- Relational OLAP (ROLAP)
 - Hybrid OLAP (HOLAP)
 - Multi-dimensional OLAP (MOLAP)
 - Desktop OLAP (DOLAP)
- 26. In OLTP systems, what is a common characteristic of the database design?**
- Denormalised structure for optimal performance
 - Emphasis on historical data analysis
 - Complex joins and aggregations
 - Normalised structure for data integrity

- 1. Which OLAP architecture combines the strengths of both ROLAP and MOLAP, allowing users to store summary data in a multi-dimensional format while also leveraging relational databases?**
- Multi-dimensional OLAP (MOLAP)
 - Relational OLAP (ROLAP)
 - Hybrid OLAP (HOLAP)
 - Desktop OLAP (DOLAP)
- 2. What is the typical response time expectation for queries in OLAP systems?**
- Sub-second to a few seconds
 - Minutes to hours
 - Days to weeks
 - Instantaneous, within milliseconds
- 3. Which OLAP operation involves drilling down from a higher-level summary to more detailed data?**
- Slice
 - Dice
 - Roll-up
 - Drill-down
- 4. What does the term 'star schema' refer to in the context of OLAP database design?**
- A database design with a single central table
 - A normalised structure for optimal performance
 - A multi-dimensional database structure with a central fact table and surrounding dimension tables
 - A method for data encryption in OLAP systems
- 5. What is the primary purpose of a data warehouse?**
- Real-time transaction processing
 - Supporting day-to-day operational activities
 - Storing and managing large volumes of historical data for analysis
 - Automating routine tasks
- 6. In a data warehouse, what is a 'dimension' in the context of data modeling?**
- A measurable value in the dataset
 - A primary key in a relational database
 - A category or attribute by which data is organised and analysed
 - A data transformation process
- 7. What is the purpose of Extract, Transform, Load (ETL) processes in data warehousing?**
- Executing real-time transactions
 - Storing raw data without any transformations
- 8. Integrating and preparing data for analysis in the data warehouse**
- 9. Implementing data encryption for security**
- 10. Which of the following is a common characteristic of a data warehouse compared to an operational database?**
- Emphasis on real-time transaction processing
 - Normalised data structure
 - Focus on supporting day-to-day operational activities
 - Denormalised data structure for analytical queries
- 11. What does the term 'star schema' refer to in the context of data warehousing?**
- A database design with a single central table
 - A normalised data structure for optimal performance
 - A multi-dimensional database structure with a central fact table and surrounding dimension tables
 - A method for data encryption in data warehousing
- 12. In data warehousing, what is the purpose of a 'data mart'?**
- A subset of a data warehouse that focuses on a specific business function or department
 - The central repository of all organisational data
 - The process of extracting data from the warehouse for analysis
 - A tool for real-time data processing
- 13. What is the role of metadata in a data warehouse?**
- Executing analytical queries
 - Storing raw data
 - Managing user interfaces
 - Providing information about the structure and content of the data
- 14. What is the benefit of using a data warehouse for decision support and business intelligence?**
- Real-time transaction processing
 - Improved performance of operational database
 - Enhanced ability to analyse and make informed based on historical data
 - Minimising the need for data integration
- 15. Which SQL operation is commonly used in data warehousing to aggregate and summarise data in queries?**

- a. JOIN
- b. GROUP BY
- c. ORDER BY
- d. WHERE

40. What is the purpose of a data warehouse 'cube' in multi-dimensional data analysis?

- a. A storage unit for raw data
- b. A visual representation of data relationships
- c. A tool for data encryption
- d. A structure for organising and presenting data for analysis

41. What is a data mart in the context of data management?

- a. A central repository for all organisational data
- b. A subset of a data warehouse that focuses on a specific business function or department
- c. A tool for real-time data processing
- d. A method for data encryption

42. What is the primary purpose of a data mart?

- a. Storing raw, unprocessed data
- b. Supporting day-to-day operational activities
- c. Providing a centralised view of all organisational data
- d. Facilitating analysis and reporting for a specific business area

43. How does a data mart differ from a data warehouse?

- a. Data marts focus on specific business functions, while Data warehouses cover the entire organisation
- b. Data warehouses are smaller subsets of Data marts
- c. Data marts store only historical data, while data warehouses handle real-time transactions
- d. Data warehouses are designed for operational activities, while Data marts are for strategic decision-making

44. What is a 'Dependent data mart'?

- a. A data mart that relies on external data sources
- b. A data mart that is independent of any other data storage
- c. A data mart that depends on another Data Mart for its data
- d. A data mart that includes only raw data without transformations

45. What is the benefit of using Data marts in addition to a centralised data warehouse?

- a. Increased data security
- b. Improved performance of the Data Warehouse

- c. Enhanced flexibility and agility for specific business units
- d. Simplified data integration processes

