

Total No. of Questions : 8]

SEAT No. :

P735

[Total No. of Pages : 3

[5870]-1026

T.E. (Mechanical)

ARTIFICIAL INTELLIGENCE & MACHINE LEARNING

(2019 Pattern) (Semester - II) (302049)

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) Neat diagrams must be drawn wherever necessary.
- 2) Figures to the right side indicate full marks.
- 3) Use of calculator is allowed.
- 4) Assume suitable data wherever necessary.

Q1) a) Explain following terms in decision tree : [6]

- i) entropy
- ii) information gain
- iii) Gini index

b) What is the difference between KNN and K means? Also state advantages and limitations of KNN and K means? [5]

c) How does the Bayes algorithm differ from decision trees? [6]

OR

Q2) a) What is Support Vector Machine? How does the SVM work? [6]

b) Define pruning. What are various types of pruning? Explain any one type of pruning. [5]

c) Differentiate between logistic regression and linear regression. [6]

Q3) a) What are different hyperparameter tuning algorithms? Elaborate using an example. [8]

b) Why data pre-processing is required? Explain the techniques in pre-processing. [6]

c) State advantages and disadvantages of random forest. [4]

P.T.O.

OR

**Q4)** a) Explain the difference between training data and Testing data in a Dataset? How it is useful in a Machine Learning Model? [8]

b) Explain the following terms: [6]

i) Over fitted model

ii) Underfitted model

iii) Good model

c) Define following terms [4]

i) ACCURACY

ii) PRECISION

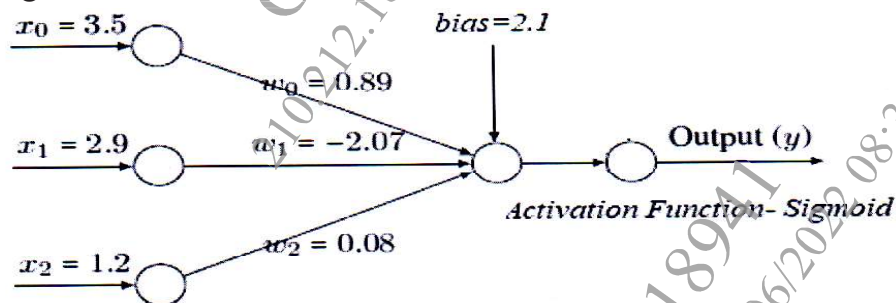
iii) RECALL

iv) F1SCORE

**Q5)** a) What do you understand from on policy and off policy algorithm in reinforcement learning? Explain SARSA algorithm for Reinforcement learning. [8]

b) Explain with neat diagram equivalence of biological neuron and artificial neuron? [6]

c) Compute the output of the following neuron if the activation function is sigmoid. Assume bias to be 2.1. [4]



OR

**Q6)** a) What are different activation functions? Explain any one in details. [8]

b) Explain [6]

i) Positive Learning

ii) Negative Learning with respect to Reinforcement learning

c) What are applications of Reinforcement learning in Mechanical engineering? [4]

- Q7)** a) Write short note on use of AIML in material inspection. [8]  
b) What are the advantages of using fault detection in Automobile cars. [5]  
c) What are the different applications of AIML in health care. [4]

OR

- Q8)** a) Explain in detail different applications of AIML. [8]  
b) Write short note on use of AIML in traffic control. [5]  
c) What are the different types of sensors used in Human machine interactions? [4]

