unit	question	option1	option2	option3	option4	answer
1	Core of soft Computing is	Fuzzy Computing, Neural Computing, Genetic Algorithms	Fuzzy Networks and Artificial Intelligence	Artificial Intelligence and Neural Science	Neural Science and Genetic Science	option1
1	Who initiated the idea of Soft Computing	Charles Darwin	Lofti A Zadeh	Rechenberg	Mc_Culloch	option2
1	Fuzzy Computing	mimics human behaviour	doesnt deal with 2 valued logic	deals with information which is vague, imprecise, uncertain, ambiguous, inexact, or probabilistic	All of the above	option4
1	Neural Computing	mimics human brain	information processing paradigm	Both (a) and (b)	None of the above	option3
1	Genetic Algorithm are a part of	Evolutionary Computing	inspired by Darwin's theory about evolution - "survival of the fittest"	are adaptive heuristic search algorithm based on the evolutionary ideas of natural selection and genetics	All of the above	option4
1	What are the 2 types of learning	Improvised and unimprovised	supervised and unsupervised	Layered and unlayered	None of the above	option2
1	Supervised Learning is	learning with the help of examples	learning without teacher	learning with the help of teacher	learning with computers as supervisor	option3
1	Unsupervised learning is	learning without computers	problem based learning	learning from environment	learning from teachers	option3
1	Conventional Artificial Intelligence is different from soft computing in the sense	Conventional Artificial Intelligence deal with prdicate logic where as soft computing deal with fuzzy logic	Conventional Artificial Intelligence methods are limited by symbols where as soft computing is based on empirical data	Both (a) and (b)	None of the above	option3
1	In supervised learning	classes are not predefined	classes are predefined	classes are not required	classification is not done	option2
1	ANN is composed of large number of highly interconnected processing elements(neurons) working in unison to solve problems	TRUE	FALSE			option1
1	Artificial neural network used for	Pattern Recognition	Classification	Clustering	All of these	option4
1	A Neural Network can answer	For Loop questions	what-if questions	IF-The-Else Analysis Questions	None of these	option2
1	In artificial Neural Network interconnected processing elements are called	nodes or neurons	weights	axons	Soma	option1
1	Neuron can send _____ signal at a time.	Multiple	One	Two	Three	option2
1	Any soft-computing methodology is characterized with	precise solutions	control actions are unambiguous and accurate	Control action is formally defined	algorithm which can easily adapt with the change of dynamic environment	option4
1	An equivalence between Fuzzy vs. Probability to that of Prediction vs. Forecasting is	Fuzzy=Prediction	Fuzzy= Forecasting	Probability=Forecasting	None of these	option2
1	Both fuzzy logic and artificial neural network are soft computing techniques because	Both gives precise and accurate results.	Artificial neural network gives accurate result, but fuzzy logic does not.	In each, no precise mathematical model of the problem is required	Fuzzy gives exact result but artificial neural network does not.	option3
1	Which of the following cannot be stated using fuzzy logic?	Color of an apple	Height of a person	Date of birth of a student	Speed of a car	option3
1	For the same size of training data as input, the fastest learning technique is	Supervised training with gradient descent error correction	Supervised training with stochastic method	Unsupervised training without error calculation	Unsupervised training with Hebbian method.	option1

1	In case of layer calculation, the maximum time involved in	Input layer computation.	Hidden layer computation.	Output layer computation.	Equal effort in each layer.	option4
1	In supervised learning, training set of data includes	Input	Output	Both input and output	None	option3
1	Both fuzzy logic and artificial neural network are soft computing techniques because,	Both gives precise and accurate results.	Artificial neural network gives accurate result but fuzzy logic does not.	In each, no precise mathematical model of the problem is required.	Fuzzy gives exact result but artificial neural network does not.	option3
1	Fuzzy – Genetic Hybrid system is a	Fuzzy logic in parallel with the Genetic algorithm	Fuzzy logic controlled Genetic algorithm	Genetic algorithm controlled Fuzzy logic	None of the above	option2
1	In which of the following, one technology calls the other technology as subroutine to process or manipulate information needed	Embedded hybrid system	Sequential hybrid system	Auxiliary hybrid system	Parallel hybrid system	option3
1	Which of the following is not a hybrid system?	Embedded hybrid system	Sequential hybrid system	Auxiliary hybrid system	Parallel hybrid system	option4
1	Command to start matlab fuzzy toolbox is	fis	fuzzy	fuzzybox	fuzzytool	option2
1	Training Perceptron is based on	Supervised learning technique.	Unsupervised learning	Reinforced learning	Stochastic learning	option1
1	A batch mode of training is generally implemented through the _____ in error calculation	Minimization of median square error	Maximization of median square error	Maximization of mean square error	Minimization of mean square error	option4
1	_____ is/are the way/s to represent uncertainty.	Fuzzy Logic	Probabilty	Entropy	All of the mentioned	option1
1	An artificial neurons receives n inputs x1, x2,...,xn with weights w1,w2,...,wn attached to the input links. The weighted sum ..... is computed to be passed on to a non-linear filter ø calledactivation function to release the output.	Σ wi	Σ xi	Σ xi+Σ wi	Σ xi.Σwi	option4
1	Who invented the Single-Layer Perceptron?	Frank Rosenblatt	Marvin Minsky	Seymour Papert	None of these	option1
1	Japanese were the first to utilize fuzzy logic practically on high-speed trains in Sendai.	True	False			option1
1	Which AI system provides a diagnosis to a specific problem?	Intelligent agent	Geographical information system	Data mining system	Expertsystem	option2
1	Why are linearly separable problems of interest to neural network researchers?	Because they are the only class of problems that a network can solve sucessfully	Because they are the only mathematical functions that are continuous	Because they are the only mathematical functions you can draw	Because they are the only class of problems a perceptron can solve successfully	option2
1	Where is the minimum criterion used ?	When there is an AND operation	When there is an OR operation	In De-Morgan's theorem	None of these	option1
1	Perceptron learning, Delta learning and LMS learning are learning methods which falls under the category of	Error correction learning - learning with a teacher	Reinforcement learning - learning with a critic	Hebbian learning	Competitive learning - learning without a teacher	option1
1	Generally, AI systems analyze imprecise and subjective information. This information is called	Blurred data	Fuzzy logic	Inclusive information	Dirty data	option3
1	Which AI system will work for you to find information on the internet?	Intelligent agent	Neural Network	Genetic Algorithms	Expertsystem	option3
1	Which AI system will continue to analyze a problem until it finds the best solution?	Intelligent agent	Neural Network	Genetic Algorithms	Expertsystem	option4
1	Which Intelligent Agent will monitor systems and report back to you when there is a problem?	Shopping bot	Buyer agent	Information agent	Predictive agent	option1
1	Which Intelligent Agent can play an Internet game on your behalf?	Information agent	User agent	Predictive agen	Game agent	option2
1	In terms of computing we have	antecedent	consequent	mapping function	All of the mentioned	option4
1	Example of hard computing	Robot movement	Hand written character recognition	money allocation	searching problem	option4
1	Hard computing produce	precise solutions	fuzzy solution	approximate solution	None of these	option1
1	Hard computing is strictly	Parallel	sequential	Both	None of these	option2
1	Principle compunent of soft computing is	Neural Network	Fuzzy Loguc	Genetic Algorithms	All of the mentioned	option4
1	Which is supervised learning	clustering	regression	association	dimensionality reduction	option2
1	Example of hybrid system is	Auxillary	Embedde	Neuro Fuzzy	Neuro Gastro	option3
1	Soft computing is NOT	allows stochasticity	deterministic	allows parallel computation	tolerant of imprecision	option2
2	Fuzzy logic is a form of	Two valued logic	Many valued logic	Crisp set logic	Binary set logic	option2

