Question Bank – Artificial Intelligence and Machine Learning (CSA4009)

1. Discuss the importance of exploratory data analysis (EDA) in building machine learning models.
2. What is a Rational Agent?
3. Describe the components of an Expert System with suitable examples.
4. Define Artificial Intelligence.
5. Describe the importance of data preprocessing in machine learning models.
6. Explain the importance of data preprocessing in supervised ML, including handling categorical, missing, and outlier data.
7. Write the formula for Bayes' Theorem and explain each term.
8. What are the three main types of machine learning?
9. Define machine learning.
10. Differentiate between supervised and unsupervised learning with examples.
11. Write the technological drivers of AI.
12. Explain supervised, unsupervised, semi-supervised, and reinforcement learning with examples.
13. Describe the steps in the machine learning process.
14. +Explain descriptive analytics — main steps, tools, and applications.
15. Explain the basic framework of machine learning with a neat diagram.
16. What is the Turing Test?
17. What do you mean by Data Privacy?
18. What is data visualization?
19. Explain Random Forest with a suitable example.
20. Explain standard deviation and how it is used in machine learning.
21. Write formulas for Population and Sample Standard Deviation.
22. Explain the steps involved in hypothesis testing.
23. Describe different techniques for handling missing values with examples.
24. Compare classification vs regression models in terms of performance and application.
25. Analyze how Random Forest mitigates overfitting in decision trees.
26. Discuss how visualization supports hypothesis validation in ML workflows.
27. Explain the KNN algorithm with suitable examples.
28. Explain the difference between classification and regression in supervised learning.
29. Discuss the advantages of using visualization libraries like Matplotlib and Seaborn in Python.