SEMESTER EXAMINATION-2021

CLASS – MCA III SEM SUBJECT: COMPUTER SCIENCE

PAPER CODE:MCA-C301 PAPER TITLE: MACHINE LEARNING

Time: 3 hour **Max. Marks: 70**

Min. Pass: 40%

Note: Question Paper is divided into two sections: **A and B.** Attempt both the sections as per given instructions.

SECTION-A (SHORT ANSWER TYPE QUESTIONS)

Instructions: Answer any five questions in about 150 words each. Each question carries six marks. (5 X 6 = 30 Marks)

Question-1: Define gradient descent algorithm with suitable example.

Question-2: Explain EM Algorithm.

Question-3: What are Different Types of Machine Learning algorithms?

Question-4: What is neuron? How human brain works?

Question-5: Describe the main features of Genetic Algorithm.

Question-6: What are the issues in decision tree?

Question-7: What is mean Shift Algorithm?

Question-8: Define Recurrent Network.

Question-9: What is Fuzzy set classifier?

Question-10: Define Support vector machines.

SECTION-B (LONG ANSWER TYPE QUESTIONS)

Instructions: Answer any FOUR questions in detail. Each question carries 10 marks. (4 X 10 = 40 Marks)

Question-11: Define ID3 algorithm. Apply the ID3 algorithm to the training data provided in the table. Show exemplary computation for the first (root) node.

Day	Outlook	Temp	Humidity	Wind	PlayTennis
D1	Sunny	Hot	High	Strong	No
D2	Overcast	Hot	High	Weak	Yes
D3	Rain	Mild	High	Weak	Yes
D4	Rain	Cool	Normal	Weak	Yes
D5	Rain	Cool	Normal	Strong	No
D6	Overcast	Cool	Normal	Strong	Yes
D7	Sunny	Mild	Normal	Strong	Yes
D8	Overcast	Mild	High	Strong	Yes
D9	Rain	Mild	High	Strong	No
D10	Overcast	Hot	Normal	Weak	Yes

Question-12: What are well-posed learning problems in ML? Implement an algorithm for

the checkers problem. Represent the learned function V as a linear combination of board features of your choice. To train your program, play it repeatedly against a second copy of the program that uses a fixed evaluation function you create by hand. Plot the percent of games won by your system, versus the number of training games played.

Question-13: What is a Hierarchical Clustering Algorithm? Explain the Agglomerative Hierarchical Clustering algorithm with the help of an example.

Question-14: Implement AND function using perceptron networks for targets.

Question-15: Explain Back Propogation Algorithm in Detail.

Question-16: Explain Naïve Bayes Classifier with suitable example.

Question-17: What is K-Means Algorithm? Use the k-means algorithm and Euclidean distance to cluster the following into 2 clusters:

Height	**Weight**
185	72
170	56
168	60
179	68
182	72
188	77
180	71
180	70
183	84
180	88
180	67
177	76

Question-18: What is genetic algorithm? Define Common operators for genetic algorithms with example.

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