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Brainware University  
398, Ramkrishnapur Road, Barasat  
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## BRAINWARE UNIVERSITY

Term End Examination 2022

Programme – M.Tech.(CSE)-2018/M.Tech.(CSE)-2020/M.Tech.(CSE)-2021

Course Name – Pattern Recognition

Course Code - PEC-MCS303B

( Semester III )

Full Marks : 60

Time : 2:30 Hours

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

### Group-A

(Multiple Choice Type Question)

1 x 15=15

1. Choose the correct alternative from the following :

- (i) Which algorithm place two actions into a plan without specifying which should come first?
- |                       |                          |
|-----------------------|--------------------------|
| a) Full-order planner | b) Total-order planner   |
| c) Semi-order planner | d) Partial-order planner |
- (ii) What is the other name of each and every total-order plan?
- |                 |                  |
|-----------------|------------------|
| a) Polarization | b) Linearization |
| c) Solarization | d) None of these |
- (iii) In supervised learning
- |                               |                               |
|-------------------------------|-------------------------------|
| a) classes are not predefined | b) classes are predefined     |
| c) classes are not required   | d) classification is not done |
- (iv) What are the 2 types of learning
- |                                |                                |
|--------------------------------|--------------------------------|
| a) Improvised and unimprovised | b) supervised and unsupervised |
| c) Layered and unlayered       | d) None of these               |
- (v) Which condition is used to influence a variable directly by all the others?
- |                        |                    |
|------------------------|--------------------|
| a) Partially connected | b) Fully connected |
| c) Local connected     | d) None of these   |
- (vi) What is the consequence between a node and its predecessors while creating bayesian network?
- |                              |   |
|------------------------------|---|
| a) Functionally dependent    | b) Dependant                                |
| c) Conditionally independent | d) Both Conditionally dependant & Dependant |
- (vii) Three components of Bayes decision rule are class prior, likelihood and \_\_\_\_\_.
- |               |             |
|---------------|-------------|
| a) Evidence   | b) Instance |
| c) Confidence | d) Saliency |
- (viii) How many terms are required for building a bayes model?
- |      |      |
|------|------|
| a) 1 | b) 2 |
|------|------|

- c) 3 d) 4
- (ix) Perceptron training rule converges, if data is \_\_\_\_\_
- a) Linearly separable b) Non-linearly separable  
 c) Linearly non-separable data d) Any data
- (x) Which reveals an improvement in online smoothing?
- a) Matrix formulation b) Revelation  
 c) HMM d) None of these
- (xi) Which algorithm works by first running the standard forward pass to compute?
- a) Smoothing b) Modified smoothing  
 c) HMM d) Depth-first search algorithm
- (xii) Is XOR problem solvable using a single perceptron?
- a) Yes b) No  
 c) Can't say d) None of these
- (xiii) Classification is
- a) A subdivision of a set of examples into a number of classes b) A measure of the accuracy, of the classification of a concept that is given by a certain theory  
 c) The task of assigning a classification to a set of examples d) None of these
- (xiv) What is used to initiate the perception in the environment from the following?
- a) Sensor b) Read  
 c) Actuators d) None of these
- (xv) Gaussian function is also called \_\_\_\_\_ function
- a) Bell b) Signum  
 c) Fixed Point d) Quintic

**Group-B**

(Short Answer Type Questions)

3 x 5=15

2. What is Euclidean distance? Calculate Euclidean distance between points (2,-1) and (-1,2). (3)
3. State the kernel function. Give the examples of kernels commonly used in learning. (3)
4. Compare learning of feed-forward neural network and SVM learning (3)
5. Explain different approaches for Prototype Selection (3)
6. Define Pattern Recognition with an example. (3)

OR

Briefly explain unsupervised learning method with an algorithm and example (3)

**Group-C**

(Long Answer Type Questions)

5 x 6=30

7. Define Pattern Recognition with an example. (5)
8. Working function of recurrent neural network(RNN) with diagram. (5)
9. Explain Fuzzy k-means Clustering. (5)
10. Explain Chi-Squared Test in Hypothesis Testing. (5)
11. Define Neural Network with working diagram. (5)
12. Compare K-means and KNN Algorithms. (5)

OR

Explain the K Nearest Neighbor Algorithm. (5)



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