BRAINWARE UNIVERSITY

Term End Examination 2021 - 22
Programme – Bachelor of Computer Applications
Course Name – Soft Computing
Course Code - BCA602B
(Semester VI)

Time allotted : 1 Hrs.25 Min.   **Full Marks : 70**

[The figure in the margin indicates full marks.]

Group-A
(Multiple Choice Type Question)   1 x 70=70

Choose the correct alternative from the following :

(1) Core of soft Computing is

  a) Fuzzy Computing, Neural Computing, Genetic Algorithms

  b) Fuzzy Networks and Artificial Intelligence

  c) Artificial Intelligence and Neural Science

  d) Neural Science and Genetic Science

(2) Who initiated the idea of Soft Computing

  a) Charles Darwin

  b) Lofti A Zadeh

  c) Rechenberg

  d) Mc_Culloch

(3) Conventional Artificial Intelligence is different from soft computing in the sense

  a) Conventional Artificial Intelligence deal with predicate logic whereas soft computing deal with fuzzy logic

  b) Conventional Artificial Intelligence methods are limited by symbols where as soft computing is based on empirical data

  c) Conventional Artificial Intelligence deal with predicate logic whereas soft computing deal with fuzzy logic and Conventional Artificial Intelligence methods are limited by symbols where as soft computing is based on empirical data

  d) None of these

(4) Machine learning is

  a) The autonomous acquisition of knowledge through the use of computer programs.

  b) The autonomous acquisition of knowledge through the use of manual programs

  c) The selective acquisition of knowledge throug

  d) The selective acquisition of knowledge throug

h the use of computer programs

h the use of manual programs

(5) How many types of agents are there in artificial intelligence?

a) 1

b) 2

c) 3

d) 4

(6) Fuzzy Computing

a) mimics human behavior

b) does deal with multi valued logic

c) deals with information which is vague, imprecise, uncertain, ambiguous, inexact, or probabilistic

d) All of these

(7) The values of the set membership is represented by

a) Discrete Set

b) Degree of truth

c) Probabilities

d) Both Degree of truth & Probabilities

(8) Let's assume that a fuzzy set A is defined as follows: A = 0·1/50 + 0·3/60 + 0·5/70 + 0·8/80 + 1/90 + 1/100. What will be the value of | A |?

a) 3.7

b) 6

c) 1

d) 1.7

(9) Every fuzzy complement has at most

a) two equilibrium

b) three equilibrium

c) one equilibrium

d) None of these.

(10) The boundary of the fuzzy A set is defined by those elements x of the universe such that

a) $\mu A\,(\,x\,) = 1$

b) $\mu A\,(\,x\,) = 0$

c) $0 < \mu A\,(\,x\,) < 1$

d) $0 \leq \mu A\,(\,x\,) \leq 1$

(11) Fuzzy logic is usually represented as

a) IF-THEN-ELSE rules

b) IF-THEN rules

c) Both IF-THEN-ELSE rules & IF-THEN rules

d) None of these

(12) which is/are the way/s to represent uncertainty

a) Fuzzy Logic

b) Probability

c) Entropy

d) All of these

(13) The membership functions are generally represented in

a) Tabular Form

b) Graphical Form

c) Mathematical Form

d) Logical Form

(14) What is the form of Fuzzy logic

a) Two-valued logic

b) Crisp set logic

c) Many-valued logic

d) Binary set logic

(15) Three main basic features involved in characterizing membership function are

a) Intuition, Inference, Rank Ordering

b) Fuzzy Algorithms, Neural network, Genetic Algorithm

c) Core, Support , Boundary

d) Weighted Average, center of Sums, Median

(16) The region of the universe that is characterized by complete membership in the set is called

a) Core

b) Support

c) Boundary

d) Fuzzy

(17) A fuzzy set whose membership function has at least one element x in the universe whose membership value is unity is called

a) sub normal fuzzy sets

b) normal fuzzy set

c) convex fuzzy set

d) concave fuzzy set

(18) Which of the following is used for probability theory sentences;

a) Conditional logic

b) logic

c) propositional logic

d) None of these

(19) Fuzzy set theory defines fuzzy operators. Choose the fuzzy operators from the following

a) AND

b) OR

c) NOT

d) All of these

(20) What is meant by probability density function

a) probability distributions

b) Continuous variable

c) discrete variable

d) probability distributions for Continuous variables

(21) If A and B are two fuzzy sets with membership functions: $\mu a(\chi) = \{0.2, 0.5., 0.6, 0.1, 0.9\}$, $\mu b(\chi) = \{0.1, 0.5, 0.2, 0.7, 0.8\}$ then the value of $\mu a \cap \mu b$ will be

