



## BRAINWARE UNIVERSITY

### Term End Examination 2020 - 21

Programme – Master of Technology in Computer Science & Engineering

Course Name – Pattern Recognition

Course Code - PEC-MCS303B

Semester / Year - Semester III

Time allotted : 85 Minutes

Full Marks : 70

[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 70=70

1. (Answer any Seventy)

(i) What are the 2 types of learning

- |                                |                                |
|--------------------------------|--------------------------------|
| a) Improvised and unimprovised | b) supervised and unsupervised |
| c) Layered and unlayered       | d) None of these               |

(ii) Supervised Learning is

- |                                       |                             |
|---------------------------------------|-----------------------------|
| a) learning with the help of examples | b) learning without teacher |
| c) learning with the help of teacher  | d) None of these            |

(iii) Which of the following does not include different learning methods

- |                 |                 |
|-----------------|-----------------|
| a) Memorization | b) Analogy      |
| c) Deduction    | d) Introduction |

(iv) Automated vehicle is an example of \_\_\_\_\_

- |                        |                           |
|------------------------|---------------------------|
| a) Supervised learning | b) Unsupervised learning  |
| c) Active learning     | d) Reinforcement learning |

(v) In which of the following learning the teacher returns reward and punishment to learner?

- |                        |                           |
|------------------------|---------------------------|
| a) Active learning     | b) Reinforcement learning |
| c) Supervised learning | d) Unsupervised learning  |

- (vi) Which of the following is also called as exploratory learning?
- a) Supervised learning
  - b) Active learning
  - c) Unsupervised learning
  - d) Reinforcement learning
- (vii) In Supervised learning, class labels of the training samples are
- a) Known
  - b) Unknown
  - c) Doesn't matter
  - d) Partially known
- (viii) How many terms are required for building a bayes model?
- a) 1
  - b) 2
  - c) 3
  - d) 4
- (ix) Where does the Bayes rule can be used?
- a) Solving queries
  - b) Increasing complexity
  - c) Decreasing complexity
  - d) Answering probabilistic query
- (x) How the entries in the full joint probability distribution can be calculated?
- a) Using variables
  - b) Using information
  - c) Both Using variables & information
  - d) None of these
- (xi) How the bayesian network can be used to answer any query?
- a) Full distribution
  - b) Joint distribution
  - c) Partial distribution
  - d) All of these
- (xii) To which does the local structure is associated?
- a) Hybrid
  - b) Dependant
  - c) Linear
  - d) None of these
- (xiii) 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

(xiv) Three components of Bayes decision rule are class prior, likelihood and \_\_\_\_\_.

a) Evidence

b) Instance

c) Confidence

d) Saliency

(xv) Which algorithm is used for solving temporal probabilistic reasoning?

a) Hill-climbing search

b) Hidden markov model

c) Depth-first search

d) Breadth-first search

(xvi) How does the state of the process is described in HMM?

a) Literal

b) Single random variable

c) Single discrete random variable

d) None of these

(xvii) Where does the additional variables are added in HMM?

a) Temporal model

b) Reality model

c) Probability model

d) All of these

(xviii) Which allows for a simple and matrix implementation of all the basic algorithm?

a) HMM

b) Restricted structure of HMM

c) Temporary model

d) Reality model

(xix) Which algorithm works by first running the standard forward pass to compute?

a) Smoothing

b) Modified smoothing

c) HMM

d) Depth-first search algorithm

(xx) Which suggests the existence of efficient recursive algorithm for online

smoothing?

- a) Matrix
- b) Constant space
- c) Constant time
- d) None of these

(xxi) Bayesian classifiers is

- a) A class of learning algorithm that tries to find an optimum classification of a set of examples using the probabilistic theory
- b) Any mechanism employed by a learning system to constrain the search space of a hypothesis
- c) An approach to the design of learning algorithms that is inspired by the fact that when people encounter new situations, they often explain them by reference to familiar experiences, adapting the explanations to fit the new situation.
- d) None of these

(xxii) Gaussian function is also called \_\_\_\_\_ function

- a) Bell
- b) Signum
- c) Fixed Point
- d) Quintic

(xxiii) The span of the Gaussian curve is determined by the \_\_\_\_\_ of the distribution

- a) Mean
- b) Model
- c) Median
- d) Variance

(xxiv) The full width of the Gaussian function at half the maximum is

- a) 2.35?
- b) 1.5?
- c) 0.5?
- d) 0.355?

