NNFL 2nd MID JNTU ONLINE BITS

1. The weight updation in extended delta rule is a.
$\Delta W_i=\alpha (t_j-y_j)x_i$ f. (y-in j)
b. $\Delta W_{ij}=\alpha (t_j-y_j)$ f<SUP.< sup> (y-in j)
c. $\Delta W_{ij}= x_i$ f. (y-in j)
d. $\Delta W_{ij}=\alpha(t_j-y_j)x_i$
2. The squared error for particular training pattern if extended delta rule is
a. E=Σ m j=1 (tj-yj)2
b. E=Σ m j=1 (tj+yj)2
c. E=Σ mj=1 (tj)2 d.
E=Σ m j=1 (yj)2
3. The connection matrix W=
a. k=1..a ΣAk Bk
T
b. k=1..a ΣAk
c. k=1..a ΣBk T
d. k=1..aΣAkBk
4. The Auto associative net training is often called as
a. Storing the vectors
b. Sorting the vectors
c. Recalling the vectors
d. Searching for the vectors
5. Two vectors a and b are orthogonal if
a. Σi ai=0
b. Σi bi=0
c. Σi ai bi=0
d. Σi ai bi =1
6. The following rule allows for an arbitrary differentiable activation function to be applied to the output units
a. Delta
b. Extended Delta
c. Hebb
d. Hopfield
7. The updation of the following is done to reduce the difference between the computed output and the target
a. Input
b. Output
c. Target
d. Weight
8. Representation of data (-1,+1) is called
a. Bipolar
b. Binary
c. Real valued d.
Bilinear
9. The performance of the auto associative memory net is among the following for bipolar vectors than the binary vectors
a. W orst **b.**
Better c.
Equal
d. No way related
10. Important criterion for an associative network is among the following it can store
a. Time to train
b. Number of patterns
c. Iterations
d. Zero elements
11. The following rule can be used for both binary as well as bipolar vectors a. Hebb rule
b. LVQ
c. LMS
d. Winner Rule
12. The weight determination formula in associative memory is
a. W=Σp=1..p ST (p) t(p)
b. W=Σp=1..p S(p) t(p)
c. W=Σp=1..p ST (p)
d. W=Σp=1..p t(p)
13. The following rule changes the weight of the connection to minimize the difference between the net input to the output units and the target value
a. Delta Rule
b. Hebb Rule
c. LMS Rule
d. Adaline
14. The following energy points of the Lyapunov surface have to be mapped to desired memory states
a. Maximu

b. Minimum
c. Zero
d. Only one
15. The connection matrix W=
a. k=1..a ΣAk Bk T
b. k=1..a ΣAk
c. k=1..a Σ Bk
T
d. k=1..a ΣAk Bk
16. The following matrix provides a way to encode associations as memories into a neural network
a. Hebb matrix
b. Covariance matrix
c. Bilinear matrix
d. Inverse matrix
17. The following results if the input vector pair is same as the output vector pair
a. Auto associative
b. Hetero associative
c. Bidirectional Memories
d. Self organizing maps
18. The following results if the input vector pair is different as the output vector pair
a. Auto associative
b. Hetero associative
c. Bidirectional Memories
d. Self organizing maps
19. The following rule for pattern association is an iterative learning rule a. Delta Rule
b. Hebb Rule
c. LMS Rule
d. Adaline
20. The Delta Rule for single output unit is given by
a. ΔWj=α(t-yin)xi
b. ΔWj=α(t-yin)
c. ΔWj= (t-yin)xi
d. ΔWj=α(yin)xi
21. When an axon of cells excite(s) cell B and repeatedly or persistently takes part in firing it, some growth process or metabolic change takes place in one or both cells so that A s efficacy as one of the cells firing B is
a. Increased
b. Decreased
c. Equal
d. No way related
22. The following is process of forming association between related patterns a. Pattern Association
b. Pattern Classification
c. Pattern Recognition
d. Pattern Clustering
23. The following nets are single layer nets in which the weights are determined to store an asset of pattern association
a. Hopfield
b. Associative Memory
c. Boltzmann's Machine
d. Perceptron
24. The simple and frequently used method for determining the weights for an associative memory neural net is
a. Hebb rule
b. LVQ
c. LMS
d. Winner Rule
25. The following rule assumes that the error signal is directly measurable a. Delta Rule
b. Hebb Rule
c. LMS Rule
d. Adaline
26. The Delta Rule for single output unit is given by a.
ΔWj=α(t-yin)xi
b. ΔWj=α(t-yin)
c. ΔWj= (t-yin)xi
d. ΔWj=α(yin)xi
27. The Delta Rule for several output units is given by
a. ΔWij=α(tj-yinj)xi
b. ΔW ij=α(tjxi
c. ΔW ij= (tj-yinj)xi
d. ΔW ij=αxi
28. Whether the system is auto associative or hetero associative, the following that are to be associated is store d in connections of the network

