QP CODE: 24045073

24045073

Reg No : .....

Name : .....

M.Sc DEGREE (CSS) EXAMINATION, OCTOBER 2024

Third Semester

M.Sc ARTIFICIAL INTELLIGENCE

CORE - AI010303 - PATTERN RECOGNITION

2020 ADMISSION ONWARDS

2FB623BA

Time: 3 Hours Weightage: 30

Part A (Short Answer Questions)

*Answer any **eight** questions.*

*Weight **1** each.*

1. What is decision boundary?
2. What is reinforcement learning?
3. Define conditional probabily.If P(A)=1/13,P(B)=1/4 and P(A∩ B)=1/52 .Find i) P(A/B) ii)P(B/A)
4. Define likelihood ratio for discrete features.
5. What is maximum aposteriori probability?
6. What is the advantage of using Bayesian estimation over MLE?
7. State No Free Lunch theorem.
8. Define variance.
9. List the steps involved in Agglomerative Hierarchical Clustering.
10. What is multidimensional scaling?

(8×1=8 weightage)

Part B (Short Essay/Problems)

*Answer any **six** questions.*

*Weight **2** each.*

11. Discuss using an example working of pattern recognition system .
12. Discuss the importance of pattern recognition.

13. Prove that a Bayes classifier is equivalent to a minimum distance classifier, assuming that the feature vector is Gaussian.

14. Explain Discriminant Functions for the Normal Density for Σi = arbitrary.

15. Explain first order Hidden Markov model.

16. Explain k-Nearest-Neighbor Rule.

17. Find Jackknife variance estimate.

18. Prove that a Bayes classifier is equivalent to a minimum distance classifier, assuming that the feature vector is Gaussian.

(6×2=12 weightage)

Part C (Essay Type Questions)

*Answer any **two** questions.*

*Weight **5** each.*

19. Explain in detail about the sub-problems of pattern classification.

20. Explain Minimum-Error-Rate Classification.

21. Explain Parzen Window and illustrate the effect of Window function using suitable example.

22. Explain different clustering techniques.

(2×5=10 weightage)