

6E1552

Total No. of Questions : 22

Total No. of Pages : 04

Roll No. :

6E1552

B.Tech. VI-Sem. (Back) Exam. - 2024

COMPUTER SCIENCE AND ENGINEERING

6CS4-02 / Machine Learning

CS, IT

Time : 3 Hours

Maximum Marks : 120

Instructions to Candidates :

Attempt all ten questions from Part-A, five questions out of seven questions from Part-B and four questions out of five questions from Part-C.

Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly. Units of quantities used / calculated must be stated clearly.

Use of following supporting material is permitted during examination.

(Mentioned in Form No. 205)

ersahilkagyan.com

1.

2.

PART-A

[10x2=20]

(Answer should be given up to 25 words only)

All questions are compulsory

Q.1. What is mean square error (MSE) in Machine Learning?

- Q.2. Differentiate between Random forest algorithm and Decision tree algorithm.
- Q.3. Give the advantages of SVM model.
- Q.4. Explain FP tree in FP Growth Association rule mining algorithm.
- Q.5. Define Bellman equation.
- Q.6. Give formula of accuracy in terms of FP, FN, TP and TN.
- Q.7. What is meant by confidence in association rule mining?
- Q.8. What is feature extraction? How does it differ from feature selection?
- Q.9. Define collaborative filtering.
- Q.10. Write in brief about policy iteration and value iteration.

PART-B

[5x8=40]

(Analytical/Problem solving questions)

Attempt any five questions

- Q.1. Write advantages and disadvantages of decision tree classifier.
- Q.2. Explain the use of singular value decomposition.
- Q.3. Compare filter and wrapper feature selection methods.
- Q.4. Explain Markov decision process.
- Q.5. For the given confusion matrix compute the recall. TP-true positive, TN-true negative and Predicted positive and Predicted negative are given.

	TP	TN
Predicated +ve	6	4
Predicated -ve	3	7

Q.6. How does bagging help in improving the classification performance?

Q.7. Explain steps of k-nearest neighbor algorithm.

PART-C

[4x15=60]

(Descriptive/Analytical/Problem Solving/Design question)

Attempt any four questions

Q.1. Consider the following one-dimensional dataset 12, 22, 2, 3, 33, 27, 5, 16, 6, 31, 20, 37, 8 and 18. Given $k=3$ and initial cluster centres to be 5, 6 and 31. Explain k-means algorithm for above example and find final cluster centers.

Q.2. Explain SARSA using example.

Q.3. Explain neural network Back propagation algorithm using example and diagram.

Q.4. Write short notes on the following :

(a) Probabilistic clustering

(b) Logistic Regression

Q.5. Explain support vector machine model with all necessary steps and diagrams.

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