a. Input
b. Memory
c. Output
d. Control
29. Following memories can be used as one shot memories
a. OLAM
b. BAM
c. CAM
d. ART
30. The following has the restrictions on the maximum number of associations it can accurately recall
a. ART1
b. BAM
c. ART2
d. Hopfield network
31. The following BAM is implemented by interconnecting neurons within each layer by means of additional weights
a. Continuous
b. Discrete
c. Adaptive
d. Competitive
32. The accretive associative memory is called
a. Auto associative memory
b. Hetero associative memory
c. Hybrid associative memory
d. Hopfield network
33. The following is a system that provides a mapping from a domain of inputs to a range outputs a. Fundamental memory
b. Main memory
c. Additional memory
d. Associative memory
34. In associative memory if xk is the input and yk is the output, and when xk ≠ yk the process is known as
a. Auto associative
b. No associative
c. Heteroassociative
d. Biassociative
35. The following types of BAM are stable a. Continuous
b. Discrete
c. Adaptive
d. Competitive
36. The following network accepts an input vector on one set of neurons and produces a related but different output vector on another set
a. Hopfield
b. BAM
c. Boltzmann's machine
d. ART1
37. All BAM's are unconditionally stable for any weight network was proposed by a. Kosko
b. Rumelhart
c. McCulloh Pitts
d. Kohonen
38. In the following system, any neuron is free to change state at any time a. synchronous
b. asynchronous
c. linear
d. nonlinear
39. The Bidirectional Associative Memory (BAM) has a neural network of two layers connected with the following system
a. Unidirectional
b. Parallel
c. Feedback
d. Feed forward
40. The BAM is a the following network
a. auto associative
b. Non-associative
c. Heteroassociative
d. ART
41. When ∂E/∂t ≤0 the following is obtained
a. Minima
b. Maxima
c. Focus point
d. Trajectory
42. Energy function of continuous Hopfield net when ı is a time constant is given as a. E = -0.5 i=1..m Σ j=1..mΣ Wij Vi Vj - Σθ i.Vi + (1/ τ) Σ j=1..m fi-1 (v)dv
b. E = -0.25 i=1..m Σ j=1..mΣ Wij Vi Vj - Σθ i.Vi + (1/ τ) Σ j=1m fi-1 (v)dv

c. E = 0.5 i=1..m Σ j=1..mΣ Wij Vi Vj - Σθ i.Vi + (1/ τ) Σ j=1..m fi-1 (v)dv
d. E = 0.5 i=1..m Σ j=1..mΣ Wij Vi Vj - Σθ iVi + Σ j=1..m fi-1 (v)dv

43. In continuous Hopfield the energy function is
a. E=0.5 i=1..m Σ j=1..mΣ Wij Vi Vj + i=1..m Σθ i.Vi
b. E = 0.5 i=1..m Σ j=1..mΣ Wij Vi Vj
c. E = 0.5 i=1..m Σ j=1..m Vi Vj + i=1..m Σθ i.Vi
d. E = 0.5 i=1..m Σ j=1..mΣ Wij j + i=1..m Σ ı i.Vi

44. When the activity of each neuron is formed to change with time, the net is found to converge according to the following differential equation
a. dUi /dt = -Ui/ τ + Σ j=1..m Wij Vj - θ j
b. dUi /dt = -Ui + Σ j=1..mΣ Wij Vj
c. dUi /dt = -Ui/ τ + Wij Vj
d. dUi/dt = Σ j=1..mΣ Wij Vj- θ j

45. The following matrix has the property Wij= Wji for i≠ j and Wij=0 for all i
a. Unit matrix
b. Symmetric matrix
c. Sparse matrix
d. Inverse matrix

46. Continuous valued output functions are used in
a. Discrete Hopfield
b. Continuous Hopfield
c. McCulloh Pitts
d. ART-1

47. The connections between the units are bidirectional in
a. BAM
b. Discrete Hopfield
c. McCulloh Pitts
d. ART-2

48. The Hopfield net can be viewed as an
a. Auto associative BAM
b. Hetero associative BAM
c. Boltzmann's machine
d. McCulloh Pitts model

49. Diagonal elements of symmetrical weight matrix of BAM are
a. 1
b. 0
c. Non-zero
d. Negative value only

50. Lack of the following connections ensure that the networks are conditionally stable
a. Input
b. Feed forward
c. Feed backward
d. Feed follow

51. In the following network an individual unit doesn t connect to itself
a. Hopfield
b. BAM
c. Boltzmann's matrix
d. ART1

52.
a.
b.
c.
d.

53. R (i,j) =0 in the relation matrix if (x, y)
a. R
b. Doesn't belongs to R
c. 1
d. Equal

54. Max Min composition T for relation matrix is defined as
a. T (x,z) = y ε Y Max (Min (R (x,y), S(y,z)))
b. T (x,z) = y ε Y Min (Min (R (x,y), S(y,z)))
c. T (x,z) = y ε Y Max (Max (R (x,y), S(y,z)))
d. T (x,z) = y ε Y Min (Max (R (x,y), S(y,z)))

55. If A1={a,b} A2={1,2} A3={α} then =
a.
b.
c.
d.

56. R (i,j) =1 in the relation matrix if (x, y)
a. R
b. Doesn't belongs to R
c. 1
d. Equal

57. If n=5 the relation R (X1, X2) is termed as
a. Binary

c. Finite
d. Quinary

58. If the universe of discourse or sets are finite, the n-ary relation can be expressed as an
a. Resource Matrix
b. Relation Matrix c.
Region Matrix
d. Sparse Matrix