2	Traditional set theory is also known as Crisp set theory.	True	False			option1
2	A fuzzy set A is closed if:	$\lim x \to -\infty \mu(x) = 1$ and $\lim x \to +\infty (x) =$	$\lim x \to -\infty \mu(x) = \lim x \to +\infty (x) = 0$	$\lim x \to -\infty \mu(x) = 0$ and $\lim x \to +\infty (x) = 1$	$\lim x \to -\infty \mu(x) = \lim x \to +\infty (x) = 1$	option2
2	How is Fuzzy Logic different from conventional control methods?	IF and THEN Approach	FOR Approach	WHILE Approach	DO Approach	option1
2	The height h(A) of a fuzzy set A is defined as h(A) =sup A(x) where x belongs to A. Then the fuzzy set A is called normal when	h(A)=0	h(A)<0	h(A)=1	h(A)>1	option3
2	For k>1, which of the following concept can be used to generate other linguistic hedge	Concentration and Dilation	Dilation	Concentration	None of the above	option3
2	The membership functions are generally represented in	Tabular Form	Graphical Form	Mathematical Form	Logical Form	option2
2	Three main basic features involved in characterizing membership function are	Intution, Inference, Rank Ordering	Fuzzy Algorithm, Neural network, Genetic Algorithm	Core, Support , Boundary	Weighted Average, center of Sums, Median	option3
2	Membership function defines the fuzziness in a fuzzy set irrespective of the elements in the set, which are discrete or continuous.	True	False			option1
2	Membership function can be thought of as a technique to solve empirical problems on the basis of	knowledge	examples	learning	experience	option4
2	The region of universe that is characterized by complete membership in the set is called	Core	Support	Boundary	Fuzzy	option1
2	A fuzzy set whose membership function has at least one element x in the universe whose membership value is unity is called	sub normal fuzzy sets	normal fuzzy set	convex fuzzy set	concave fuzzy set	option2
2	In a Fuzzy set a prototypical element has a value	1	0	Infinite	Not Defined	option1
2	A fuzzy set whose membership function has no members whose membership value is 1	sub normal fuzzy sets	normal fuzzy set	convex fuzzy set	concave fuzzy set	option1
2	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	sub normal fuzzy sets	normal fuzzy set	convex fuzzy set	concave fuzzy set	option3
2	The membership values of the membership function are nor strictly monotonically increasing or decreasing or strictly monoronically increasing than decreasing.	convex fuzzy set	concave fuzzy set	non convex fuzzy set	non concave fuzzy set	option3
2	The crossover points of a membership function are defined as the elements in the universe for which a particular fuzzy set has values equal to	infinite	1	0	0.5	option4
2	If *if x ia A then y is B else y is C* . The output of the given fuzzy rule is	a fuzzy set	a crisp set	a fuzzy relation	a membership function	option3
2	The cardinality of the given set A={1,2,3,4,5}	4	5	2	3	option2
2	The cardinality of the fuzzy sets defined with continuous membership function on any universe is	infinity	0	1	-1	option1
2	Two fuzzy sets A and B with membership functions μA(x)and μB(x), respectively defined as below. A = Hot Climate with μA (x) as the MF B = Cold Climate with μB(x)as the MF Pleasant climate is given by	$1 - \mu B(x)$	$\max(\mu A(x), \mu B(x))$	$\min(\mu A(x), \mu B(x))$	$1 - \mu A(x)$	option3
2	What is the Bandwidth of fuzzy set A which is given as follow A ={ (10, 0.1), (15, 0.2), (20, 0.5), (25, 0.4), (30, 0.4), (35, 0.5), (40, 0.2), (45, 0.1) }	10	15	20	25	option2
2	Given that " x is Sweet " with T(x) = 0.8 and" y is Sweet " with T(y) = 0.6.The fuzzy truth value of "If x is Sweet then y is Sweet " is:	0.2	0.4	0.6	0.8	option4
2	$(\sim (P \wedge Q) \Rightarrow R) \wedge P \wedge Q$ is equivalent to	$(P \wedge Q)$	$(P \wedge Q)VR$	P	$(\sim P \vee Q)$	option1
2	If *if x ia A then y is B else y is C* . Then relation is eqivalent to	$(A \times B) + (B \times C)$	$(A \times B) \cup (A^{-} \times C)$	$(A \times B) \rightarrow (B \times C)$	$(A \times C) \cup (B \times C)$	option2
2	What are the applications of Fuzzy Inference Systems?	Wireless services, heat control and printers	Restrict power usage, telephone lines and sort data	Simulink, boiler and CD recording	Automatic control, decision analysis and data classification	option4
2	Let X = {a, b, c, d} and Y = {1, 2, 3, 4} and A = {(a, 0.0), (b, 0.8), (c, 0.6), (d, 1.0)}, B = {(1, 0.2), (2, 1.0), (3, 0.8), (4, 0.0)}, C = {(1, 0.0), (2, 0.4), (3, 1.0), (4, 0.8)}. Determine the implication relation: If x is A then y is B	0 0 0 0 0.2 0.8 0.8 0 0.2 0.6 0.6 0 0.2 1 0.8 0	1 1 1 1 0.2 0.8 0.8 0.2 0.4 0.6 0.6 0.4 0.2 0.1 0.8 0	0 0.4 1 0.8 0.2 0.8 0.8 0.2 0.2 0.6 0.6 0.4 0.2 1 0.8 0	0 0.4 1 0.8 0 0.2 0.2 0.2 0 0.4 0.4 0.4 0 0 0 0	option2

2	what are the following sequence of steps taken in designing a fuzzy logic machine?	Fuzzification -> Rule Evaluation --> Defuzzification	Rule Evaluation --> Fuzzification -> Defuzzification	Defuzzification--> Rule Evaluation --> Fuzzification	Fuzzy Sets--> Defuzzification--> Rule Evaluation	option1
2	Fuzzy logic is usually represented as	IF-THEN-ELSE rules	IF-THEN rules	Both IF-THEN-ELSE rules & IF-THEN rules	None of the mentioned	option2
2	Which of the following is not true regarding the principles of fuzzy logic ?	Fuzzy logic follows the principle of Aristotle and Buddha	Japan is currently the most active users of fuzzy logic	Fuzzy logic is a concept of 'certain degree'	Boolean logic is a subset of fuzzy logic	option1
2	The room temperature is hot. Here the hot (use of linguistic variable is used) can be represented by _____	Fuzzy Set	Crisp Set	Fuzzy & Crisp Set	None of these	option1
2	Considering a graphical representation of the 'tallness' of people using its appropriate member function, which of the following combinations are true ? (I)TALL is usually the fuzzy subset. (II) HEIGHT is usually the fuzzy set. (III) PEOPLE is usually the universe of discourse	I,II,III	I,II	I,III	II,III	option1
2	What is the Fuzzy Approximation Theorem(FAT) ?	A fuzzy sytem can model any continoussytem	The conversion of fuzzy logic to probability.	A continoussytem can model a fuzzy system	Fuzzy patches covering a series of fuzzy rules	option2
2	What is the main difference between probability and fuzzy logic	Fuzzy logic is probability in disguise	Fuzzy logic is the likelihood of an event occuring and probablility is the extent of that event	Probability is ADDITIVE, meaning all its values must add up to one	Probability dissipates with decreasing information	option1
2	Fuzzy Set theory defines fuzzy operators. Choose the fuzzy operators from the following.	AND	OR	NOT	All of the mentioned	option4
2	There are also other operators, more linguistic in nature, called _____ that can be applied to fuzzy set theory.	Hedges	Lingual Variable	Fuzzy Variable	None of the mentioned	option1
2	Consider a fuzzy set A defined on the interval X = [0, 10] of integers by the membership Junction μA(x) = x / (x+2) Then the α cut corresponding to α = 0.5 will be	{0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10}	{1, 2, 3, 4, 5, 6, 7, 8, 9, 10}	{2, 3, 4, 5, 6, 7, 8, 9, 10}	None of these	option3
2	If A and B are two fuzzy sets with membership functions: μa(χ) ={0.2,0.5.,0.6,0.1,0.9} μb (χ)= {0.1,0.5,0.2,0.7,0.8} then the value of μa ∩ μb will be	{0.2,0.5,0.6,0.7,0.9}	{0.2, 0.5,0.2, 0.1,0.8}	{0.1, 0.5, 0.6, 0.1,0.8}	{0.1, 0.5, 0.2, 0.1,0.8}	option4
2	A _____ point of a fuzzy set A is a point x ∈ X at which μA(x) = 0.5	Core	Support	Cross-over	None of these	option3
2	Given U = {1,2,3,4,5,6,7} A = {(3, 0.7), (5, 1), (6, 0.8)} then A~ will be: (where ~ → complement)	{(4, 0.7), (2,1), (1,0.8)}	{(4, 0.3.): (5, 0), (6. 0.2) }	{(l, 1), (2, 1), (3, 0.3), (4, 1), (6,0.2), (7, 1)}	{(3, 0.3), (6.0.2)}	option3
2	In Lamda-cut method the value of λ can be	Greater than 10	Between 1 and 10	Between 0 and 1	Any value	option3
2	Suppose, a fuzzy set Young is defined as follows Young = (10, 0.5), (20, 0.8), (30, 0.8), (40, 0.5), (50, 0.3) Then the crisp value of Young using MoM method is	20	25	30	35	option2
2	If the fuzzy set has two sub regions, then the centre of gravity of the sub region _____ can be used to calculate the defuzzified value.	with the median of all the area	with the mean of all the area	with the largest area	with the smallest area	option3
2	Which of the following is not a centroid method?	Centre of gravity method (CoG)	Centre of sum method (CoS)	Centre of area method (CoA)	Centre of Mass (CoM)	option4
2	Let A be a fuzzy set. Then 1-cut of A is usually called	support	height	core	alpha-cut	option3
2	Each fuzzy complement has at most ------equilibrium.	1	2	3	None of these	option1
2	Equilibrium of a fuzzy complement c is a solution of the equation	c(a)-a=1	c(a)-a=2	c(a)=2a	c(a)-a=0	option4
2	Defuzzification is done to obtain	Crisp output	Fuzzy Output	The best rule to follow	None of these	option1
2	If Z is a set of elements with a generic element z, i.e. Z = {z}, then this set is called _____	Universe set	Universe of discourse	Derived set	None of these	option2
2	A fuzzy convexity is set	increasing	decreasing	increasing and then decreasing	All of the mentioned	option4

