SNS COLLEGE OF ENGINEERING

Kurumbapalayam (Po), Coimbatore – 641 107

AN AUTONOMOUS INSTITUTION

Approved by AICTE, New Delhi and Affiliated to Anna University, Chennai

Question Bank

19BA336 - ARTIFICIAL INTELLIGENCE

Unit : 1

2 Marks Questions:

1. What is Machine Learning?
2. How does supervised learning work?
3. Define Artificial Intelligence.
4. Recall types of unsupervised learning.
5. When to use reinforcement learning?
6. Explain the concept of neural networks.
7. Where is deep learning applied?
8. What drives natural language processing?
9. How do decision trees function?
10. Define regression analysis.
11. What is clustering in ML?
12. When to apply ensemble methods?
13. How do SVMs classify data?
14. What is the role of KNN algorithm?
15. Recall types of AI agents.
16. How does dimensionality reduction help ML?
17. What is the aim of feature engineering?
18. Define overfitting in ML.
19. When to use logistic regression?
20. What is transfer learning in AI?

13 Marks Questions:

1. Describe the difference between supervised and unsupervised learning.
2. Discuss the working mechanism of a convolutional neural network (CNN).
3. Elaborate on the impact of AI on business processes.
4. Explain the importance of data preprocessing in machine learning.
5. Illustrate the role of hyperparameters in model tuning.
6. Elucidate the concept of bias-variance tradeoff in ML.
7. Analyze the ethical considerations in AI adoption.
8. Differentiate between strong and weak AI systems.
9. Discuss the challenges of implementing AI in healthcare.
10. Elaborate on the concept of explainable AI (XAI).
11. Describe the components of a typical AI pipeline.
12. Discuss the application of AI in customer relationship management (CRM).
13. Explain the role of AI in predictive analytics for financial markets.

14. Illustrate the use of natural language processing (NLP) in sentiment analysis.
15. Analyze the impact of AI on job roles and employment trends.
16. Discuss the potential risks of AI bias in decision-making algorithms.
17. Elaborate on the role of AI in autonomous vehicles.
18. Explain the concept of federated learning in distributed systems.
19. Discuss the challenges of AI adoption in developing countries.
20. Elucidate the role of AI in personalized marketing strategies.

Unit : 2

2 Marks Questions:
1. Why is alternative data vital for AI?
2. What are sources of alternative data?
3. How to generate alternative data effectively?
4. Define data integration in products.
5. Recall steps in data strategy.
6. Why manage data efficiently?
7. When to use alternative data?
8. What defines practical data integration?
9. How to find relevant alternative data?
10. Why consider data quality?
11. What's the role of AI in data management?
12. How does alternative data impact decision-making?
13. What are the risks of poor data management?
14. Define the term "data strategy."
15. Why is data strategy crucial?
16. When to update data strategies?
17. What's the importance of data governance?
18. Why integrate data into products?
19. What challenges arise in data integration?
20. How does AI enhance data utilization?

13 Marks Questions:
1. Discuss the process of finding alternative data sources.
2. Describe methods for generating alternative data efficiently.
3. Elaborate on integrating data seamlessly into product development.
4. Analyze the role of AI in managing and utilizing alternative data.
5. Discuss strategies for managing and mitigating risks in data integration.
6. Elucidate the significance of data quality in AI applications.
7. Explain the steps involved in developing a robust data strategy.
8. Differentiate between traditional and alternative data sources.
9. Illustrate how AI algorithms utilize alternative data for insights.
10. Describe the challenges in managing and analyzing alternative data.
11. Discuss the impact of data strategy on organizational decision-making.
12. Elaborate on the importance of real-time data in AI applications.
13. Analyze the ethical considerations in collecting and utilizing alternative data.
14. Explain the significance of data governance in AI-driven businesses.
15. Discuss the integration of data privacy regulations into data strategies.
16. Elucidate how AI algorithms adapt to diverse alternative data sources.
17. Describe the steps to assess the credibility of alternative data.
18. Discuss the scalability challenges in managing large volumes of alternative data.
19. Analyze the role of data visualization in communicating insights from alternative data.
20. Elaborate on the impact of alternative data on market forecasting models.

Unit : 3

2 Marks Theory and Practical Questions:
1. How does image classification work?
2. Why is text classification important?
3. What is hyper-parameter tuning?
4. Define emerging NN architectures.
5. Recall key principles of image classification.
6. When to use text classification?
7. Where are hyper-parameters adjusted?
8. How do neural networks classify images?
9. Why is hyper-parameter tuning crucial?
10. What are the benefits of emerging NN architectures?
11. Define CNNs and their applications.
12. Recall common text classification algorithms.
13. When to apply transfer learning in image classification?
14. Where can hyper-parameter optimization algorithms be applied?
15. How does attention mechanism improve text classification?
16. Why is fine-tuning essential in transfer learning?
17. What is the role of data augmentation in image classification?
18. Define LSTM and its significance in text classification.
19. Recall advantages of using pre-trained word embeddings.
20. How do GANs contribute to image classification?

