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Question Paper Code: U9271

B.E./B.Tech. DEGREE EXAMINATION, APRIL 2024

Open Elective

Civil Engineering

21UCS971- ARTIFICIAL INTELLIGENCE& MACHINE LEARNING FUNDAMENTALS

(Common to ECE, EEE, MECH,IT, Chemical, AGRI, BME, CSBS & Biotechnology
Engineering branches)

(Regulations 2021)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

1. List out the Characteristics of AI CO1-U
2. What are Intelligent Agent and its types? CO1-U
3. List out the Search Algorithm in AI CO1-U
4. Define Open and Close search Algorithm CO1-U
5. What are the applications of probability theory? CO1-U
6. Define Baye's Rule. CO1-U
7. Define Machine Learning CO1-U
8. Define Support Vector Machine CO1-U
9. Define K-means algorithm CO1-U
10. Give the Pros and Cons of Unsupervised Learning CO1-U

PART – B (5 x 16= 80 Marks)

11. (a) What are some challenges and ethical considerations when implementing AI in healthcare? CO1- U (16)
- OR
- (b) How do financial institutions use AI for fraud detection and risk assessment? CO1- U (16)

12. (a) What is Breadth-First Search (BFS), and how does it work to traverse a graph? CO1- U (16)

OR

- (b) Explain the data structure typically used for DFS, such as a stack or recursive function calls. CO1- U (16)

13. (a) A training data set of weather and the corresponding target variable 'Play' (suggesting possibilities of playing). CO2-AP (16)

	Outlook	Play		Outlook	Play
0	Rainy	Yes	7	Overcast	Yes
1	Sunny	Yes	8	Rainy	No
2	Overcast	Yes	9	Sunny	No
3	Overcast	Yes	10	Sunny	Yes
4	Sunny	No	11	Rainy	No
5	Rainy	Yes	12	Overcast	Yes
6	Sunny	Yes	13	Overcast	Yes

OR

- (b) Working on a fraud detection model for credit card transactions. The dataset contains a small percentage of fraudulent transactions. The business requires a model that can accurately detect fraud while minimizing false positives. How would you evaluate the model's performance in this scenario? Which evaluation metrics would you prioritize, and why? How would you balance high recall and low false positive rates? CO2-AP (16)

14. (a) Can you explain the key components of supervised learning, such as features, labels, and the training process? CO1- U (16)

OR

- (b) How are SVMs used in image classification tasks, such as recognizing objects in images? CO1- U (16)

15. (a) What is a decision tree, and how does it work for both classification and regression problems? CO1- U (16)

OR

(b) How is Principal Component Analysis (PCA) used to reduce the dimensionality of data, and what are its applications? CO1- U (16)