3	Fuzzy logic is :	Used to respond to questions in a humanlike way	A new programming language used to program animation	c) The result of fuzzy thinking	d) A term that indicates logical values greater than one	option1
3	What Is Fuzzy Inference Systems?	The process of formulating the mapping from a given input to an output using fuzzy logic	The process of formulating the mapping from a given input to an output using fuzzy logic	Having a larger output than the input	Having a smaller output than the input	option1
3	What Are The Two Types Of Fuzzy Inference Systems?	Model-Type and System-Type	Momfred-Type and Semigi-Type	Mamdani-Type and Sugeno-Type	Mihni-Type and Sujgani-Type	option3
3	Where Has Fuzzy Inference Systems Been Implemented?	Wireless services, heat control and printers	Wireless services, heat control and printers	Simulink, boiler and CD recording	Automatic control, decision analysis and data classification	option4
3	What Is Another Name For Fuzzy Inference Systems?	Fuzzy Expert System	Fuzzy Modelling	Fuzzy Logic Controller	All of the mentioned	option4
3	Mamdani's Fuzzy Inference Method Was Designed To Attempt What?	Control any two combinations of any two products by synthesising a set of linguistic control rules obtained from experienced human operations.	Control a television and remote combination by synthesising a set of linguistic control rules obtained from experienced human operations.	Control a steam engine and a boiler combination by synthesising a set of linguistic control rules obtained from experienced human operations	Control a air craft and feul level combination by synthesising a set of linguistic control rules obtained from experienced human operations	option3
3	What Is The First Step Of Fuzzy Logic Toolbox?	Fuzzification of the input variables	Defuzzification	Application of the fuzzy operator (AND or OR) in the antecedent	Aggregation of the consequents across the rules	option1
3	What Is The Input And Output Of Step 2 - Apply Fuzzy Operator?	The input is a single truth value and the output has two or more values	The input is a value greater than one and the output is a value less than the input	The input and output have both the same values	The input has two or more values and the output has a single truth value	option4
3	What Is The Equation For Probabilistic?	Probor (a,b) = a-b + ab	Probor (a,b) = ab + ab	Probor (a,b) = a+b - ab	Probor (a,b) = a/b x ab	option3
3	What Is The Input And Output Of Step 3 - Apply Implication Method?	Input is a fuzzy set but the output is a whole value	Input is a whole value but the output can be a fuzzy set	Input and output have the same value	Input is a smaller value than the output value	option2
3	What Is The Purpose Of Aggregation?	To gather all the different fuzzy set outputs and combine them into a single fuzzy set outputs	To gather all the possible inputs and use the average to gain an output	To gather all the different fuzzy set outputs and average them out to get a single value	To subtract all the output fuzzy set values from the input values	option1
3	Generalizations of ordinary fuzzy sets which involve fuzzy sets defined within a universal set whose elements are ordinary fuzzy sets constitute a --------fuzzy set	Level 1	Level 2	Level 3	Level 4	option2
3	Example of an idempotent t-norm is	Algebraic Product	Bounded Difference	Drastic intersection	Standard intersection	option4
3	One difference between Mamdani approach and Takagi-Sugeno approach to FLC design is that	Mamdani approach needs defuzzification module whereas Takagi-Sugeno approach does not	Takagi-Sugeno approach does not require any fuzzification module whereas Mamdani approach needs	Takagi-Sugeno approach is more interpretable but less accurate	All of the mentioned	option1
3	Takugi-Sugeno approach to FLC design is computationally more expensive compared to Mamdani approach because	Mamdani approach considers a less number of rules in fuzzy rule base	Searching a rule in Mamdani approach is simple and hence less time consuming	Takagi-Sugeno approach consider a large number of rules in fuzzy rule base	Computation of each rule in Takagi-Sugeno approach is more time consuming	option4
3	“The train is running fast”. Here ‘fast’ can be represented by	Fuzzy Set	Crisp Set	Fuzzy & Crisp Set	None of these	option1
3	_____ is/are the way/s to represent uncertainty.	Fuzzy Logic	Probabilty	Entropy	All of the mentioned	option4

3	An expert system differs from a database program in that only an expert system:	contains declarative knowledge	contains procedural knowledge	features the retrieval of stored information	expects users to draw their own conclusions	option2
3	_____ is the process of formulating the mapping from a given input to an output using Fuzzy logic.	FIZ	FIS	FOZ	None of these	option2
3	Which of the following is a type of Membership function?	Triangular	Trapezoidal	Sigmoid	All of the above	option4
3	Which of the following is not a type of Membership function?	S-shape	Bell shape	Truncated Gaussian	None of these	option4
3	What is the independent variable of fuzzy output?	Maturity	Membership	Generic Element	None of these	option1
3	Gausian MF is specified by _____ parameters	1	2	3	4	option2
3	Cauchy MF is	Gausian MF	Triangular MF	Generalised Bell MF	Trapezoidal MF	option3
3	= {(1, 0.5), (2, 0.1), (3, 0.4)} and =_ {(1, 0.2), (2, 0.3), (3, 0.5)}, find AUB	{(1, 0.2), (2, 0.1), (3, 0.4)}	{(1, 0.5), (2, 0.3), (3, 0.5)}	{(1, 0.5),(2, 0.9),(3, 0.6)}	{(x1,0.1),(x2,0.03),(x3,0.20)}	option2
3	= {(1, 0.5), (2, 0.1), (3, 0.4)} and =_ {(1, 0.2), (2, 0.3), (3, 0.5)}, find A∩B	{(1, 0.2), (2, 0.1), (3, 0.4)}	{(1, 0.5), (2, 0.3), (3, 0.5)}	{(1, 0.5),(2, 0.9),(3, 0.6)}	{(x1,0.1),(x2,0.03),(x3,0.20)}	option1
3	= {(1, 0.5), (2, 0.1), (3, 0.4)} and =_ {(1, 0.2), (2, 0.3), (3, 0.5)}, find A complement	{(1, 0.2), (2, 0.1), (3, 0.4)}	{(1, 0.5), (2, 0.3), (3, 0.5)}	{(1, 0.5),(2, 0.9),(3, 0.6)}	{(x1,0.1),(x2,0.03),(x3,0.20)}	option3
3	= {(1, 0.5), (2, 0.1), (3, 0.4)} and =_ {(1, 0.2), (2, 0.3), (3, 0.5)}, find A.B	{(1, 0.2), (2, 0.1), (3, 0.4)}	{(1, 0.5), (2, 0.3), (3, 0.5)}	{(1, 0.5),(2, 0.9),(3, 0.6)}	{(x1,0.1),(x2,0.03),(x3,0.20)}	option4
3	Methods of fuzzy approximate reasoning are	Syllogistic	Categorical	Dispositional	All of the mentioned	option4
3	Which fuzzy approximate reasoning uses "usually"	Syllogistic	Categorical	Dispositional	Qualitative	option3
3	Like relational databases there does exists fuzzy relational databases	True	False			option1
3	In this mode of approximate reasoning, the antecedents, containing no fuzzy quantifiers and fuzzy probabilities	Syllogistic	Categorical	Dispositional	Qualitative	option2
3	In this mode of approximate reasoning, the antecedents and consequents have fuzzy linguistic variables	Syllogistic	Categorical	Dispositional	Qualitative	option4
3	In this mode of approximation reasoning, antecedents with fuzzy quantifiers are related to inference rules	Syllogistic	Categorical	Dispositional	Qualitative	option1
3	Method of aggregation of fuzzy rule	Conjuctive system of rules	DISjuctive system of rules	Both	None of these	option3
3	Fuzzy Expert system does NOT consist of	Knowledge base	User Interface	Inference Engine	None of these	option4
3	If P:Mary is efficient, Q: Ram is efficient, T(P)=0.8, T(Q)=0.6 find value of Mary is not efficient	0.2	0.4	0.6	0.8	option1
3	If P:Mary is efficient, Q: Ram is efficient, T(P)=0.8, T(Q)=0.6 find value of Mary is efficient and so is Ram.	0.2	0.4	0.6	0.8	option3
3	If P:Mary is efficient, Q: Ram is efficient, T(P)=0.8, T(Q)=0.6 find value of Either Mary or Ram is efficient	0.2	0.4	0.6	0.8	option4
3	If P:Mary is efficient, Q: Ram is efficient, T(P)=0.8, T(Q)=0.6 find value of If Mary is efficient then so is Ram.	0.2	0.4	0.6	0.8	option3
3	Fuzzy Implication is also known as	Fuzzy logic	Fuzzy IF-THEN rule	Fuzzy expert system	None of these	option2
3	Ways to compute fuzzy rule A-> B is	A coupled with B	A entails B	Both	None of these	option3
3	R=(AXB)U(ÃXY) is	Zadeh's Max Product rule for *If x is A then y is B* else y is C	Zadeh's Max Min rule for *If x is A then y is B*	Zadeh's Max Product rule for *If x is A then y is B* else y is C	Zadeh's Max Min rule for *If x is A then y is B*	option4
3	System is used foe both MISO and MIMO	Mamdani	Sugeno	Takagi	None of these	option1
3	Which method is good for embedding linear controller	Mamdani	Sugeno	Takagi	None of these	option2
3	Suppose, a fuzzy set Young is defined as follows Young = (10, 0.5), (20, 0.8), (30, 0.8), (40, 0.5), (50, 0.3) Then the crisp value of Young using LoM method is	20	25	30	35	option3
3	Suppose, a fuzzy set Young is defined as follows Young = (10, 0.5), (20, 0.8), (30, 0.8), (40, 0.5), (50, 0.3) Then the crisp value of Young using FoM method is	20	25	30	35	option1
3	Which method counts overlapping area twice	CoS	CoG	CoA	LoM	option1
3	Which is not the diffuzzification metghod	Centre of gravity method	Centre of sum method	Centre of perimeter method	Centre of area method	option3
3	Which of this is not a fuzzy controller	Domestic Shower Controller	Water purifier controller	Train brake power controller	Angular JS Controller	option4
4	In Evolutionary algorithm____ operator is prime operator	selection	mutation	recombination	initialization	option2
4	In evolutionary algorithm selection is _____	deterministic	probabilistic	both	None of these	option1
4	Evolutionary Algorithm deals with self adaptation	Yes	No			option1

4	Problem domain of Evolutionary Algorithm is	discrete optimization	continuous optimization	combinatorial optimization	None of these	option2
4	Evolutionary Algorithm solves_____ problem	NP-complete	NP-hard	P	None of these	option2
4	Sequence of steps in EA	initialization-> selection->mutation->crossover->termination	initialization-> selection->crossover->termination	initialization-> selection->crossover->mutation->termination	None of these	option3
4	Which of the following MOEA algorithm is based on the concept of “elitism”?	MOGA	NPGA	NSGA	NSGA-II	option4
4	Which of the following solution is non-Pareto based a posteriori technique?	SOEA	MOGA	VEGA	Lexicographic ordering	option3
4	A three-objective optimizations are solved using a MOEA algorithm and a few objective vectors are listed below. (Assume all objectives are to be minimized) [3,5,10], [5,3,10], [3,10,5], [10,5,3], [10,3,5]. Which of the following is true?	All are non-dominating solutions	Solution [3,5,10] dominates all other solution	Solution [10,5,3] dominated by the solution [3,5,10]	Solution [3,10,5] dominates solution [5,3,10]	option1
4	Which of the following Pareto-based techniques to solve a MOOP follows “ranking” followed by "fitness averaging"	MOGA	NPGA	NSGA	NSGA-II	option1
4	Which of the following MOEA techniques follows Tournament selection strategy?	MOGA	NPGA	NSGA	NSGA-II	option2
4	Niche counts of two solutions x1 and x2 are 10, 20. This means that	x1 is surrounded by more neighbors than that of X2	x1 is surrounded by less neighbors than that of X2	x1 would be less desirable to provide population diversity .	x1 would be more desirable to provide population diversity .	option2
4	Which of the following statement is not correct?	A set of solutions is called trade-off solutions, which lie on the Pareto optimal front.	A solution is called a trade-off solution, if it is not dominated by any other solution in the solution space	A front is called Pareto-optimal front on which all optimal solutions lie.	A front containing a non-dominated set of solutions obtained over an exhaustive search space is called pareto optimal front	option3
4	In the following, only one statement is correct. Select the correct statement.	Stochastic selection with remainder supports low selection pressure.	Crowding tournament selection scheme supports low population diversity.	There is no selection scheme in NPGA.	In MOGA, Rank based selection can be applied to select parent chromosome for mating pool creation	option4
4	Select the wrong statement	MOGA uses the concept of ranking whereas NSGA uses the concept of niching to assign fitness values to parent chromosomes.	MOGA assigns different fitness values to all solution with the same rank whereas NSGA assigns the same fitness value to all solutions belonging to the same front.	MOGA assigns the same fitness values to all solution with the same rank whereas NSGA assigns different fitness value to all solutions belonging to the same front.	NSGA yields more accurate Pareto front than MOGA.	option3
4	To create mating pool, NSGA follows	Stochastic remainder selection	Crowding Tournament selection	Roulette wheel selection	Canonical Selection	option1
4	A similarity between NPGA and NSGA is that	Both are based on the concept of ranking.	Both assign fitness values to the parent chromosomes prior to their selection for mating pool.	Both calculates niched count to maintain population diversity.	Both are computationally very expensive.	option3
4	Ifc1 and c2 are two offspring chromosomes, then according to NPGA, c1 will be preferable to be selected for mating pool if	if c1’s niche count is higher than that of c2.	if c1’s niche count is equal to that of c2.	if c1’s niche count is less than that of c2.	None of these	option3
4	A priori high level information that is required in “Lexicographic ordering” is	the scalar weights of each objective function.	the descending ordering of the rank of the importance of objective functions.	independent of objective function.	None of these	option2