59. If R={(x,y)/y=x+1, (x,y) X then R=
a. {(1,3),(2,3),(3,5)}
b. {(1,2),(2,3),(3,4)} c.
{(1,1),(1,3),(0,4)}
d. {(1,0),(2,0),(3,1)}

60. {(a,b)/a A b B is
a. Ax B
b. A B
c. A∩ B
d. A Bc
61. If A≠ B and A and B are non empty then
a. A x B = B x A
b. A x B ≠ B x A c.
A x B = θ
d. Ax B = X
62. Composition of relation R and S are denoted by
a. R o S
b. S + R
c. R S
d. R - S
63. If A contains B then
a. A is superset of B
b. A is subset of B
c. A is leader of B
d. A is complement of B
64. The following set of set A is the set of all possible subsets that are derivable from A including Null set a. Power set
b. Subset
c. Superset
d. Null set
65. If a set has no members then it is called a.
Null set
b. Non empty set
c. Complement set
d. Ideal set
66. A set with single element is called
a. Hamilton
b. Planar
c. Euler
d. Singleton
67. If A is fully contained in B then
a. A is superset of B
b. A is subset of B c.
A is leader of B
d. A is complement of B
68. The following set is the which, with reference to a particular context contains all possible elements having the same characteristics and from which sets can be formed
a. Universe of discourse
b. Complement
c. Singleton set
d. Null set
69. The following is well defined collection of objects
a. UML diagrams
b. Sets
c. Venn diagram
d. Figure
70. The following diagram is pictorial representations to denote a set
a. Gannt chart
b. DAG
c. Venn diagram
d. RAG
71. An element is said to be if a belongs to set A
a. Cardinal
b. Member
c. Sibling
d. Child
72. The number of elements in a set is called
a. Chromatic number
b. Cardinality
c. In degree
d. Out degree
73. The equation of defuzzified value x in MOM defuzzification method is
a. x = (xi M Σxi)/
b. x = (xi M-3 Σxi)/
c. x = (xi M+1 Σxi)/
d. x = (xi M Σxi)
74. For a discrete membership function, centre of area is a. x =i=1..n Σxi μ(xi) /(i=1..n Σ μ(xi))
b. x = μ (xi) /(i=1..n Σ μ (xi))
c. x =i=1..n Σxi /(i=1..n Σ ı (xi))
d. x =i=1..n Σxi (xi) /(i=1..n Σ μ (xi))
75. For a discrete membership function, centre of area is a. x =i=1..n Σxi μ(xi) /(i=1..n Σ μ(xi))
b. x = μ (xi) /(i=1..n Σ μ (xi))
c. x =i=1..n Σxi /(i=1..n Σ μ (xi))
d. x =i=1..n Σxi (xi) /(i=1..n Σ μ (xi))
76. In case with more than one element having maximum value firing defuzzification, the following should be taken
a. Mean value of maxima
b. Mean value of minima
c. Centroid
d. Mode value
77. The following is the largest membership grade obtained by any element in that set
a. Index

b. Height
c. Degree
d. Member

78. In MOM defuzzification method in continuous case M could be defined as the following where |μ(x) is equal to height of fuzzy set
a. M = { x [-C,C]
b. M = { x&isin [0,1]
c. M = { x&isin [0,0]
d. M = { x&isin [1,1]

79. In centre of sums method the defuzzified value x is
a. x =i=1..N Σ xi k=1..N . Σμι k xi/ (i=1..N Σ i k=1..N . Σμι k xi)
b. x =i=1..N Σ xi k=1..N . Σμι k xi/ (Σμι k xi)
c. x =i=1..N Σ xi k=1..N . Σμι k xi/ (i=1..N Σ i k=1..N . Σμι k)
d. x* =i=1..N Σxi k=1..N . xi /(i=1..N Σ i k=1..N . Σμι k xi)

80. A collection of rules referring to a particular system is known as
a. Fuzzy database
b. Fuzzy rule base c.
Fuzzy set
d. Fuzzy relation

81. Conversion of fuzzy set to single crisp value is called
a. Fuzzification
b. Defuzzification
c. Crispification
d. Decryptography

82. Conversion of single crisp value to fuzzy set is called a.
Fuzzification
b. Defuzzification
c. Crispification
d. Decryptography

83. Most commonly used defuzzification method
a. Centre of area
b. Centre of sums
c. Centre of gravity
d. Mean of maxima

84. Number of times overlapping area is counted in centroid method is a. Only one
b. Twice
c. Thrice
d. Doesn't count at all

85. Number of times overlapping area is counted in centre of sums method is
a. Only one
b. Twice
c. Thrice
d. Doesn't count at all