13 Marks Practical Questions:
1. Describe the process of training a CNN for image classification.
2. Discuss the steps involved in preprocessing text data.
3. Illustrate the impact of different hyper-parameter values on model performance.
4. Analyze the performance metrics used in image classification evaluation.
5. Differentiate between supervised and unsupervised text classification approaches.
6. Elaborate on the role of word embeddings in improving text classification accuracy.
7. Elucidate the significance of cross-validation in hyper-parameter tuning.
8. Explain the concept of grid search in hyper-parameter optimization.
9. Discuss the challenges of overfitting and underfitting in image classification.
10. Describe the structure of a typical convolutional neural network (CNN).
11. Illustrate the application of transfer learning in text classification tasks.
12. Analyze the impact of batch size on training efficiency in neural networks.
13. Elaborate on the process of selecting an appropriate activation function.
14. Discuss the trade-offs between different optimization algorithms in training neural networks.
15. Explain the concept of dropout regularization and its effect on model generalization.
16. Elucidate the importance of data preprocessing in text classification.
17. Discuss the advantages and disadvantages of using recurrent neural networks (RNNs) for text classification.
18. Describe the procedure for implementing k-fold cross-validation.
19. Analyze the impact of different loss functions on training convergence.
20. Elaborate on the role of learning rate scheduling in training neural networks.

Unit : 4

Theory and Practical-Based 2 Marks Questions:
1. What is AI bias and its implications?
2. How can AI perpetuate ethical concerns?
3. Why are ethical principles crucial in AI development?
4. Define ethical AI and its significance.
5. When does AI bias occur?
6. Explain AI's impact on societal trust.

7. What are principles of ethical AI?
8. How to mitigate AI bias effectively?
9. Why is AI transparency essential?
10. Recall examples of AI bias instances.
11. What role does diversity play in AI ethics?
12. Where can bias emerge in AI systems?
13. Define fairness in AI algorithms.
14. How to ensure accountability in AI?
15. What measures can address AI discrimination?
16. Why should AI developers prioritize inclusivity?
17. What are the ethical implications of AI surveillance?
18. Discuss the role of regulation in AI ethics.
19. How do cultural biases influence AI systems?
20. What steps promote AI transparency and accountability?

Practical 13 Marks Questions:
1. Discuss ethical dilemmas in AI decision-making processes.
2. Elaborate on strategies to mitigate AI bias in recruitment.
3. Illustrate the impact of biased datasets on AI outcomes.
4. Explain the role of human oversight in AI development.
5. Analyze the ethical considerations in AI-driven healthcare applications.
6. Differentiate between explainable AI and black box algorithms.
7. Elucidate the challenges of regulating AI in autonomous vehicles.
8. Describe methods for auditing AI systems for bias detection.
9. Discuss the ethical implications of AI-driven facial recognition technology.
10. Illustrate the importance of diversity in AI design teams.
11. Elaborate on the role of AI in perpetuating systemic biases.
12. Analyze the ethical dilemmas of AI in predictive policing.
13. Explain the concept of algorithmic fairness and its implementation challenges.
14. Discuss the ethical responsibilities of AI companies towards society.
15. Elucidate the role of transparency in building trust in AI systems.
16. Describe the ethical considerations in AI-assisted decision-making.
17. Discuss the challenges of ensuring privacy in AI applications.
18. Explain the impact of AI bias on financial decision-making.
19. Analyze the role of government policies in regulating AI ethics.
20. Illustrate the potential consequences of ignoring AI bias in criminal justice systems.

Unit : 5

Sure, here are the questions:

2 Marks Theory/Practical-based Questions:

1. What is AI discrimination? Give an example.
2. How do adversarial attacks exploit AI vulnerabilities?
3. Why is AI adoption slower in developing economies?
4. Define AI's impact on job displacement.
5. When did AI ethics become a crucial concern?
6. Recall an instance of AI bias in real-world applications.
7. What are the challenges of AI regulation?
8. Explain AI's role in socioeconomic disparities.
9. Why are AI algorithms prone to biases?
10. What measures mitigate AI discrimination risks?
11. Discuss AI's influence on income inequality.
12. How do developing economies utilize AI for growth?
13. Where are AI-driven job opportunities emerging?

14. Elaborate on AI's contribution to global economic development.
15. Analyze the ethical implications of AI in hiring practices.
16. What strategies combat adversarial attacks on AI systems?
17. Describe AI's potential in enhancing healthcare access.
18. Illustrate AI's role in promoting financial inclusion.
19. Differentiate between ethical and unethical AI applications.
20. Explain AI's significance in sustainable development initiatives.

13 Marks Practical Questions:

1. Discuss the impact of AI bias on employment diversity.
2. Elucidate how adversarial attacks compromise AI security measures.
3. Analyze the socio-economic repercussions of AI-driven job displacement.
4. Describe strategies to address AI discrimination in hiring processes.
5. Illustrate the role of AI in bridging the digital divide in developing nations.
6. Elaborate on ethical considerations in deploying AI for economic growth.
7. Explain the significance of AI regulation in safeguarding consumer rights.
8. Discuss the potential of AI in fostering inclusive economic development.
9. Analyze the effectiveness of AI-based solutions in addressing healthcare disparities.
10. Differentiate between fair and biased AI algorithms in employment screening.
11. Elucidate the ethical implications of using AI in credit scoring systems.
12. Discuss how AI can empower marginalized communities in developing economies.
13. Describe the role of government policies in promoting responsible AI deployment.