4	A solution xi is said to dominate another solution xj if	xj is worse than xi and xi is strictly better than xj.	xj is no worse than xi and xi is strictly better than xj in at least one objective.	xj is no worse than xi and xi is lesser than xj in at least one objective.	xj is worse than xi and xi is lesser than xj in at least one objective.	option2
4	Motivation for EA is	Mathematical based properties	Natural selection	Gradient properties	None of these	option2
4	compared to Traditional approach EA takes _____ CPU time	Large	Small	Equal	None of these	option1
4	Genetic Algorithm is superset of Evolutionary Algorithm	True	False			option2
4	Optimization in GA is	Metaheuristic	Stochastic	Discreate	Continuous	option3
4	In GA individual memory is there	Yes	No			option2
4	In GA individual operatior is	Crossover point	Mutation	pbest	gbest	option2
4	Encoding is	possible solutions of a problem are considered as individuals in a population	represents the main requirements of the desired solution of a problem	operator defines the way individuals in the current population are selected for reproduction	operator defines how chromosomes of parents are mixed in order to obtain genetic codes of their offspring	option1
4	Fitness function is	possible solutions of a problem are considered as individuals in a population	represents the main requirements of the desired solution of a problem	operator defines the way individuals in the current population are selected for reproduction	operator defines how chromosomes of parents are mixed in order to obtain genetic codes of their offspring	option2
4	Selection is	possible solutions of a problem are considered as individuals in a population	represents the main requirements of the desired solution of a problem	operator defines the way individuals in the current population are selected for reproduction	operator defines how chromosomes of parents are mixed in order to obtain genetic codes of their offspring	option3
4	Crossover is	possible solutions of a problem are considered as individuals in a population	represents the main requirements of the desired solution of a problem	operator defines the way individuals in the current population are selected for reproduction	operator defines how chromosomes of parents are mixed in order to obtain genetic codes of their offspring	option4
4	Mutation is	possible solutions of a problem are considered as individuals in a population	represents the main requirements of the desired solution of a problem	operator defines the way individuals in the current population are selected for reproduction	operator creates random changes in genetic codes of the offspring	option4
4	How many genes will be used in a chromosome of each individual if the number of cities is 10?	5	10	100	4	option2
4	How many genes will be in the alphabet of the algorithm?	n*(n-1)/2	n*(n+1)/2	n*(n-2)/2	n*(n+2)/2	option1
4	Suppose a genetic algorithm uses chromosomes of the form x = abcdefgh with a fixed length of eight genes. Each gene can be any digit between 0 and 9. Let the fitness of individual x be calculated as: f(x) = (a + b) − (c + d) + (e + f) − (g + h) , and let the initial population consist of four individuals with the following chromosomes: x1 = 6 5 4 1 3 5 3 2 x2 = 8 7 1 2 6 6 0 1 x3 = 2 3 9 2 1 2 8 5 x4 = 4 1 8 5 2 0 9 4 arrange chromosomes in order with the fittest first and the least fit last.	x1 ,x2,x3,x4	x2,x1,x3,x4	x1,x3,x4,x2	x2,x3,x1,x4	option2
4	one–point crossover at the middle point on x2 = 8 7 1 2 6 6 0 1 x1 = 6 5 4 1 3 5 3 2 will generate	O1 = 3 5 3 2 8 7 1 2 O2 = 6 6 0 1 6 5 4 1	O1 = 3 5 3 2 8 7 2 1 O2 = 6 6 0 1 6 5 1 4	O1 = 8 7 1 2 3 5 3 2 O2 = 6 5 4 1 6 6 0 1	O1 = 8 7 1 2 3 5 2 3 O2 = 6 5 4 1 6 6 1 0	option3
4	A budget ariline company operates 3 plains and employs 5 cabin crews. Only one crew can operate on any plain on a single day, and each crew cannot work for more than two days in a row. The company uses all planes every day. A Genetic Algorithm is used to work out the best combination of crews on any particular day. What is alphabet size in it?	3	5	8	15	option2

4	In _____ individuals are represented as a Finite State Machine	EP	ES	GA	PSO	option1
4	In _____ individuals are represented as a Real valued vector	EP	ES	GA	PSO	option2
4	In _____ individuals are represented as a binary string	EP	ES	GA	PSO	option3
4	Parent selection in ____ is stochastic using tournament	EP	ES	GA	PSO	option1
4	Parent selection in ____ is deterministic	EP	ES	GA	PSO	option2
4	Parent selection in ____ is either stochastic or deterministic	EP	ES	GA	PSO	option3
4	_____does not use recombination to produce offspring.	EP	ES	GA	PSO	option1
4	_____ uses crossover to produce offspring.	EP	ES	GA	PSO	option2
4	_____ uses various recombination operators.	EP	ES	GA	PSO	option3
4	Is it advisable to apply genetic algorithm for all kinds of optimization problem	Yes	No			option2
4	In _____ each individual survives for exactly one generation	Generation Model	Steady state Model	Population Model	Tournament Model	option1
4	Category of EP based on scaling function	Non adaptive	Non Dynamic	Non self-adaptive	Adaptive	option1
4	Evolutionary algorithm differes from genetic algorithm as it does not have	Crossover	mutation	Selection	Reproduction	option1
4	Evolutionary algorithms classified as	Evolutionary Programming	Evolutionary Strategies	Genetic Algorithms	All of the mentioned	option4
5	In the choice phase of problem solving, normative models involve selecting an optimal or best outcome	True	False			option1
5	Analytical techniques for problem solving are best for unstructured rather than structured problems.	True	False			option2
5	Heuristic approaches are typically used to solve more complex problems.	True	False			option1
5	Genetic algorithms are heuristic methods that do not guarantee an optimal solution to a problem	True	False			option1
5	A "what-if" model is most typically used for the most structured problems	True	False			option2
5	The use of simulation models is desirable because they can usually be solved in one pass, without incurring the time and cost of iterations	True	False			option2
5	An advantage of simulation is that it allows model builders to solve problems with minimal interaction with users or managers	True	False			option2
5	Time compression in a simulation allows managers to test certain strategies with less risk.	True	False			option1
5	Simulation solutions cannot easily be transferred from one problem domain to another	True	False			option1
5	Determining the duration of the simulation occurs before the model is validated and teste	True	False			option2
5	Which of the following(s) is/are the pre-requisite(s) when Genetic Algorithms are applied to solve problems? (i) Encoding of solutions. (ii) Well-understood search space. (iii) Method of evaluating the suitability of the solutions. (iv) Contain only one optimal solution.	i and ii only	i and iii only	ii and iii only	All of the mentioned	option2
5	Which GA operation is computationally most expensive?	Initial population creation	Selection of sub-population for mating	Reproduction to produce next generation	Convergence testing	option3
5	Which of the following is not true for Genetic algorithms?	It is a probabilistic search algorithm	It is guaranteed to give global optimum solutions	If an optimization problem has more than one solution, then it will return all the solutions	It is an iterative process suitable for parallel programming	option2
5	Which one of the following is not necessarily be considered as GA parameters?	the population size.	the obtainable accuracy	the mutation probability	the average fitness score	option4
5	Which of the following optimization problem(s) can be better solved with Order GA?	0-1 Knapsack problem	Travelling salesman problem	Job shop scheduling problem	Optimal binary search tree construction problem	option2
5	Optimal binary search tree construction problem	1 3 5 7 2 4 6 8	A B D E C F H G	1 0 0 1 1 0 0 1	14.6 -23.4 177.23	option3
5	Roulette wheel selection scheme is preferable when	Fitness values are uniformly distributed	Fitness values are non-uniformly distributed	Needs low selection pressure	Needs high population diversity	option1

