

PSG COLLEGE OF ARTS & SCIENCE  
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2023  
(Fifth Semester)

Branch - COMPUTER SCIENCE WITH DATA ANALYTICS

MACHINE LEARNING

Time: Three Hours

Maximum: 50 Marks

SECTION-A (5 Marks)

Answer ALL questions

ALL questions carry EQUAL marks

(5 x 1 = 5)

- 1 What is Machine learning?
  - (i) The autonomous acquisition of knowledge through the use of computer programs
  - (ii) The autonomous acquisition of knowledge through the use of manual programs
  - (iii) The selective acquisition of knowledge through the use of computer programs
  - (iv) The selective acquisition of knowledge through the use of manual programs
  
- 2 \_\_\_\_\_ is the Machine Learning Algorithm that can be used for unlabeled data
  - (i) Regression Algorithms
  - (ii) Clustering Algorithms
  - (iii) Association Algorithms
  - (iv) Heirarchial Algorithms
  
- 3 Which of the following is an example of a classification problem?
  - (i) Predicting the price of a house based on its features
  - (ii) Predicting the weight of a person based on their height
  - (iii) Predicting whether a customer will churn or not
  - (iv) Predicting the age of a person based on their income
  
- 4 Where does the additional variables are added in HMM?
  - (i) Temporal model
  - (ii) Reality model
  - (iii) Probability model
  - (iv) Permanent Model
  
- 5 Choose the most widely used measures and tools to assess the classification models.
  - (i) The area under the ROC curve
  - (ii) Confusion matrix
  - (ii) Cost-sensitive accuracy
  - (iv) All of the above

SECTION - B (15 Marks)

Answer ALL Questions

ALL Questions Carry EQUAL Marks

(5 x 3 = 15)

- 6 a Describe any two examples of Machine Learning Applications.  
OR  
b Explain Regression.
  
- 7 a Explain Multivariate Classification.  
OR  
b Illustrate Principal Components Analysis.
  
- 8 a State the importance of Nonparametric Methods.  
OR  
b Specify the role of Logistic Discrimination.
  
- 9 a Describe Gaussian Processes.  
OR  
b Discuss Learning Model Parameters.

Cont...

- 10 a Summarise the Strategy of Experimentation in Machine Learning.  
OR  
b Narrate Hypothesis Testing.

**SECTION -C (30 Marks)**

Answer ALL questions

ALL questions carry EQUAL Marks

(5 x 6 = 30)

- 11 a Summarise the working of Bayesian Decision Theory.  
OR  
b Compare Bias and Variance.
- 12 a Discuss the importance of Tuning Complexity.  
OR  
b Discuss about Mixture Densities.
- 13 a Discuss the working of Smoothing Model with example.  
OR  
b Bring out the importance of Geometry of the Linear Discrimination.
- 14 a Illustrate Bayesian Estimation in detail.  
OR  
b Highlight the working of Hidden Markov Models.
- 15 a Summarise the guidelines for Machine Learning Experiments.  
OR  
b Distinguish the two Classification Algorithms with example.

Z-Z-Z

END