86. The energy function of discrete Hopfield network is
a. E= -0.5 Σi≠jΣj yiyj wij Σ xi yi + Σ Oi yj
b. E= Σi≠j Σj yiyj wij Σ xi yi + Σ Oi yj
c. E= -0.25 Σi≠j Σj yiyjwij Σ xi yi + Σ Oi yj

d. E= -0.5 Σi≠j Σj yiyj wij Σ xi yj
87. ΔE =
a. -[Σj (yj wij + xi - θiΔyi]
b. -[Σj (yj wij)Δyi]
c. -[Σj (xi - θi)Δyi]
d. -[Σj (yj wij + Δyi]
88. The essence of a CAM is to map the following onto a fixed (stable) point
a. Output
b. Fundamental memory
c. Main memory
d. Additional memory
89. The energy cannot increase for both positive and negative change in yi, the value of ΔE is a. less than zero
b. Greater than zero
c. Equal to zero
d. Infinity
90. In the following mode of training, all neurons in Hopfield networks fire at random.
a. Stable state
b. Output
c. Synchronous
d. Asynchronous
91. The change in energy is due to a change in the
a. Time of training
b. State of neuron
c. Number of neurons present
d. Weight
92. If the energy doesn t change with further iteraWon then the net reaches
a. State equilibrium
b. State inequilibrium
c. State annealing
d. State instability
93. The formulation of the following nets shows the usefulness of net as a content addressable memory a. Discrete Hop
b. Continuous Hop
c. Discrete BAM
d. Continuous BAM
94. The function is used to prove the stability of recurrent network
a. Time
b. Energy
c. Sigmoid
d. Pressure
95. Four neurons have the following number of probable states.
a. 8
b. 16
c. 32
d. 64
96. The fuzziness of the data can be decreased by
a. Decreasing the weighting factor W
b. Increasing the weighting factor W
c. Doesn't change with weighting factor
d. Keeping the weighting factor constant
97. The most famous fuzzy clustering procedure in the literature is
a. k-means algorithm
b. DB-scan algorithm
c. Fuzzy-c-means algorithm
d. Gaussian algorithm
98. The sum of memberships of all elements in a cluster is always
a. 0
b. -1
c. 1
d. Variable
99. The fuzziness of the data can be increased by a. Decreasing the weighting factor W
b. Increasing the weighting factor W
c. Doesn't change with weighting factor
d. Keeping the weighting factor constant
100. Fuzzy clustering can also be termed as a. Overlapping clustering
b. Exclusive clustering
c. Hierarchical clustering
d. Probabilistic clustering
101. Fuzzy Classification can be applied
a. Only to Fuzzy Data
b. Only to Crisp Data
c. Can be applied to any type of Data

d. Only to Graphical Data
102. The main advantage of Fuzzy Classification is
a. Features in linguistic forms can be converted to Mathematical values
b. Features can be modeled with probabilistic functions
c. Features can be modeled directly with block diagram
d. Features can be modeled graphically
103. Fuzzy classification is implemented using
a. Only Crisp logic
b. Only Fuzzy logic
c. Both Crisp and Fuzzy logic
d. Only Predicate Logic
104. The weighting factor W Accounts for the a. Fuzziness of data
b. Exactness of data
c. Probability of data
d. Distinct nature of data
105. Biggest application of fuzzy classification is a. Data mining
b. Image Processing
c. Geographical information system
d. Medical analysis
106. Limitation of fuzzy classification is
a. Low dimensional data
b. High dimensional data
c. Trained data
d. Uncertain data
107. Half tea spoon sugar placed in tea implies
a. Sweetness is 0.5
b. Probability of sweetness is 0.5
c. Sweetness feature can be modeled with a membership 0.5
d. Sweetness feature can be modeled with a membership 0.5 Sweetness is 0.5
108. The classes in fuzzy classification are
a. Exact
b. Distinct
c. Distinct but overlapping
d. Only overlapping
109. Fuzzy classification is a
a. Decision based application
b. Rule based application
c. Branching application
d. Both decision based and rule based
110. Fuzzy membership functions can be
a. Only distinct
b. Only continuous
c. Only graphical
d. Can be distinct and continuous
111. The output of the fuzzy classifier is determined by the rule which has
a. Lowest degree of membership
b. Highest degree of membership
c. 0 degree membership
d. Exactly 0.5 membership
112. The partitioning of data in fuzzy classification is usually carried by a. Clustering
b. Probability
c. Statistical analysis
d. Regression
113. The goal of fuzzy classification is
a. To cluster the data
b. To find highest memberships
c. To implement fuzzy logic
d. To create category memberships
114. The use of fuzzy classification to ordinary classification is to get
a. Fixed range of values
b. Overlapping range of values
c. Exact values
d. Optimal values
115. Biggest application of fuzzy classification is a. Data mining
b. Image Processing
c. Geographical information system
d. Medical analysis
116. If 0≤ μ_I (x) then T (P)
a. μ_I (x)
b. P
c. 0