5	What GA encoding scheme suffers from Hamming cliff problem?	Binary coded GA	Real coded GA	Order GA	Tree coded GA	option1
5	Which selection strategy is susceptible to a high selection pressure and low population diversity?	Roulette-wheel selection.	Rank based selection.	Tournament selection.	All of the mentioned	option1
5	Which of the following is not a mutation operation in real coded GA?	Flipping	Random mutation.	Polynomial mutation.	All are mutation operation in real coded GA	option1
5	Two parent chromosomes in Order GA encoding scheme is given as follows: * 1 2 3 4 5 6 7 8 9 10 * 10 9 8 7 6 5 4 3 2 1 A k-th point is selected at 4th location according to single point crossover technique. Which of the following off-spring is not possible?	1 2 3 4 10 9 8 7 6 5	7 8 9 10 6 5 4 3 2 1	10 9 8 7 1 2 3 4 5 6	5 6 7 8 9 10 1 2 3 4	option4
5	The purpose of the fitness evaluation operation is	To check whether all individual satisfies the constraints given in the problem	To decide the termination point.	To select the bestindividuals	To identify the individual with worst costfunction	option3
5	If crossover between chromosomes in search space does not produce significantly different offspring, what does it imply? (if offspring consist of one half of each parent) (i) The crossover operation is not successful. (ii) Solution is about to be reached. (iii) Diversity is so poor that the parents involved in the crossover operation are similar. (iv) The search space of the problem is not ideal for GAs to operate	ii, iii & iv only	ii, iii only	i, iii & iv only	All of the mentioned	option2
5	In Rank-based selection scheme, which of the following is not correct	The % area to be occupied by an individual , is given by average of sumation of elements	Two or more individuals with the same fitness values should have the same rank.	Individuals are arranged in a descending order of their fitness values.	The proportionate based selection scheme is followed based on the assigned rank.	option3
5	Tournament Selection has	Low population diversity and moderate selection pressure	High population diversity and Moderate selection pressure	Moderate population diversity and high selection pressure	High population diversity and low selection pressure	option3
5	If selection pressure is HIGH, which one is FALSE	The search focuses only on good individuals (in terms of fitness) at the moment	It loses the population diversity.	Lower rate of convergence.	Leads to pre-mature convergence of the solution to a sub-optimal solution.	option3
5	Which of the following comparison is true?	In the event of restricted accessto information, GAs win out in that they require much fewer information to operate than other search.	Under any circumstances, GAs always outperform other algorithms.	The qualities of solutions offered by GAs for any problems are always better than those provided by other search	GAs could be applied to any problem, whereas certain algorithms are applicable to limited domains.	option1
5	Which of the following is a fitness scaling approach?	Linear scaling	Sigma scaling	Power law scaling	All of the mentioned	option4
5	Important aspect of GA	Definition of objective function	Implementation of genetic representation	Implementation of genetic operators	All of the mentioned	option4
5	Term in GA for chromosome	coded design vector	coded design variable	every bit	Number of coded design variable	option1
5	Term in GA for substring	coded design vector	coded design variable	every bit	Number of coded design variable	option2
5	Term in GA for gene	coded design vector	coded design variable	every bit	Number of coded design variable	option3
5	Term in GA for population	coded design vector	coded design variable	every bit	Number of coded design variable	option4
5	Term in GA for generation	coded design vector	coded design variable	population of design vector after 1 iteration	Number of coded design variable	option3
5	Which of these are adaptive heuristic search algorithms	evolutionary algorithms	genetic algorithms	Binary search	None of these	option2
5	In Genetic algorithm string operate with	Real values	binary number	Decimal Number	None of these	option2

5	In genetic algorithm____ operator is prime operator	selection	termination	recombination	initialization	option3
5	In genetic algorithm selection is _____	deterministic	probabilistic	both	None of these	option2
5	Genetic Algorithm deals with self adaptation	Yes	No			option2
5	Why to use genetic algorithm	Provide optimization over small space area	Provide optimization over large space area	They break on slight change in input	None of these	option2
5	Parent 1 is 1 0 1 1 1 1 1 1 Parent 2 is 0 1 0 1 0 0 0 0. If single point crossover is made after 5th point, what is its possible child	1 0 1 1 1 0 0 1	0 1 0 1 0 1 1 0	1 0 1 1 1 0 0 0	0 1 0 1 0 1 0 1	option3
5	Probability of crossover is	Crossover point	Crossover rate	Cross-over population	None of these	option2
5	Consider chromosome 1 2 3 4 5 6 7 8 9. Random points generated were 2 and 5 so result of scramble will be	1 2 3 4 5 6 7 8 9	1 5 3 4 2 6 7 8 9	1 5 4 3 2 6 7 8 9	None of these	option3
5	Sequential GA	Generational	Centralized	Distributed	None of these	option1
5	Parallel GA	Generational	Steady state	Distributed	None of these	option3
5	Examples of stopping criteria in GA can be	Generation limit	No change in fitness	Elapsed time	All of the mentioned	option4
5	Category of GBML systems	Pittsburg Approach	Divide n conquer approach	Michi Approach	None of these	option1
5	PGA is	Parallel Genetic Algorithm	Proportional Genetic Algorithm	Perceptron based Genetic Algorithm	None of these	option1
5	Schema theorem serves as _____ tool for GA process	Analysis	Computation	Termination	None of these	option1
5	If H=10*1* then o(H)=	1	2	3	4	option3
6	Which of the following are stochastic algorithms (i.e., algorithms which for the same input can produce different output)?	Genetic Algorithms	Particle Swarm Optimization	Ant Colony Optimization	All of the mentioned	option4
6	Swarm intelligence (SI) is	collective behavior of decentralized, self-organized systems, natural or artificial	fuzzy logic system	crisp logic concept	None of these	option1
6	Swarm intelligence (SI) introduced by	Gerardo Beni and Jing Wang	Gerardo Beni and James Gosling	George M and Jing Wang	None of these	option1
6	The application of swarm principles to robots is called	swarm robotics	swarm behaviour	robotics	None of these	option1
6	Methods of Swarm intelligence is	Particle swarm optimization	Ant colony optimization	Both	None of these	option3
6	PSO stands for	Particle Swarm Optimization	Particle Selection Optimization	Portion Swarm Optimization	Portion Selection Optimization	option1
6	ACO stands for	Analytical Colony Optimization	Ant Colony Optimization	Ant Coding optimization	None of these	option2
6	Each particle of swarm maintaines record of	pbest	gbest	Both pbest, gbest	None of these	option3
6	pbest is	personal best	personal based	proper based	proper best	option1
6	gbest is	global best	general best	global based	general based	option1
6	In PSO partical move towards global optimum step by step that is known as	progress	loops	iteration	None of these	option3
6	particle has	fitness value	velocity	pbest	All of the mentioned	option4
6	In each iteration every particle in swarm gets_____ chance to move towards global optimum	1	2	3	Many	option1
6	In each iteration every particle in swarm we update	velocity	gbest	Both velocity ,gbest	None of these	option3
6	Particles velocity is given by	Vi(t+1)=w*Vi - c1*rand*(pbest-xi)+ c2*rand*(gbest-xi)	Vi(t+1)=w*Vi +c1*rand*(pbest-xi)- c2*rand*(gbest-xi)	Vi(t+1)=w*Vi +c1*rand*(gbest-xi)+ c2*rand*(pbest-xi)	Vi(t+1)=w*Vi +c1*rand*(pbest-xi)+ c2*rand*(gbest-xi)	option4
6	Particle update rule is	Xi(t+1)=Xit+Vi(t+1)	Xi(t+1)=Xit-Vi(t+1)	Vi(t+1)=w*Vi +c1*rand*(pbest-xi)+ c2*rand*(gbest-xi)	Vi(t+1)=w*Vi +c1*rand*(pbest-xi)- c2*rand*(gbest-xi)	option1
6	In particle swarm optimization, c1,c2 are	Acceleration Coeficient	Cognitive Component	Social Component	Inertia term	option1
6	In Particles velocity, cognitive component is	c1*rand*(pbest-xi)+ c2*rand*(gbest-xi)	c1*rand*(pbest-xi)	c2*rand*(gbest-xi)	None of these	option2
6	In Particles velocity, social component is	c1*rand*(pbest-xi)+ c2*rand*(gbest-xi)	c1*rand*(pbest-xi)	c2*rand*(gbest-xi)	None of these	option3
6	In Particles velocity, inertia term is	c1*rand*(pbest-xi)+ c2*rand*(gbest-xi)	c1*rand*(pbest-xi)	c2*rand*(gbest-xi)	None of these	option4
6	In PSO important thing is	Communication	Learning	Both	None of these	option3

6	Premature convergence of PSO is	Once PSO traps in global optimum, it is dificult to jump out of global optimum	Once PSO traps in local optimum, it is dificult to jump out of local optimum	Once PSO traps in local optimum, it is dificult to jump out of global optimum	Once PSO traps in global optimum, it is dificult to jump out of local optimum	option2
6	PSO topology	Star	Ring	Adaptive random	All of the mentioned	option4
6	In binary PSO,solution in_____is binary string	Population	chromosome	swarm	velocity	option1
6	Chemical substance release by ants is	pheromone	perchloric	Both	None of these	option1
6	ACO is typically used to solve_____ based problem	searching	graph	database	None of these	option2
6	ACO inspired by	ant colony foraging	bird flocking	both	None of these	option1
6	PSO inspired by	ant colony foraging	bird flocking	both	None of these	option2
6	ACO is best at finding _____ solution	discreate	continuous	both	None of these	option1
6	PSO is best at finding _____ solution	discreate	continuous	both	None of these	option2
6	In ACO there exist two matrix	Cost matrix, Pheromone Matrix	Cost Matrix, Velocity Matrix	Velocity Matrix, Pheromone Matrix	Velocity Matrix, Pheromone Matrix	option1
6	Ants are _____ that move along between nodes in a graph.	Participants	Population	Agents	None of these	option3
6	ACO is _____ optimization	Heuristic	Metaheuristic	Probabilistic	None of these	option2
6	Ants uses _____ communication via pheromone trails	Direct	Stigmergic	eulogic	None of these	option2
6	Autocatalysis is	Positive feedback loop	Negative feedback loop	Condition occur at termination of algorithm	Allows ants to explore less promising areas	option1
6	ACO algorithms also called as	Autocatalytic negative feedback algorithm	Autocatalytic positive feedback algorithm	Autocatalytic forward feedback algorithm	Autocatalytic backward feedback algorithm	option2
6	Ant System first introduced by	James Kennedy	Russell E.	Marco Dorigo	L. A. Zadeh	option3
6	Application of Ant systems	Scheduling Problem	Assignment Problem	Set Problem	All of the mentioned	option4
6	_____avoids premature convergence in ACO	distributed computing	pheromone	Global pheromone update	Transition rule	option1
6	ACO performed poorly for TSP problems larger than ___ cities	60	65	70	75	option4
6	In ACO___ search is extreamly important to obtain good result	local	global	distributed	None of these	option1
6	Optimization in PSO is	Metaheuristic	Stochastic	Discreate	Continuous	option2
6	PSO	find shortest path	reach target with minimal duration	find local finest solution	find best among others	option2
6	Quadratic Assignment problem can be solved by	ES	GA	PSO	ACO	option4
6	Vehicle routing can be solved by	ES	GA	PSO	ACO	option4
6	Automatic programming uses	ES	GA	PSO	ACO	option2
6	Economic models uses	ES	GA	PSO	ACO	option2
6	Heating system planning problem uses	ES	GA	PSO	ACO	option3
6	Amount of pheromone deposited	1/length_of_tour, if path is not used	1/length_of_tour, if path is used	length_of_tour, if path is not used	length_of_tour, if path is used	option2
6	When all ants have completed a solution,the trails are updated with	$\tau xy=(1-p)*\tau xy-\sum\Delta\tau xy$	$\tau xy=(1-p)+\sum\Delta\tau xy$	$\tau xy=(1-p)*\tau xy+\sum\Delta\tau xy$	$\tau xy=(1-p)*\tau xy-\tau xy$	option3