a) {0.2,0.5,0.6,0.7,0.9}

b) {0.2, 0.5,0.2, 0.1,0.8}

c) {0.1, 0.5, 0.6, 0.1,0.8}

d) {0.1, 0.5, 0.2, 0.1,0.8}

(22) The height h(A) of a fuzzy set A is defined as h(A) = sup A(x)

a) h(A) = 0

b) h(A) <0

c) h(A)=1

d) h(A)<1

(23) which point of a fuzzy set A is a point $x \in X$ at which $\mu A(x) = 0.5$

a) Core

b) Support

c) Cross-over

d) α - cut

(24) What are the following sequence of steps taken in designing a fuzzy logic machine?

a) Fuzzification → Rule evaluation → Defuzzification

b) Fuzzification → Defuzzification → Rule evaluation

c) Rule evaluation → Fuzzification → Defuzzification

d) Rule evaluation → Defuzzification → Fuzzification

(25) Membership function defines the fuzziness in a fuzzy set irrespective of the elements in the set, which are discrete or continuous.

a) discrete or continuous

b) discrete

c) continuous

d) None of these

(26) Membership function can be thought of as a technique to solve empirical problems on the basis of

a) knowledge

b) examples

c) learning

d) experience

(27) In a Fuzzy set a prototypical element has a value

a) 1

b) 0

c) infinite   d) None of these

(28) A fuzzy set wherein no membership function has its value equal to 1 is called

   a) subnormal fuzzy sets   b) normal fuzzy set

   c) convex fuzzy set   d) concave fuzzy set

(29) A fuzzy set has a membership function whose membership values are strictly monotonically increasing or strictly monotonically decreasing or strictly monotonically increasing than strictly monotonically decreasing with increasing values for elements in the universe

   a) subnormal fuzzy sets   b) normal fuzzy set

   c) convex fuzzy set   d) concave fuzzy set

(30) The membership values of the membership function are nor strictly monotonically increasing or decreasing or strictly monotonically increasing then decreasing

   a) subnormal fuzzy sets   b) non convex fuzzy set

   c) convex fuzzy set   d) concave fuzzy set

(31) Unsupervised learning is

   a) learning without computers   b) problem based learning

   c) learning from environment   d) learning from teachers

(32) Perceptron is

   a) General class of approaches to a problem.   b) Performing several computations simultaneously

   c) Structures in a database those are statistically relevant   d) Simple forerunner of modern neural networks, without hidden layers.

(33) In supervised learning

   a) classes are not predefined   b) classes are predefined

   c) classes are not required   d) classification is not done

(34) What is composed of large number of highly interconnected processing elements (neurons) working in unison to solve problems.

   a) ANN   b) Perceptron

   c) neuron   d) None of these

(35) Artificial neural network used for

   a) Pattern Recognition   b) Classification

   c) Clustering   d) All of these

(36) A Neural Network can answer

   a) For Loop questions   b) what-if questions

   c) IF-Then-Else Analysis Questions   d) None of these

(37) Ability to learn how to do tasks based on the data given for training or initial experience

   a) Self-Organization   b) Adaptive Learning

   c) Fault tolerance   d) Robustness

(38) When the cell is said to be fired

   a) if potential of body reaches a steady threshold values   b) if there is impulse reaction

   c) during upbeat of heart   d) None of these

(39) In artificial Neural Network interconnected processing elements are called

    a) nodes or neurons   b) weights

    c) axons   d) Soma

(40) Each connection link in ANN is associated with _____ which has information about th e input signal.

    a) neurons   b) weights

    c) bias   d) activation function

(41) Classification of XOR input pattern is

    a) separable by perceptron model   b) separable by Kohonen model

    c) separable by multilayer feedback   d) all of these.

(42) In ANN model

    a) learning constant should be small   b) should be constant throughout the epoch

    c) should be 'one'   d) Should be small but adaptive and remain stable to irrelevant input.

(43) Acquired knowledge is stored in the ANN with the help of

    a) activation function   b) local induced field

    c) synaptic weight   d) input signal.