d. 1
117. B'=
a. ı' O X(x,y)
b. ı' U X(x,y)
c. ı' || X (x,y)
d. ı'
118. μB c (y)=
a.
b.
c.
d.
119. Absolute fuzzy quantifiers are defined over
a. R
b. 0
c. 1
d. α
120. Fuzzy inference also referred to as a.
Approximate reasoning
b. Abductive reasoning
c. Inductive reasoning
d. Default logic
121. The following is a statement which acquires a fuzzy truth value
a. Fuzzy preposition
b. Fuzzy predicate
c. Binary value
d. Real value
122. GMP stands for
a. Generalized Modus Ponens
b. Generalized Modus Potent
c. Generalized Modus Point
d. Generalized Modus Potential
123. GMT stands for
a. Generalized Modus Tag
b. Generalized Modus Tollens
c. Generalized Modus Thrice
d. Generalized Modus Threat
124. μ(x,y) =
a. μx (x,y)
b. μ x (x)
c. μ x (y)
d. μ (x,y)
125. μı*ı (x,y)=
a. Min(μı (x), μı (y))
b. Max(μı (x), μı (y))
c. Min(μı (x),μı (x))
d. Min(μı (y), μı (y))
126. μ(x,y) =
a. Max (μ (x,y), μ (x,y))
b. Min (μ (x,y), μ (x,y))
c. 1-μ (x,y)
d. 1-μ (x,y)
127. μ∩ (x,y) =
a. Max (μ X (x,y),μ (x,y))
b. Min (μ X (x,y), μ (x,y)) c.
1-μ (x,y)
d. 1- μ (x,y)
128. μc (x,y)=
a. Max (μ (x,y), μ (x,y))
b. Min (μ (x,y), μ (x,y))
c. 1-μ (x,y)
d. 1- μ (x,y)
129. The following is fuzzy set defined on Cartesian product of crisps set X1, X2,Xn where the ntuple (X1,X2,Xn) may have varying degree of membership with in the relation
a. Fuzzy Relation
b. Crisp Relation
c. Cartesian
d. Function
130. μo (x,z) =
a. yεY Max(Min (μ (x,y), μ (y,z)))
b. yεY Min(Min (μ (x,y), μ (y,z)))
c. yεY Max(Max (μ (x,y), μ (y,z)))
d. yεYMin(Max (μ (x,y), μ (y,z)))
131. μa (x) =
a. a+ μ (x)
b. a* μ(x)

c. μ (x)
d. μ (x)-a
132. μAα(x) =
a. (μ (x))α
b. μ (x)
c. α
d. α *μ (x)
133. c =
a. ≠ X
b. = X
c. {}
d. Ac
134. If A={(x1,0.5), (x2, 0.7), (x3, 0)} and {(x1,0.8), (x2, 0.2), (x3, 1)} then ı ı is
a. {(x1,0), (x2, 1), (x3, 0)}
b. {(x1,0.8), (x2, 0.7), (x3, 1)}
c. {(x1,0.1), (x2, 0.1), (x3, 1)}
d. {(x1,1.3), (x2, 0.9), (x3,)}
135. If A={(x1,0.5), (x2, 0.7), (x3, 0)} and {(x1,0.8), (x2, 0.2), (x3, 1)} then ı ∩ ı is
a. {(x1,0), (x2, 1), (x3, 0)}
b. {(x1,0.5), (x2, 0.2), (x3, 0)}
c. {(x1,0.1), (x2, 0.1), (x3, 1)}
d. {(x1,1.3), (x2, 0.9), (x3,)}
136. If A={(x1,0.5), (x2, 0.7), (x3, 0)} and {(x1,0.8), (x2, 0.2), (x3, 1)} then μı ı(x2)=
a. 0.1
b. 0.5
c. 0.2
d. 0
137. The product of two fuzzy set ı and ı whose membership function defined as μı.ı (x)
a. μı(x) . μı(x)
b. μı(x) + μı(x)
c. μı(x) - μı(x)
d. μı(x) / μı(x)
138. If ı={(x1,0.2), (x2, 0.8), (x3, 0.4)} ı= {(x1,0.4), (x2, 0), (x3, 0.1)} then ı.ı
a. {(x1,0.6), (x2, 0.8), (x3, 0.5)}
b. {(x1,0.08), (x2, 0), (x3, 0.04)} c.
{(x1,0.01), (x2, 1), (x3, 0.03)}
d. {(x1,0.02), (x2, 2), (x3, 0.01)}
139. If A={(x1,0.5), (x2, 0.7), (x3, 0)} and {(x1,0.8), (x2, 0.2), (x3, 1)} then μı ı(x1)=
a. 0.8
b. 0.5
c. 1.3
d. 1
140. If A={(x1,0.5), (x2, 0.7), (x3, 0)} and {(x1,0.8), (x2, 0.2), (x3, 1)} thenμ ı ı(x2)=
a. 0.2
b. 0.7
c. 0.1
d. 1
141. If A={(x1,0.5), (x2, 0.7), (x3, 0)} and {(x1,0.8), (x2, 0.2), (x3, 1)} thenμ ı ∩ ı(x1)=
a. 0.1
b. 0.5
c. 0.2
d. 0
142. The union of two fuzzy sets ı and ı is ı U ı is defined with membership function μA U N (x) as
a. min (μA(x),μN(x))
b. max (μA(x),μN(x)) c.
abs (μA(x),μN(x))
d. log (μA(x),μN(x))
143. If A={(x1,0.5), (x2, 0.7), (x3, 0)} and {(x1,0.8), (x2, 0.2), (x3, 1)} then μı U ı(x3)=
a. 0
b. 0.1
c. 1
d. 3
144. The intersection of two fuzzy sets ı and ı is ı ∩ ı is defined with membership function μA N (x) as
a. min (μA(x), μN(x))
b. max (μA(x), μN(x))
c. abs (μA(x), μN(x))
d. log (μA(x), μN(x))
145. If A={(x1,0.5), (x2, 0.7), (x3, 0)} and {(x1,0.8), (x2, 0.2), (x3, 1)} then μı U ı(x3)=
a. 0.1
b. 0.5
c. 0.2
d. 0
146. The complement of fuzzy set ı is a new fuzzy set ı with the following membership function
a. μı(x) = 1- μı(x) b. μı(x) = 1+ μı(x) c. μı(x) = 1* μı(x) d. μı(x) = 1/ μı(x)