SCOA Unit I MCQ

1. **Membership function defines the fuzziness in a fuzzy set irrespective of the elements in the set, which are discrete or continuous.**

   A.True

   B.False

2. **The membership functions are generally represented in**

   A.Tabular Form

   B.Graphical Form

   C.Mathematical Form

   D.Logical Form

3. **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

4. **Three main basic features involved in characterizing membership function are**

   A.Intution, Inference, Rank Ordering

   B.Fuzzy Algorithm, Neural network, Genetic Algorithm

C.Core, Support , Boundary

D.Weighted Average, center of Sums, Median

5. **The region of universe that is characterized by complete membership in the set is called**

   A.Core

   B.Support

   C.Boundary

   D.Fuzzy

6. **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

7. **In a Fuzzy set a prototypical element has a value**

   A.1

   B.0

   C.infinite

   D.Not defined

8. **A fuzzy set wherein no membership function has its value equal to 1 is called**

   A.normal fuzzy set

   B.Subnormal fuzzy set.

   C.convex fuzzy set

   D.concave fuzzy set

9. **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.convex fuzzy set

   B.concave fuzzy set

   C.Non concave Fuzzy set

   D.Non Convex Fuzzy set

10. **The membership values of the membership function are nor strictly monotonically increasing or decreasing or strictly monoronically increasing than decreasing.**

    A.Convex Fuzzy Set

    B.Non convex fuzzy set

    C.Normal Fuzzy set

    D.Sub normal fuzzy set

11. **The crossover points of a membership function are defined as the elements in the universe for which a particular fuzzy set has values equal to**

A. infinite

B. 1

C. 0

D. 0.5

12. Fuzzy Computing

A. doesnt deal with 2 valued logic

B. mimics human behaviour

C. deals with information which is vague, imprecise, uncertain, ambiguous, inexact, or probabilistic

D. All of the above

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

A. True

B. False

14. Artificial neural network used for

A. Pattern Recognition

B. Classification

C. Clustering

D. All of these

15. A Neural Network can answer

A.For Loop questions

B.what-if questions

C.IF-The-Else Analysis Questions

D.None of these

16. **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

17. **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 Learniing

18. **In artificial Neural Network interconnected processing elements are called**

    A.nodes or neurons

B.weights

C.axons

D.Soma

19. Each connection link in ANN is associated with _____ which has information about the input signal.

A.neurons

B.weights

C.bias

D.activation function

20. Neurons or artificial neurons have the capability to model networks of original neurons as found in brain

A.True

B.False

21. Internal state of neuron is called _____, is the function of the inputs the neurons receives

A.Weight

B.activation or activity level of neuron

C.Bias

D.None of these

22. Neuron can send _____ signal at a time.

A.multiple

B.one

C.none

D.any number of

23. Artificial intelligence is

A.It uses machine-learning techniques. Here program can learn From past experience and adapt themselves to new situations

B.Computational procedure that takes some value as input and produces some value as output.

C.Science of making machines performs tasks that would require intelligence when performed by humans

D.None of these

24. 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

25. 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

26. 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

27. 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

28. 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

29. 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

30. n(log n) is referred to

A.A measure of the desired maximal complexity of data mining algorithms

B.A database containing volatile data used for the daily operation of an organization

C.Relational database management system

D.None of these

31. 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

32. Prolog 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

33. 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. None of these

34. Quantitative attributes are

A. A reference to the speed of an algorithm, which is quadratically dependent on the size of

the data

B. Attributes of a database table that can take only numerical values

C. Tools designed to query a database

D. None of these

35. Subject orientation

A. The science of collecting, organizing, and applying numerical facts

B. Measure of the probability that a certain hypothesis is incorrect given certain observations.

C. One of the defining aspects of a data warehouse, which is specially built around all the existing applications of the operational data

D. None of these

36. Vector

A. It do not need the control of the human operator during their execution

B. An arrow in a multi-dimensional space. It is a quantity usually characterized by an ordered set of scalars

C. The validation of a theory on the basis of a finite number of examples

D. None of these

37. Transparency

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

38. 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

39. Who initiated the idea of Soft Computing

A. Charles Darwin

B. Lofti A Zadeh

C. Rechenberg

D. Mc_Culloch

40. Fuzzy Computing

A. mimics human behaviour

B. doesnt deal with 2 valued logic

C. deals with information which is vague, imprecise, uncertain, ambiguous, inexact, or probabilistic

D. All of the above

41. Neural Computing

A. mimics human brain

B. information processing paradigm

C. Both (a) and (b)

D. None of the above

42. Genetic Algorithm are a part of

A. Evolutionary Computing

B. inspired by Darwin's theory about evolution - "survival of the fittest"

C. are adaptive heuristic search algorithm based on the evolutionary ideas of natural selection and genetics

D. All of the above

43. What are the 2 types of learning

A. Improvised and unimprovised

B. supervised and unsupervised

C. Layered and unlayered

D. None of the above

44. Supervised Learning is

A. learning with the help of examples

B. learning without teacher

C. learning with the help of teacher

D. learning with computers as supervisor

45. Unsupervised learning is

A. learning without computers

B. problem based learning

C. learning from environment

D. learning from teachers

46. Conventional Artificial Intelligence is different from soft computing in the sense

A. Conventional Artificial Intelligence deal with prdicate logic where as 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. Both (a) and (b)

47. In supervised learning

A. classes are not predefined

B. classes are predefined

C. classes are not required

D. classification is not done

Question No	Question	Answer Key
1.	**Membership function defines the fuzziness in a fuzzy set irrespective of the elements in the set, which are discrete or continuous.** **A.**True **B.**False	A
2.	**The membership functions are generally represented in** **A.**Tabular Form **B.**Graphical Form **C.**Mathematical Form **D.**Logical Form	B
3.	**Membership function can be thought of as a technique to solve empirical problems on the basis of** **A.**knowledge **B.**examples **C.**learning	D

	D.experience	
4.	**Three main basic features involved in characterizing membership function are** **A.**Intution, Inference, Rank Ordering **B.**Fuzzy Algorithm, Neural network, Genetic Algorithm **C.**Core, Support , Boundary **D.**Weighted Average, center of Sums, Median	C
5.	**The region of universe that is characterized by complete membership in the set is called** **A.**Core **B.**Support **C.**Boundary **D.**Fuzzy	A
6.	**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

	B.normal fuzzy set **C.**convex fuzzy set **D.**concave fuzzy set	
7.	**In a Fuzzy set a prototypical element has a value** **A.**1 **B.**0 **C.**infinite **D.**Not defined	A
8.	**A fuzzy set wherein no membership function has its value equal to 1 is called** **A.**normal fuzzy set **B.**subnormal fuzzy set. **C.**convex fuzzy set **D.**concave fuzzy set	B
9.	**A fuzzy set has a membership function whose membership values**	A

	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.**convex fuzzy set **B.**concave fuzzy set **C.**Non concave Fuzzy set **D.**Non Convex Fuzzy set	
10.	**The membership values of the membership function are nor strictly monotonically increasing or decreasing or strictly monoronically increasing than decreasing.** **A.**Convex Fuzzy Set **B.**Non convex fuzzy set **C.**Normal Fuzzy set **D.**Sub normal fuzzy set	B
11.	**Fuzzy Computing** **A.**doesnt deal with 2 valued logic	D