(xxv) A statistical technique that develops an equation that relates a dependent variable to one or more independent variables is called

- a) Correlation analysis
- b) Regression analysis
- c) Partial correlation analysis
- d) All of these

(xxvi) The basic assumption behind regression analysis is:

- a) To estimate a line that goes through most values in the observed data set
- b) To minimize the sum of the squared residuals
- c) Estimate a line that maximizes the difference between the sum of  $Y_i - \hat{Y}_i$
- d) All of these

(xxvii) Correlation analysis is used to

- a) Simultaneously compare the effect of multiple independent variables on a dependent variable
- b) Predict values of y based on values of x
- c) Measure the strength of association between two variables
- d) All of these

(xxviii) The difference between regression analysis and correlation analysis is:

- a) Regression enables prediction of the dependent variable
- b) Regression estimates the line of best fit through the data
- c) Regression provides measures of association in units of the variable being measured
- d) All of these

(xxix) Which of the following is a common error measure?

- a) Sensitivity
- b) Median absolute deviation
- c) Specificity
- d) All of these

(xxx) How many possible plans are available in partial-order solution?

- a) 3
- b) 4
- c) 5
- d) 6

(xxxi) What is the other name of each and every total-order plan?

- a) Polarization
- b) Linearization
- c) Solarization
- d) None of these

(xxxii) Which are needed to compute the logical inference algorithm?

- a) Logical equivalence
- b) Validity
- c) Satisfiability
- d) All of these

(xxxiii) Which is also called single inference rule?

- a) Reference
- b) Resolution
- c) Reform
- d) None of these

(xxxiv) Which form is called as conjunction of disjunction of literals?

- a) Conjunctive normal form
- b) Disjunctive normal form
- c) Normal form
- d) All of these

(xxxv) For spiral data the decision boundary will be

- a) Linear
- b) Non-linear
- c) Does not exist
- d) None of these

(xxxvi) A perceptron is \_\_\_\_\_

- a) a single McCulloch-Pitts neuron
- b) an auto associative neural network
- c) a double layer auto associative neural network
- d) All of these

(xxxvii) Perceptron is used as a classifier for \_\_\_\_\_

- a) Linearly separable data
- b) Non-linearly separable data
- c) Linearly non-separable data
- d) Any data

(xxxviii) Is XOR problem solvable using a single perceptron?

- a) Yes
- b) No
- c) Can't say
- d) None of these

(xxxix) On what factor the number of outputs depends?

- a) distinct inputs
- b) distinct classes



(xlvi) Case-based learning is

- a) A class of learning algorithm that tries to find an optimum classification of a set of examples using the probabilistic theory
- b) Any mechanism employed by a learning system to constrain the search space of a hypothesis
- c) An approach to the design of learning algorithms that is inspired by the fact that when people encounter new situations, they often explain them by reference to familiar experiences, adapting the explanations to fit the new situation
- d) None of these

(xlvii) What is the basis for numerous spatial domain processing techniques?

- a) Transformations
- b) Scaling
- c) Histogram
- d) None of these

(xlviii) Cluster is

- a) Group of similar objects that differ significantly from other objects
- b) Operations on a database to transform or simplify data in order to prepare it for a machine-learning algorithm
- c) Symbolic representation of facts or ideas from which information can potentially be extracted
- d) None of these

(xlix) What is the relation between the distance between clusters and the corresponding class discriminability?

