No. of Printed Pages : **2**

Sl. No.

B3.2-R5 : ARTIFICIAL INTELLIGENCE & MACHINE LEARNING

NOTE :

1. **Answer question 1 and any FOUR from questions 2 to 7.**
2. **Parts of the same question should be answered together and in the same sequence.**

Total Time : 3 Hours **Total Marks : 100**

1. (a) Mention and briefly discuss the three different layers in the architecture of the matplotlib.

(b) What is NLTK? Briefly discuss

(c) List down the different types of Deep Neural Networks

(d) How AI is helpful in managing the Electronic Health Records? Discuss.

(e) Briefly discuss the usages of following data types provided by NumPy: float16, float32, and float64.

(f) In context of Support Vector Machine (SVM), briefly discuss Hyperplane, Support vectors, Linear SVM, and non-linear SVM.

(g) Perceptron is also known as Linear Binary Classifier. Discuss why? Also discuss the following four parts of Perceptron: Input value or One input layer, Weights and Bias, Net sum, and Activation Function **(7x4)**

2. (a) Differentiate between Goal based Agents and Learning Agents.

(b) Highlight the usages of OLAP and OLTP. Also discuss the difference between OLAP and OLTP **(9+9)**

3. (a) Briefly mention the different AI based technologies used in healthcare.

(b) Why do we need Data Preprocessing? Briefly discuss all the involved steps in data preprocessing. **(6+12)**

4. (a) Linear regression and logistic regression are two often used supervised learning techniques. Briefly discuss them and highlight the major differences between both techniques.

(b) Mention some of the most popular applications of computer vision. **(9+9)**

5. (a) Local Binary Pattern Histogram (LBPH) is one of the simplest face recognition algorithms. Through examples, discuss the major steps of the LBPH algorithm.

(b) What is sentiment analysis? Mention the steps involved in the process of sentiment analysis. **(10+8)**

6. (a) Briefly describe the following terminologies:

Lexical Analysis, Syntactic Analysis, Semantic Analysis, Discourse Integration, and Pragmatic Analysis are different phases of NLP.

(b) Differentiate between K-fold cross validation and Stratified K-fold cross validation.

(c) Differentiate between Pandas and NumPy. **(6+6+6)**

7. (a) Highlighting the basic structure of deep learning, briefly explain, how does deep learning work?

(b) Discuss the different ways to create DataFrame. **(9+9)**

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