	B. mimics human behaviour **C.** deals with information which is vague, imprecise, uncertain, ambiguous, inexact, or probabilistic **D.** All of the above	
12.	Defuzzification is done to obtain a) Crisp output b) The best rule to follow c) Precise fuzzy value d) None of the above	a
13.	"The train is running fast". Here 'fast' can be represented by a) Fuzzy Set b) Crisp Set c) Fuzzy and Crisp Set d) None of the mentioned	a
14.	Suppose, a fuzzy set Young is defined as follows: Young = (10, 0.5), (20, 0.8), (30, 0.8), (40, 0.5), (50, 0.3) Then the crisp value of Young using MoM method is a) 25 b) 20 c) 35 d) 50	a
15.	f the fuzzy set has two sub regions, then the centre of gravity of the sub region _____ can be used to calculate the defuzzified value. a) with the median of all the area	c

	b) with the mean of all the area c) with the largest area d) with the smallest area	
16.	Which of the following is not a centroid method? a) Centre of gravity method (CoG) b) Centre of sum method (CoS) c) Centre of area method (CoA) d) Centre of Mass (CoM)	d
17.	What are the following sequence of steps taken in designing a fuzzy logic machine? (a) Fuzzification->Rule evaluation->Defuzzification (b) Rule evaluation->Fuzzification->Defuzzification (c) Fuzzy Sets->Defuzzification->Rule evaluation (d) Defuzzification->Rule evaluation->Fuzzification	a
18.	If A is a fuzzy set, then (A λ)complement ≠ ———(Aλ)complement (a) except for value of λ=0.5 (b) except for value of λ=1 (c) except for value of λ=0 (d) for all values of λ	a
19.	The cardinality of the given set A = {1, 2, 3, 4, 5} a) 2 b) 5 c) 4 d) 1	B
20.	If x is A then y is B else y is c then the relation R is equivalent to a) (A × B) + (B × C) b) A × B) ∪ (A × C)	b

	c) $(A \times B) \rightarrow (B \times C)$ d) $(A \times C) \cup (B \times C)$	
21.	What are the applications of Fuzzy Inference Systems? a) Wireless services, heat control and printers b) Restrict power usage, telephone lines and sort data c) Simulink, boiler and CD recording d) Automatic control, decision analysis and data classification	d
22.	Fuzzy logic is a form of : a) Two valued logic b) Crisp set logic c) Many valued logic d) Binary set logic	c
23.	The main objective of fuzzy AHP is: a) To increase the ambiguity of human judgement b) Eliminate the ambiguous and vagueness of the human judgement c) Control human biasness d) B and C	d
24.	In triangular fuzzy number (l, m, u), what does ‘m’ represents: a) Smallest likely value b) Most probable value c) Largest possible value d) None of the above	C
25.	Which type of normalization method is used to eliminate the units of criteria in case of VIKOR analysis? a) Vector normalization b) Linear normalization c) Both A and B	b

	d) None of the above	
26.	Fuzzy logic is a form of a) Two-valued logic b) Crisp set logic c) Many-valued logic d) Binary set logic	Answer: c Explanation: With fuzzy logic set membership is defined by certain value. Hence it could have many values to be in the set.
27.	Traditional set theory is also known as Crisp Set theory. a) True b) False	Answer: a Explanation: Traditional set theory set membership is fixed or exact either the member is in the set or not. There is only two crisp values true or false. In case of fuzzy logic there are many values. With weight say x the member is in the set. 3. The truth values of traditional set theory is _____ and that of fuzzy set is _____
28.	The truth values of traditional set theory is _____ and that of fuzzy set is _____	Answer: a Explanation: Refer the

	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	definition of Fuzzy set and Crisp set.
29.	How many types of random variables are available? a) 1 b) 2 c) 3 d) 4	Answer: c Explanation: The three types of random variables are Boolean, discrete and continuous.
30.	The room temperature is hot. Here the hot (use of linguistic variable is used) can be represented by _____ . a) Fuzzy Set b) Crisp Set	Answer: a Explanation: Fuzzy logic deals with linguistic variables.
31.	The values of the set membership is represented by a) Discrete Set b) Degree of truth c) Probabilities d) Both b & c	Answer: b Explanation: Both Probabilities and degree of truth ranges between 0 – 1.
32.	What is meant by probability density function?	d

	a) Probability distributions b) Continuous variable c) Discrete variable d) Probability distributions for Continuous variables	
33.	Which of the following is used for probability theory sentences? a) Conditional logic b) Logic c) Extension of propositional logic d) None of the mentioned	Answer: c Explanation: The version of probability theory we present uses an extension of propositional logic for its sentences.
34.	Fuzzy Set theory defines fuzzy operators. Choose the fuzzy operators from the following. a) AND b) OR c) NOT d) EX-OR	Answer: a, b, c Explanation: The AND, OR, and NOT operators of Boolean logic exist in fuzzy logic, usually defined as the minimum, maximum, and complement;
35.	Fuzzy logic is usually represented as a) IF-THEN-ELSE rules b) IF-THEN rules c) Both a & b d) None of the mentioned	Answer: b Explanation: Fuzzy set theory defines fuzzy operators on fuzzy sets. The problem in applying this is that the appropriate fuzzy

		operator may not be known. For this reason, fuzzy logic usually uses IF-THEN rules, or constructs that are equivalent, such as fuzzy associative matrices. Rules are usually expressed in the form: IF variable IS property THEN action
36.	_____ is/are the way/s to represent uncertainty. a) Fuzzy Logic b) Probability c) Entropy d) All of the mentioned	Answer: d Explanation: Entropy is amount of uncertainty involved in data. Represented by H(data).
37.	_____ are algorithms that learn from their more complex environments (hence eco) to generalize, approximate and simplify solution logic. a) Fuzzy Relational DB b) Ecorithms c) Fuzzy Set d) None of the mentioned	Answer: c Explanation: Local structure is usually associated with linear rather than exponential growth in complexity

This sheet is for 1 Mark questions

S.r No	Question	Image	a	b	c	d	Correct Answer
e.g	Write down question	img.jpg	Option a	Option b	Option c	Option d	a/b/c/d
1	When we say that the boundary is crisp		Distinguish two regio	Cannot Distinguis	Collection of ordere	None of these	a
2	In computing the output is called as		Consequent	Outfeed	Anticedents	Premise	a
3	Fuzzy logic is a form of		two valued logic	crisp set logic	many value logic	binary set logic	c
4	Control actions while computing should be		Ambiguous	Unambioguos	Inaccurate	None of these	b
5	Core of soft computing is		Fuzzy computing,neu	Fuzzy network an	Neural Science	Genetic Science	a
6	Hard computing perfforms what type of computation		Sequential	Parallel	approxiamate	both a and b	a
7	Who iniated idea of sofft computing		charles darwin	rich and berg	mc culloch	lofti a zadeh	d
8	Soft computing is based on		fuzzy logic	neural science	crisp software	binary logic	a
9	In soft computing the problems,algorithms can be		non adaptive	adaptive	static	all of the above	b
10	Fuzzy Computing		mimics human behav	deals with inpreci	exact information	both a and b	d
11	Hard computing is also called as		evolutionary comput	conventional com	non conventional co	probablistic computing	b
12	Which computing produces accurate results		soft computing	hard computing	both a and b	none of the above	b
13	Neural network computing		mimics human behav	information proce	both a and b	none of the above	c
14	Artificial neural network is used for		pattern recognition	classification	clustering	all of the above	d
15	How does blind search differ from optimization		Blind search represer	Blind search usua	Blind search cannot	none of these	B
16	In modeling,an optimal solution is understood to be		a solution that can or	a solution found i	a solution that is the	a solution that require	C
17	When is a complete enumeration of solution used?		When a solution that	When there is enc	When the modeler	When there are an infi	B
18	All of the follwing are true about heuristics EXCEPT		heuristics are used w	heuristics are use	heuristics are used	heuristics are rules of g	C
19	Which approach is most suited to structured problem with little uncertainity		Simuation	human intuition	Optimization	genetic algorithm	C
20	Genetic algorithm belong to the family of method in the		artifical intelligence a	optimization area	complete enumerat	Non computer based is	A
21	What does the 0 membership value means in the set		the object is fully insi	the object is not i	the object is partiall	none of the above	b
22	The union of two fuzzy sets is the_____of each element from two sets		maximum	minimum	equal to	not equal to	a
23	The process of fuzzy interference system involes		membership functior	fuzzy logic operat	if-then rules	all the above	d
24	What does a fuzzifier do		coverts crisp input to	coverts crisp oupu	coverts fuzzy input t	coverts fuzzy output to	a
25	Which of the folloowing is not defuzzifier method		centroid of area	mean of maximun	largest of maximum	hypotenuse of triangle	d
26	Which of the following is/are type of fuzzy interference method		mamdani	sugeno	rivest	only a and b	d
27	A Fuzzy rule can have		multiple part of ante	only single part of	multiple part of ant	only single part of ante	c
28	The α cut of a fuzzy set A is a crisp set defined by :-		$\{x\|_U a(x)>\alpha\}$	$\{x\|_U a(x)>=\alpha\}$	$\{x\|_U a(x)<\alpha\}$	$\{x\|_U a(x)<=\alpha\}$	b
29	The bandwidth(A) in a fuzzy set is given by		(A)=|x1*x2|	(A)=|x1+x2|	(A)=|x1-x2|	(A)=|x1/x2|	c
30	The intersection of two fuzzy sets is the_____of each element from two sets		maximum	minimum	equal to	not equal to	b
31	A={1/a,0.3/b,0.2/c,0.8/d,0/e} B={0.6/a,0.9/b,0.1/c,0.3/d,0.2/e} What will be the con		{0/a,0.7/b,0.8/c,0.2/c	{0/a,0.9/b,0.7/c,0	{0.8/a,0.7/b,0.8/c,0	{0/a,0.7/b,0.8/c,0.9/d,	a
32	A={1/a,0.3/b,0.2/c,0.8/d,0/e} B={0.6/a,0.9/b,0.1/c,0.3/d,0.2/e} What will be the uni		{1/a,0.9/b,0.1/c,0.5/c	{0.8/a,0.9/b,0.2/c	{1/a,0.9/b,0.2/c,0.8,	{1/a,0.9/b,0.2/c,0.8/d,	c
33	A={1/a,0.3/b,0.2/c,0.8/d,0/e} B={0.6/a,0.9/b,0.1/c,0.3/d,0.2/e} What will be the inte		{0.6/a,0.3/b,0.1/c,0.3	{0.6/a,0.8/b,0.1/c	{0.6/a,0.3/b,0.1/c,0	{0.6/a,0.3/b,0.2/c,0.3/	a
34	What denotes the support(A) in a fuzzy set?		$\{x\|_U a(x)>0\}$	$\{x\|_U a(x)<0\}$	$\{x\|_U a(x)<=0\}$	$\{x\|_U a(x)<0.5\}$	a
35	What denotes the core(A) in a fuzzy set?		$\{x\|_U a(x)>0\}$	$\{x\|_U a(x)=1\}$	$\{x\|_U a(x)>=0.5\}$	$\{x\|_U a(x)>0.8\}$	b
36	Fuzzy logic deals with which of the following		fuzzy set	fuzzy algebra	both a and b	none of the above	c
37	which of the following is a sequence of steps taken in designning a fuzy logic machine		fuzzification->Rule Ev	deffuzification->ru	rule evaluation->fuz	rule evaluation->defuz	a
38	can a crisp set be a fuzzy set?		no	yes	depends	all of the above	b
39	Genetic algorithm belong to the family of method in the		artifical intelligence a	optimization area	complete enumerat	Non computer based is	A
40	All of the follwing are suitable problem for genetic algorithm EXCEPT		pattern recognizatior	simulation of biol	simple optimization	dynamic process contr	C
41	Tabu search is an example of ?		heuristic	Evolutionary algor	ACO	PSO	a