147. If ı={(x1,0.5), (x2, 0.7), (x3, 0)} then ıc=
a. {(x1,0.5), (x2, 0.7), (x3, 0)}
b. {(x1,0.5), (x2, 0.3), (x3, 1)} c.
{(x1,0.3), (x2, 0.7), (x3, 0)}
d. {(x1,0.5), (x2, 0.7), (x3, 3)}
148. μıc(x1)=
a. 0.5
b. 0.3
c. 1
d. 1.8
149. μıc (x2)=

a. 0.5
b. 0.3
c. 1
d. 1.8
150. μıc (x3) =
a. 0.5
b. 0.3
c. 1
d. 1.8
151. If μı(x) =μı(x) then the two fuzzy sets ı and ı are said to be a. Equal
b. Product
c. Union
d. Intersection
152. (ı∩ ı)c =
a. ı∩ ı
b. ıc ∩ ıc
c. ıc∩ ı
d. ı∩ ıc
153. (ı ı)c =
a. ı ı
b. ıc ıc
c. ıc ı
d. ı ıc
154. ı ıc =
a. ≠ X
b. = X
c. {}
d. Ac
155. If ı={(x1,0.4), (x2, 0.2), (x3, 0.7)} and α=2 then (ı)2=
a. {(x1,0.16), (x2, 0.04), (x3, 0.49)}
b. {(x1,0.4), (x2, 0.2), (x3, 0.7)}
c. {(x1,0.2), (x2, 0.1), (x3, 0.1)}
d. {(x1,0.1), (x2, 0.3), (x3, 0.7)}
156. If ı={(x1,0.4), (x2, 0.2), (x3, 0.7)} and α=2 then μı2(x3)=
a. 0.16
b. 0.04
c. 0.49
d. 0.01
157. The disjunctive some of two fuzzy set ı and ı as ıΘ ı is a. (ıc∩ ı) (ı∩ ıc)
b. (ıc∩ ıc) (ı∩ ıc)
c. (ıc∩ ı) (ıc∩ ıc)
d. (ıc∩ ı) ∩ (ı∩ ıc)
158. μ a.ı(x) =
a. a+ μı(x)
b. a* μı(x) c. μı(x)
d. μı(x)-a
159. μAα(x) =
a. (μı(x))α
b. μı(x)
c. α
d. α * μı(x)
160. Raising the fuzzy set to its second power is called a. Concentration
b. Dilution
c. Dilation
d. Convolution
161. Taking the square root of fuzzy set is called

a. Concentration
b. Dilution
c. Dilation
d. Convolution
162. The difference ı- ı =
a. ı∩ ı **b.**
(ı ıc) c.
(ı∩ ıc)
d. ıc∩ ıc
163. If ı= {(x1,0.2), (x2, 0.5), (x3, 0.6)} ı= {(x1,0.1), (x2, 0.04), (x3, 0.5)} then ı =
a. {(x1,0.2), (x2, 0.5), (x3, 0.6)}
b. {(x1,0.1), (x2, 0.5), (x3, 0.6)}
c. {(x1,0.2), (x2, 0.5), (x3, 0.5)} d.
{(x1,0.1), (x2, 0.3), (x3, 0.6)}
164.c=
a. ≠ X
b. = X
c. {}
d. Ac
165. In the discrete case fuzzy set is defined as
a. A= ΣxiεX μ (xi) /xi
b. A= ΣxiεX (xi) /xi
c. A= ΣxiεX μ /xi
d. A= ΣxiεX μ (xi) * xi
166. In the continuous case fuzzy set as a.
A= xζ μ (x)/x
b. A= xζ (x)/x
c. A= xζ μ (x)+x
d. A= xζ μ (x)*x
167. The following is associated with fuzzy set A such that the function maps every elements of the universe of discourse X to the interval [0,1]
a. Threshold function
b. Membership function
c. Sigmoid function
d. Hyperbolic
168. Mathematically membership function is a. μ
=1/(1+x)2
b. μ =(1+x)2
c. μ = x2
d. μ =1+x
169. If ı ={(x1,0.2), (x2 0.8)} ı= {(x1,0.6), (x2, 0.8)}, ı= {(x1,0.2), (x2, 0.8)} then
a. ı= ı
b. ı` ı
c. ı= ı
d. ı= 3ı
170. If ı ={(x1,0.2), (x2 0.8)} ı= {(x1,0.6), (x2, 0.8)}, ı= {(x1,0.2), (x2, 0.8)} then
a. ı= ı
b. ı≠ ı
c. ı= ı
d. ı= 3ı
171. The following sets support a flexible sends of membership of elements to a set a. Fuzzy set
b. Logic set
c. Certain set
d. Crisp set
172. In the following set theory an element either belong to or doesn t belong to a set
a. Fuzzy set
b. Logic set
c. Certain set
d. Crisp set
173. In the following set theory many degrees of membership are allowed
a. Fuzzy set
b. Logic set
c. Certain set
d. Crisp set
174. The following function values need not always be described by discrete values
a. Membership
b. Index
c. Position
d. Class
175. If ={(x1,0.2), (x2, 0.8)} ={(x1,0.6), (x2, 0.8)}, = {(x1,0.2), (x2, 0.8)} then
a. =
b. ≠
c. =
d. = 3

