QP CODE: 23002946

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Reg No : .....

Name : .....

M Sc DEGREE (CSS) EXAMINATION, MARCH 2023

Third Semester

Faculty of Science

M Sc Artificial Intelligence

CORE - AI010303 - PATTERN RECOGNITION

2020 ADMISSION ONWARDS

84F13D85

Time: 3 Hours Weightage: 30

Part A (Short Answer Questions)

*Answer any **eight** questions.*

*Weight **1** each.*

1. Explain any one application of pattern recognition
2. Explain Computational Complexity of pattern classification.
3. What is Bayes Risk?
4. Define templatematching procedure
5. What is Bayesian method of estimation?
6. What is expectation in EM algorithm
7. Define i)arching ii) component classifier iii) weak learner
8. What is m-fold cross validation?
9. What is Unsupervised Learning?
10. Explain Agglomerative Hierarchical Clustering

(8×1=8 weightage)

Part B (Short Essay/Problems)

*Answer any **six** questions.*

*Weight **2** each.*

11. Explain in detail about the design cycle of pattern recognition system
12. Explain different learning method.

13. Explain Discriminant Functions for the Normal Density for Σi = Σ
14. Explain discriminant Functions for classifier with independent binary feature vector.
15. How is a Hidden Markov Model different from a Markov model?
16. Explain the Error Rate for the Nearest-Neighbor Rule
17. Explain No Free Lunch theorem
18. Explain sum-of sqared error criterion

(6×2=12 weightage)

Part C (Essay Type Questions)

*Answer any **two** questions.*

*Weight **5** each.*

19. With the help of an example, explain in detail about the design cycle of pattern recognition system
20. How is Bayesian rule used in decision making?
21. Explain the general principle of the maximum likelihood estimation for the following cases 1. Unknown mean and known covariance matrix 2. Unknown mean and unknown covariance matrix
22. Given 7 two dimensional patterns A=(1,1) , B=(1,2),C=(2,2), D=(6,2), E=(7,2), F=(6,6), G=(7,6). Using k-means algorithm obtain 3 clusters

(2×5=10 weightage)