(44) Expert systems

    a) Combining different types of method or information   b) Approach to the design of learning algorithms that is structured along the lines of the theory of evolution

    c) an information base filled with the knowledge of an expert formulated in terms of if-then rules   d) None of these

(45) Falsification is

    a) Modular design of a software application that facilitates the integration of new modules   b) Showing a universal law or rule to be invalid by providing a counter example

    c) A set of attributes in a database table that refers to data in another table   d) None of these

(46) Evolutionary computation is

    a) Combining different types of method or information   b) Approach to the design of learning algorithms that is structured along the lines of the theory of evolution.

    c) Decision support systems that contain an information base filled with the knowledge of an expert formulated in terms of if-then rules.   d) None of these

(47) Extendible architecture is

    a) Modular design of a software application that facilitates the integration of new modules   b) Showing a universal law or rule to be invalid by providing a counter example

    c) A set of attributes in a database table that refers to data in another table   d) None of these

(48) Massively parallel machine is

a) A programming language based on logic

b) A computer where each processor has its own operating system, its own memory, and its own hard disk

c) Describes the structure of the contents of a database.

d) None of these

(49) Search space

a) The large set of candidate solutions possible for a problem

b) The information stored in a database that can be retrieved with a single query.

c) Worth of the output of a machine learning program that makes it understandable for humans

d) None of these

(50) Shallow knowledge

a) The large set of candidate solutions possible for a problem

b) The information stored in a database that can be retrieved with a single query

c) Worth of the output of a machine learning program that makes it understandable for humans

d) All of these

(51) What are the advantages of neural networks over conventional computers? (i) They have the ability to learn by example (ii) They are more fault tolerant (iii) They are more suited for real time operation due to their high 'computational' rates.

a) All of these

b) ii and iii

c) i, ii

d) None of these

(52) Which of the following is true? Single layer associative neural networks do not have the ability to: (i) perform pattern recognition (ii) find the parity of a picture (iii)determine whether two or more shapes in a picture are connected or not

a) All of these

b) ii and iii

c) i, ii

d) None of these

(53) Factors which affect the performance of learner system does not include

a) Representation scheme used

b) Training scenario

c) Type of feedback

d) Good data structures

(54) Different learning methods does not include

a) Memorization

b) Analogy

c) Deduction

d) Introduction

(55) Single layer perceptron is used for

a) linear separability

b) error minimization

c) non-linear separability

d) annealing

(56) Which mode of training, all neurons in Hopfield networks fire at random.

a) Stable status

b) Output

c) Synchronous

d) Asynchronous

(57) X-OR problem can be solved by

a) single layer perceptron

b) Bayes theorem

c) multi-layer perceptron

d) single layer perception and Bayes theorem

(58) For a network with inputs [x1, x2, x3]= [0 3,0.5,0.6] and weights [w1,w2 ,w3] = [0 2, 0 1, -0 3] , the net output to the output M-P neuron is

a) 0·07 b) -0·07
c) 0·7 d) -0·7

(59) In fuzzy logic controller the rule base is updated by the help of

a) Fuzzy logic b) ANN and GA
c) Hebb's rule d) none of these.

(60) If a problem is linearly separable, then we can find the weight vector Wi, such that WiT . X > 0 for each X, with desired output '+1' and WiT . X < 0 , for each X, with desired output '−1'.

a) True b) False
c) Can't say d) None of these.

(61) Neuro software is:

a) A software used to analyze neurons b) It is powerful and easy neural network
c) Designed to aid experts in real world d) It is software used by Neurosurgeon

(62) A 3-input neuron is trained to output a zero when the input is 110 and a one when the input is 111. After generalization, the output will be zero when and only when the input is:

a) 000 or 110 or 011 or 101 b) 010 or 100 or 110 or 101
c) 000 or 010 or 110 or 100 d) 100 or 111 or 101 or 001

(63) A 4-input neuron has weights 1, 2, 3 and 4. The transfer function is linear with the constant of proportionality being equal to 2. The inputs are 4, 10, 5 and 20 respectively. The output will be:

a) 238 b) 76
c) 119 d) 123

(64) What happens in upper subnet of the hamming network?

a) classification b) storage
c) output d) None of these

(65) The competition in upper subnet of hamming network continues till?

a) only one unit remains negative b) all units are destroyed
c) output of only one unit remains positive d) None of these

(66) Which is true for neural networks?

a) It has set of nodes and connections b) Each node computes it's weighted input
c) Node could be in excited state or non-excited state d) All of these

(67) What is shape of dendrites like

a) oval b) round
c) tree d) rectangular

(68) What are the issues on which biological networks proves to be superior than AI networks?

a) robustness & fault tolerance b) flexibility
c) collective computation d) All of these

(69) What are dendrites?

a) fibers of nerves b) nuclear projections
c) other name for nucleus d) None of these

(70) Feature of ANN in which ANN creates its own organization or representation of information it receives during learning time is

a) Adaptive Learning

b) Self-Organization

c) What-If Analysis

d) Supervised Learning