176. The following logic had its roots in the theory of crisp sets
a. Fuzzy logic
b. Boolean logic
c. Prolog
d. ELIZA
177. Uncertainty arises due to following
a. Complete information
b. Partial information
c. Clear information
d. Coherent information
178. The statements of (0 /1) type of handling is termed as the following the domain of fuzzy set theory
a. Crisp
b. Lisp
c. Prolog
d. ELIZA
179. Crisp logic is of
a. Single valued
b. Multivalued
c. Ambiguious valued
d. Non defined valued
180. Fuzzy logic is of a.
Single valued
b. Multivalued
c. Ambiguious valued
d. Non defined valued
181. The following logic is of two values
a. Crisp logic
b. Fuzzy logic
c. Bayes logic
d. Probability theory
182. In the following logic truth values are multi valued
a. Crisp logic
b. Fuzzy logic
c. Predicate logic
d. Prepositional logic
183. The following theory is an excellent mathematical tool to handle the uncertainty arising due to vagueness
a. Fuzzy set theory
b. Crisp logic
c. Classical set theory
d. Prepositional logic
184. The following may arise due to partial information about the problem
a. Clarity
b. Uncertainty
c. Perfection
d. Unambiguity
185. Classical set theory also termed as a.
Crisp
b. Lisp
c. Prolog
d. ELIZA
186. Number of pictures that can be stored at a time is a.
Only one
b. Two
c. Any number of pictures
d. It depends on training
187. If bipolar patterns are used
a. P=n/(log2n)
b. P=n/(log2n)
c. P=2n/(2log2n)
d. P=3n/(2log2n)
188. The Hopfield network consists of a set of neurons forming a multiple loop of following system.
a. Unidirectional
b. Parallel
c. Feedback
d. Feed forward
189. The magnetic mutual exchange between the alones led to the development of
a. Simulated annealing
b. McCulloh piths
c. Hopfield
d. Boltzmann's Machine
190. The following network is able to recognize unclear pictures correctly
a. Simulated annealing
b. McCulloh Pitts

c. Hopfield
d. Boltzmann's Machine
191. In Hopfield net
a. Only one unit updates its activation at a time
b. Many units
c. Does not update at all
d. Activation function is not present
192. In Hopfield net the number of binary patterns that can be stored and recalled in a net with reasonable accuracy a given by
a. P ≈ 0.15n
b. P ≈ 0.25n
c. P ≈ 0.35n
d. P ≈ 0.5n
193. The following sets have a tendency to stabilize to a local minima rather than global minima a. Hopfield
b. BAM
c. Boltzmann's machine
d. ART1
194. In the following network an individual units doesn t connect to itself
a. Hopfield
b. BAM
c. Boltzmann's machine
d. ART1
195. Simulated annealing, Boltzmann s Machine, Hopfield nets belongs to
a. Feed forward
b. Feedback
c. Feed follow
d. Adhoc
196. The asynchronous discrete time updating of the units allows a function known as [b]
a. Time function
b. Energy function
c. Memory for
d. Signal function
197. Energy function is also called as the following function to be found for net
a. Boltzmann s Machine
b. Lyapnuov function c.
Sigmoid function
d. Threshold function
198. The following functions proves that the net will converge to a stable set of actuations
a. Boltzmann's Machine
b. Lyapnuov function c.
Sigmoid function
d. Threshold function
199. Hop field network is
a. Feed forward
b. Feed back
c. Feed follow
d. Adhoc
200. In the following mode of training, all neurons in Hopfield networks fire at the same time.
a. Stable state
b. Output
c. Synchronous
d. Asynchronous
201. If |A| = n then |P (A)|=
a. 2n
b. 2n
c. n2
d. n + n
202. The value of |A| in singleton set A is a. 1
b. 0
c. 5
d. Depends on the number of elements in A
203. X={1,2,3,4,5,6,7} and A={5, 4,3} then Ac=
a. {1,2,6,7}
b. {1,2,3,4}
c. {6,7}
d. {5}
204. If A={a,b,c,1,2} B={1,2,3,a,c} then A∩ B=
a. {a,c,1,2}
b. {a,b,c}
c. {a,c}
d. {}
205. Given A={a,b,c,1,2} B={1,2,3,a,c} then AB=
a. {a,b.c,1,2,3}

