SNS College of Technology

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COIMBATORE-641 035, TAMIL NADU

DEPARTMENT OF MANAGEMENT STUDIES

Academic Year	: 2023-24	Semester	: 02
Course Code	: 23BAT615		
Course Name	: Artificial Intelligence for Managers		
Unit	: I – Technology Overview and Fundamentals		

Questions [2 Marks]

1. **What are two key components of AI and ML technologies?**

   Two key components of AI and ML technologies are algorithms and data. Algorithms form the computational logic that enables machines to learn and make decisions, while data provides the raw material for learning and training these algorithms.

2. **Explain the significance of data in AI and ML solutions.**

   Data is crucial in AI and ML solutions as it serves as the foundation for training algorithms and making informed decisions. It enables organizations to derive insights, identify patterns, and predict outcomes. Data can be sourced from various sources such as databases, APIs, sensors, and the internet. Proper storage, manipulation, and attribution of data are essential to ensure its quality and reliability for AI and ML applications.

3. **Define AI and ML technologies.**

   AI (Artificial Intelligence) refers to the simulation of human intelligence processes by machines, while ML (Machine Learning) is a subset of AI that enables machines to learn from data without being explicitly programmed.

4. **What is the significance of understanding the technology landscape in AI and ML?**

   Understanding the technology landscape helps organizations identify suitable tools, platforms, and techniques for deploying AI and ML solutions effectively.

5. **Name a popular platform used for deploying AI and ML solutions in organizations.**

   One popular platform for deploying AI and ML solutions is TensorFlow, developed by Google.

6. **Why is data important in AI and ML?**

Data is crucial for training algorithms and making informed decisions in AI and ML applications.

7. **Where can organizations find data for AI and ML applications?**

Organizations can find data from various sources such as databases, APIs, sensors, and the internet.

8. **What is the importance of proper data storage in AI and ML?**

Proper data storage ensures data accessibility, integrity, and security, which are essential for AI and ML applications.

9. **How can data be manipulated for AI and ML purposes?**

Data manipulation involves processes such as cleaning, transforming, and preprocessing data to prepare it for analysis and modeling in AI and ML.

10. **What does it mean to attribute data in AI and ML?**

Data attribution involves properly documenting the sources and origins of data, which is essential for transparency and accountability in AI and ML applications.

11. **What are statistical foundations in the context of AI and ML?**

Statistical foundations provide the theoretical framework for understanding probability, inference, and hypothesis testing, which are fundamental to many AI and ML algorithms.

12. **Why is storytelling important in data visualization?**

Storytelling helps convey insights and findings from data visualization in a compelling and understandable manner, enabling better decision-making and understanding.

13. **Name a widely used programming language for implementing AI and ML algorithms.**

Python is a widely used programming language for implementing AI and ML algorithms due to its simplicity and rich ecosystem of libraries.

14. **What role do neural networks play in machine learning?**

Neural networks are a class of algorithms inspired by the structure and function of the human brain, often used in machine learning for tasks such as classification and regression.

15. **Define supervised learning in machine learning.**

Supervised learning is a type of machine learning where the algorithm learns from labeled data, making predictions or decisions based on input-output pairs.

16. **What is unsupervised learning in machine learning?**

Unsupervised learning is a type of machine learning where the algorithm learns from unlabeled data, identifying patterns or structures within the data without explicit guidance.

17. Explain the concept of reinforcement learning.

Reinforcement learning is a type of machine learning where an agent learns to make decisions by interacting with an environment, receiving feedback in the form of rewards or penalties.

18. What is the difference between AI and ML?

AI encompasses a broader range of technologies aimed at simulating human intelligence, while ML specifically focuses on algorithms that enable machines to learn from data.

19. How do decision trees work in machine learning?

Decision trees are a type of supervised learning algorithm that partitions the data into subsets based on features, making sequential decisions to reach a final outcome.

20. Define clustering in unsupervised learning.

Clustering is a technique in unsupervised learning where similar data points are grouped together into clusters based on their intrinsic characteristics.

21. What is the purpose of feature engineering in machine learning?

Feature engineering involves selecting, transforming, or creating new features from raw data to improve the performance of machine learning models.

22. How does regularization prevent overfitting in machine learning?

Regularization techniques penalize complex models, discouraging overfitting by reducing the model's flexibility and generalizing better to unseen data.

23. Explain the bias-variance tradeoff in machine learning.

The bias-variance tradeoff refers to the balance between a model's simplicity (bias) and its ability to capture the underlying patterns in the data (variance), aiming to minimize both sources of error.

24. What is cross-validation used for in machine learning?

Cross-validation is a technique used to assess the performance and generalization ability of machine learning models by splitting the data into multiple subsets for training and testing.

25. Define feature importance in machine learning.

Feature importance measures the contribution of each feature to the predictive performance of a machine learning model, helping identify the most influential variables.

26. How can outliers affect machine learning models?

Outliers can distort the statistical properties of the data, leading to biased model predictions or decreased performance in machine learning algorithms.

27. What is the role of dimensionality reduction techniques in machine learning?

Dimensionality reduction techniques aim to reduce the number of features or variables in a dataset while preserving its essential information, helping simplify models and improve computational efficiency.