46. In a data mart, what is typically included in the data schema?

- a. A normalised data structure
- b. A denormalised data structure
- c. A single central table
- d. Real-time transaction logs

47. Which type of data mart includes summarised and aggregated data for reporting purposes?

- a. Dependent data mart
- b. Independent data mart
- c. Analytical data mart
- d. Operational data mart

48. What is the role of metadata in the context of data marts?

- a. Managing user interfaces
- b. Providing information about the structure and content of the data
- c. Executing analytical queries
- d. Storing raw data

49. How does a 'virtual' data mart differ from a 'physical' data mart?

- a. A virtual data mart is not based on real data, while a physical data mart contains actual data
- b. A virtual data mart is stored on physical servers, while a physical data mart is hosted in the cloud
- c. A virtual data mart is only accessible locally, while a physical data mart can be accessed globally
- d. A virtual data mart and a physical data mart are synonymous terms

50. In the context of data marts, what is the purpose of a 'Conformed Dimension'?

- a. A dimension that changes over time
- b. A dimension that is consistent and standardised across multiple data marts
- c. A dimension that is specific to a particular business unit
- d. A dimension that is not used for analysis and reporting

51. What is the primary purpose of the Extract, Transform, Load (ETL) layer in a data warehouse architecture?

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- 57. Data Management**
- Real-time transaction processing
 - Storing raw data
 - Integrating and transforming data for analysis
 - Generating executive reports
- 58. In the Kimball methodology for data warehouse design, what is a characteristic of the Enterprise Data Warehouse (EDW)?**
- It focuses on specific business functions or departments
 - It is a subset of a larger data mart
 - It is a centralised repository for the entire organisation
 - It only includes historical data
- 59. What is the function of the Data Mart layer in a three-tier data warehouse architecture?**
- Integrating and transforming data
 - Storing raw data
 - Facilitating analysis and reporting for specific business areas
 - Managing user interfaces
- 60. In a data warehouse architecture, what is the role of the metadata layer?**
- Managing user interfaces
 - Storing raw data
 - Providing information about the structure and content of the data
 - Executing analytical queries
- 61. What is the purpose of the Online Analytical Processing (OLAP) Server in a Data warehouse architecture?**
- Integrating data from external sources
 - Executing real-time transactions
 - Storing raw data for long-term archival
 - Facilitating multi-dimensional analysis and reporting
- 62. Which layer in a data warehouse architecture is responsible for providing a user interface for querying and reporting?**
- ETL Layer
 - Data Warehouse Layer
 - Metadata Layer
 - Presentation Layer
- 63. What does the term 'star schema' refer to in the context of data warehouse architecture?**
- A data modeling approach where data is organised into a centralised fact table surrounded by dimension tables
 - A security layer that protects sensitive data in the warehouse
 - The process of extracting data from external sources
 - A backup strategy for data recovery
- 64. Which of the following is a characteristic of the data warehouse Layer in a Data Warehouse architecture?**
- Denormalised data structure for optimal performance
 - Focus on real-time transaction processing
 - Emphasis on supporting day-to-day operational activities
 - Storage and management of large volumes of historical data for analysis
- 65. What is the role of the Operational Data Store (ODS) in data warehouse architecture?**
- Providing a user interface for reporting
 - Storing raw data without any transformations
 - Acting as a temporary storage for recent transactional data
 - Managing metadata for the entire organisation
- 66. In a data warehouse architecture, what does the term 'Conformed Dimension' refer to?**
- A dimension that changes over time
 - A dimension that is consistent and standardised across multiple data marts user
 - A dimension that is specific to a particular business unit
 - A dimension that is not used for analysis and reporting
- 67. What is the primary function of an Extract, Transform Load (ETL) tool in data warehousing?**
- Generating executive reports
 - Storing raw data
 - Integrating and transforming data for analysis
 - Managing user interfaces
- 68. Which tool is commonly used for data modeling and designing the structure of data warehouse?**
- Tableau
 - Microsoft Excel
 - ERwin Data Modeler
 - Apache Hadoop
- 69. What is the purpose of a Business Intelligence (BI) tool in the context of data warehousing?**
- ETL Processing
 - Data Integration
 - Querying and Reporting
 - Data Modeling

- 64. Which tool is designed for the creation of dashboards and interactive visualisations for data analysis?**
- a. Informatica Powercenter
 - b. IBM Cognos
 - c. Tableau
 - d. SAP Data Services
- 65. What role does Apache Hadoop play in the data warehousing ecosystem?**
- a. ETL processing
 - b. Data integration
 - c. Distributed storage and processing of large datasets
 - d. Data modeling
- 66. Which tool is commonly used for data cleansing and profiling to ensure data quality in a data warehouse?**
- a. Informatica Powercenter
 - b. Talend
 - c. Data Stage
 - d. Alteryx