b. {a,b,c}
c. {1,2,3}
d. {}
206. The complement of set A is denoted by
a.
b. Ac
c. and Ac
d. A
207. If A∩ B=φ then the two sets are
a. Joint
b. Disjoint
c. Subsets
d. Supersets
208. If A={a,b,c,d,e} B={b,d} then A-B=
a. {a,c,e}
b. {a,c}
c. {a}
d. {d}
209. If |A|=4 then |P (A)|=
a. 16
b. 4
c. 10
d. 8
210. A∩ Ac = φ is
a. Commutative
b. Associative
c. Distributive
d. Law of contradiction
211. According to Demorgan's laws (A B)c =
a. Ac Bc
b. A Bc
c. Ac B
d. Ac∩ Bc
212. According to Demorgan's laws (A∩B)c=
a. Ac Bc
b. A Bc
c. Ac B
d. Ac∩ Bc
213. Partition on A indicated as π (A) is therefore for each pair (i,j)εl for i≠j
a. Ai∩ Aj =θ
b. iεJ ∩ Ai =A
c. iεJ ∩ Ai =1
d. iεJ ∩ Ai =0
214. The following on A is defined to a set of non empty subsets Ai, whose union yields the original set A
a. Partition
b. Covering
c. Opening
d. Closing
215. The following on A is defined to a set of non empty subsets Ai, each of which is pair wise disjoint and whose union yields the original set A
a. Partition
b. Covering
c. Opening
d. Closing
216. |A|=| i=1..n Ai|=Σi=1..n|Ai| is a.
Rule of addition
b. Rule of inclusion
c. Rule of exclusion
d. Rule of application
217. If the subsets are not pair wise disjoint then the following is not applicable on the covering of set A
a. Rule of addition
b. Rule of inclusion
c. Rule of exclusion
d. Rule of application
218. A B= B A is the following property of set a.
Commutative
b. Associative
c. Distributive
d. Idempotence
219. A A= A is the following property of set
a. Commutative
b. Associative
c. Distributive

d. Idempotence
220. A∩ (B C) = (A∩ B) (A∩ C) is the following property of set
a. Commutative
b. Associative **c. Distributive** d. Idempotence
221. A∩ E = A is the following property of set
a. Commutative
b. Associative
c. Distributive
d. Identity
222. A(A∩ B) = A is the following property of set
a. Commutative
b. Associative
c. Distributive
d. Law of absorption
223. If A≤ B, B≤C then A ≤ C is
a. Commutative
b. Associative
c. Distributive
d. Transitive
224. (Ac)c=A is the following property
a. Commutative
b. Associative
c. Distributive
d. Involution
225. AAc = E is
a. Commutative
b. Associative
c. Distributive
d. Law of excluded middle
226. In discrete BAM for Binary input vectors, the weight matrix can be determined by the formula
a. Wij=Σ p (2Si(p)-1) (2tj(p)-1)
b. Wij=Σ p (2Si(p)+1) (2tj(p)-1)
c. Wij=Σ p (2Si(p)-1) (2tj(p)+1)
d. Wij=Σ p (2Si(p)+1) (2tj(p)+1)
227. In discrete BAM for Bipolar input vectors, the weight matrix can be determined by the formula
a. Wij=Σ p Si(p) 2tj(p)
b. Wij=Σ p (2Si(p)+1) (2tj(p)-1)
c. Wij=Σ p (2Si(p)-1) (2tj(p)+1)
d. Wij=Σ p (2Si(p)+1) (2tj(p)+1)
228. In continuous BAM for binary input vectors the weights are determined by the formulae
a. Wij=Σ p (2Si(p)-1) (2tj(p)-1)
b. Wij=Σ p (2Si(p)+1) (2tj(p)-1)
c. Wij=Σ p (2Si(p)-1) (2tj(p)+1)
d. Wij=Σ p (2Si(p)+1) (2tj(p)+1)
229. Logistic sigmoid activation function in Y layer is given by a. f(yin j)=1/(1+exp(-yin j)
b. f(yin j)=1+(1+exp(-yin j)
c. f(yin j)=1-(1+exp(-yin j)
d. f(yin j)=1*(1+exp(-yin j)
230. If the net input is equal to the threshold value, the activation function decide to
a. Leaves the activation of that unit to higher value
b. Leaves the activation of that unit to previous value
c. Zero
d. One
231. The following memory has the capability to transfer the input smoothly and continuously into respective output in the range between [0,1]
a. Continuous BAM
b. Discrete BAM
c. Hetero associative memory
d. Auto associative memory
232. The continuous BAM uses the following function as the activation function
a. Step activation with Zero threshold
b. Step activation with non-zero threshold
c. Logistic sigmoid function
d. Hyperbolic tangent function
233. If bias is included in calculating the net input in Y layer then f(yin j)
a. f(yin j) =bj+ΣxiWij
b. f(yin j) =bj-ΣxiWij
c. f(yin j) = ΣxiWij
d. f(yin j) =bj+ΣWij
234. Bidirectional associative memory is developed by
a. Rumelhar
b. Wilson c. Hecht
d. Kosko
235. BAM is
a. Auto Associative recurrent network
b. Hetero Associative recurrent network
c. Hop field network
d. Perceptron
236. Different forms of BAM are
a. Only binary
b. Only Bipolar
c. Only continuous
d. Binary, Bipolar, continuous

237. The activation function used in discrete BAM is
a. Step activation with Zero threshold
b. Step activation with non-zero threshold
c. Logistic sigmoid function
d. Hyperbolic tangent function.
238. The continuous BAM was introduced by
a. Rumelhart
b. Neilson
c. McCulloh
d. Kosko
239. The difference between the number of bits in two binary or bipolar vectors x1 and x2 is called
a. Hamming distance
b. Euclidean distance
c. Mean distance
d. Variance
240. The average hamming distance between the vectors is
a. 1/n [HD(x1,x2)]
b. 1/2n [HD(x1,x2)]
c. 1/3n [HD(x1,x2)]
d. 1/2 [HD(x1,x2)]