- a) proportional
- b) inversely-proportional
- c) no-relation
- d) None of these

(l) The tool used to obtain a PCA is \_\_\_\_\_

- a) LU Decomposition
- b) QR Decomposition
- c) SVD
- d) Cholesky Decomposition

(li) PCA is used for \_\_\_\_\_



- a) Dimensionality Enhancement
- b) Dimensionality Reduction
- c) Both Dimensionality Enhancement and Dimensionality Reduction
- d) None of these

(lii) Hybrid learning is

- a) Machine-learning involving different techniques
- b) The learning algorithmic analyzes the examples on a systematic basis 2nd makes incremental adjustments to the theory that is learned
- c) Learning by generalizing from examples
- d) None of these

(liii) Inductive learning is

- a) Machine-learning involving different techniques
- b) The learning algorithmic analyzes the examples on a systematic basis 2nd makes incremental adjustments to the theory that is learned
- c) Learning by generalizing from examples
- d) None of these

(liv) Which is more suitable normal form to be used with definite clause?

- a) Positive literal
- b) Negative literal
- c) Generalized modus ponens
- d) Neutral literal

(lv) Which will solve the conjuncts of the rule so that the total cost is minimized?

- a) Constraint variable
- b) Conjunct ordering
- c) Data complexity
- d) All of these

(lvi) How many possible sources of complexity are there in forward chaining?

- a) 1
- b) 2
- c) 3
- d) 4

(lvii) Fuzzy logic is a form of

- a) Two-valued logic
- b) Crisp set logic
- c) Many-valued logic
- d) Binary set logic

(lviii) Traditional set theory is also known as Crisp Set theory.

- a) is true
- b) is false
- c) May be
- d) Neither is true nor is false is true

(lix) The truth values of traditional set theory is \_\_\_\_\_ and that of fuzzy set is

- a) Either 0 or 1, between 0 & 1
- b) Between 0 & 1, either 0 or 1
- c) Between 0 & 1, between 0 & 1
- d) Either 0 or 1, either 0 or 1

(lx) Fuzzy logic is extension of Crisp set with an extension of handling the concept of Partial Truth.

- a) is true
- b) is false
- c) Either is true or is false can be true depending upon situation
- d) Neither is true nor is false is true

(lxi) The room temperature is hot. Here the hot (use of linguistic variable is used) can be represented by \_\_\_\_\_.

- a) Fuzzy Set
- b) Crisp Set
- c) All of these
- d) None of these

(lxii) What is meant by probability density function?

- a) Probability distributions
- b) Continuous variable
- c) Discrete variable
- d) Probability distributions for Continuous variables

(lxiii) Which of the following is used for probability theory sentences?

- a) Conditional logic
- b) Logic
- c) Extension of propositional logic
- d) None of these

(lxiv) A Term is either an individual constant (a 0-ary function), or a variable, or an n-ary function applied to n terms:  $F(t_1 t_2 \dots t_n)$ .

- a) is true
- b) is false
- c) Either is true or is false can be true depending upon situation
- d) Neither is true nor is false is true

(lxv) Euclidean distance measure is

- a) A stage of the KDD process in which new data is added to the existing selection
- b) The process of finding a solution for a problem simply by enumerating all possible solutions according to some pre-defined order and then testing them
- c) The distance between two points as calculated using the Pythagoras theorem
- d) None of these

(lxvi) The process by which the brain incrementally orders actions needed to complete a specific task is referred as,

- a) Planning problem
- b) Partial order planning
- c) Total order planning
- d) Both Planning problem & Partial order planning

(lxvii) In partial order plan a. Relationships between the actions of the behavior are set prior to the actions, b. Relationships between the actions of the behavior are not set until absolutely necessary Choose the correct option.

- a) is true
- b) is not true
- c) Either a. is true or b. is true can be true depending upon situation
- d) Neither a. is true nor b. is true is true

(lxviii) Which cannot be taken as advantage for totally ordered plan search?

- a) Composition
- b) State search
- c) Problem decomposition
- d) None of these

(lxix) What is the advantage of totally ordered plan in constructing the plan?

- a) Reliability
- b) Flexibility
- c) Easy to use
- d) All of these

(lxx) Suppose you are using RBF kernel in SVM with high Gamma value.

What does this signify?

- a) The model would consider even far away points from hyperplane for modeling
- b) The model would consider only the points close to the hyperplane for modeling
- c) The model would not be affected by distance of points from hyperplane for modeling
- d) None of these