42	Genetic algorithms are example of		heuristic	Evolutionary algor	ACO	PSO	b
43	mutation is applied on __candidates.		one	two	more than two	noneof these	a
44	recombination is applied on __candidates.		one	two	more than two	noneof these	b
45	LCS belongs to ___ based methods?		rule based learning	genetic learning	both a and b	noneof these	a
46	Survival is ___ approach.		deteministic	non deterministic	semi deterministic	noneof these	a
47	Evolutionary algorithms are a ___ based approach		heuristic	metaheuristic	both a and b	noneof these	a
48	Tabu search is an example of ?		heuristic	Evolutionary algor	ACO	PSO	a
49	Genetic algorithms are example of		heuristic	Evolutionary algor	ACO	PSO	b
50	Idea of genetic algorithm came from		machines	Birds	ACO	genetics	d
51	Chromosomes are actually ?		line representation	String representat	Circular representat	all of these	b
52	what are the parameters that affect GA are/is		selection process	initial population	both a and b	none of these	c
53	Evolutionary programming was developef by		Fredrik	Fodgel	Frank	Flin	b
54	Evolution Strategies is developed with		selection	mutation	a population of size	all of these	d
55	Evolution Strategies typically uses		real-valued vector re	vector representa	time based represer	none of these	a
56	in ES survival is		indeterministic	deterministic	both a and b	none of these	d
57	What is the first step in Evolutionary algorithm		Termination	selection	Recombination	Initialization	d
58	Elements of ES are/is		Parent population siz	Survival populatio	both a and b	none of these	c
59	What are different types of crossover		discrete and interme	discrete and conti	continuous and inte	none of these	a
60	Determining the duration of the simulation occurs before the model is validated and tes		TRUE	FALSE			B
61	_____cannot easily be transferred from one problem domain to another		optimal solution	analytical solution	simulation solutuon	none of these	C
62	Discrete events and agent-based models are usuallly used for_____.		middle or low level o	high level of abstr	very high level of ab	none of these	A
63	_____doesnot usually allow decision makers to see how a solution to a _____en		Simulation ,Complex	Simulation,Easy p	Genetics,Complex p	Genetics,Easy problem	A
64	EC stands for?		Evolutionary Comput	Evolutionary com	Electronic computat	noneof these	a
65	GA stands for		genetic algorithm	genetic asssuranc	genese alforithm	noneof these	a
66	LCS stands for		learning classes syste	learning classifier	learned class systen	noneof these	b
67	GBML stands for		Genese based Machi	Genes based mob	Genetic bsed machi	noneof these	c
68	EV is dominantly used for solving ___.		optimization problem	NP problem	simple problems	noneof these	a
69	EV is considered as?		adaptive	complex	both a and b	noneof these	c
70	Idea of genetic algorithm came from		machines	Birds	ACO	genetics	d
71	Chromosomes are actually ?		line representation	String representat	Circular representat	all of these	b
72	Parameters that affect GA		initial population	selection process	fitness function	all of these	d
73	Fitness function should be		maximum	minimum	intermediate	noneof these	b
74	Evolutionary algorithms are a ___ based approach		heuristic	metaheuristic	both a and b	noneof these	a
75	Tabu search is an example of ?		heuristic	Evolutionary algor	ACO	PSO	a
76	Genetic algorithms are example of		heuristic	Evolutionary algor	ACO	PSO	b
77	mutation is applied on __candidates.		one	two	more than two	noneof these	a
78	recombination is applied on __candidates.		one	two	more than two	noneof these	b
79	Applying recombination and mutation leads to a set of new candidates, called as ?		sub parents	parents	offsprings	grand child	c
80	____ decides who becomes parents and how many children the parents have.		parent combination	Parent selection	Parent mutation	Parent replace	b
81	Basic elements of EA are ?		Parent Selection methods	Survival Selection methods	both a and b	noneof these	c
82	LCS belongs to ___ based methods?		rule based learning	genetic learning	both a and b	noneof these	a

83	Survival is ___ approach.		deteministic	non deterministic	semi deterministic	noneof these	a
84	There are also other operators, more linguistic in nature, called _____ that can be applied to fuzzy set theory.		Hedges	Lingual Variable	Fuzz Variable	None of the mentioned	a
85	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		convex fuzzy set	concave fuzzy set	Non concave Fuzzy set	Non Convex Fuzzy set	a
86	Which of the following neural networks uses supervised learning? (A) Multilayer perceptron (B) Self organizing feature map (C) Hopfield network		(A) only	(B) only	(A) and (B) only	(A) and (C) only	a
87	What is the feature of ANNs due to which they can deal with noisy, fuzzy, inconsistent data?		associative nature of networks	distributive nature of networks	both associative & distributive	none of the mentioned	c
88	Feature of ANN in which ANN creates its own organization or representation of information it receives during learning time is		Adaptive Learning	Self Organization	What-If Analysis	Supervised Learning	b
89	Any soft-computing methodology is characterised by		Precise solution	control actions are unambiguous and accurate	control actions is formally defined	algorithm which can easily adapt with the change of dynamic environment	d
90	For what purpose Feedback neural networks are primarily used?		classification	feature mapping	pattern mapping	none of the mentioned	d
91	Operations in the neural networks can perform what kind of operations?		serial	parallel	serial or parallel	none of the mentioned	c
92	What is ART in neural networks?		automatic resonance theory	artificial resonance theory	adaptive resonance theory	none of the mentioned	c
93	The values of the set membership is represented by _____		Discrete Set	Degree of truth	Probabilities	Both Degree of truth & Probabilities	b
94	Given U = {1,2,3,4,5,6,7} A = {(3, 0.7), (5, 1), (6, 0.8)} then A will be: (where ~ → complement)		{(4, 0.7), (2,1), (1,0.8)}	{(4, 0.3.): (5, 0), (6	{(I, 1), (2, 1), (3, 0.3)	{(3, 0.3), (6.0.2)}	c
95	What are the following sequence of steps taken in designing a fuzzy logic machine ?		Fuzzification → Rule e	Fuzzification → De	Defuzzification → Rule	Rule evaluation → Defuzzification	Fuzzification → Fuzzification

96	If A and B are two fuzzy sets with membership functions μA(x) = {0.6, 0.5, 0.1, 0.7, 0.8} μB(x) = {0.9, 0.2, 0.6, 0.8, 0.5} Then the value of μ(A∪B)'(x) will be		{0.9, 0.5, 0.6, 0.8, 0.8	{0.6, 0.2, 0.1, 0.7,	{0.1, 0.5, 0.4, 0.2, 0.	{0.1, 0.5, 0.4, 0.2, 0.3}	c
97	Compute the value of adding the following two fuzzy integers: A = {(0.3,1), (0.6,2), (1,3), (0.7,4), (0.2,5)} B = {(0.5,11), (1,12), (0.5,13)} Where fuzzy addition is defined as μA+B(z) = maxx+y=z (min(μA(x), μB(x))) Then, f(A+B) is equal to		{(0.5,12), (0.6,13), (1,	{(0.5,12), (0.6,13),	{(0.3,12), (0.5,13), (	{(0.3,12), (0.5,13), (0.6	d
98	A U (B U C) =		(A ∩ B) ∩ (A ∩ C)	(A ∪ B) ∪ C	(A ∪ B) ∩ (A ∪ C)	B ∩ A ∪ C	b
99	Consider a fuzzy set A defined on the interval X = [0, 10] of integers by the membership Junction μA(x) = x / (x+2) Then the α cut corresponding to α = 0.5 will be		{0, 1, 2, 3, 4, 5, 6, 7, 8	{1, 2, 3, 4, 5, 6, 7,	{2, 3, 4, 5, 6, 7, 8, 9,	None of the above	c
100	The fuzzy proposition "IF X is E then Y is F" is a		conditional unqualifie	unconditional unc	conditional qualifiec	unconditional qualifiec	a
101	Choose the correct statement 1. A fuzzy set is a crisp set but the reverse is not true 2. If A,B and C are three fuzzy sets defined over the same universe of discourse such that A ≤ B and B ≤ C and A ≤ C 3. Membership function defines the fuzziness in a fuzzy set irrespecive of the elements in the set, which are discrete or continuous		1 only	2 and 3	1,2 and 3	None of these	b
102	An equivalence between Fuzzy vs Probability to that of Prediction vs Forecasting is		Fuzzy ≈ Prediction	Fuzzy ≈ Forecastir	Probability ≈ Foreca	None of these	b
103	Both fuzzy logic and artificial neural network are soft computing techniques because		Both gives precise an	ANN gives accurat	In each, no precise r	Fuzzy gives exact resul	C
104	A fuzzy set whose membership function has at least one element x in the universe whose membership value is unity is called		sub normal fuzzy sets	normal fuzzy set	convex fuzzy set	concave fuzzy set	b
105	----- defines logic funtion of two prepositions		prepositions	Lingustic hedges	truth tables	inference rules	c
106	In fuzzy propositions, ---- gives an approximate idea of the number of elements of a subset fulfilling certain conditions		Fuzzy predicate and predicate modifiers	Fuzzy quantifiers	Fuzzy qualifiers	All of the above	b
107	Multiple conjuctives antecedents is method of ----- in FLC		decomposition rule	formation of rule	truth tables	All of the above	a
108	Multiple disjuctives antecedents is method of ----- in FLC		decomposition rule	formation of rule	truth tables	All of the above	a

109	IF x is A and y is B then z=c (c is constant), is		rule in zero order FIS	rule in first order FIS	both a and b	neither a nor b	a
110	A fuzzy set wherein no membership function has its value equal to 1 is called		normal fuzzy set	subnormal fuzzy set.	convex fuzzy set	concave fuzzy set	b
111	Mamdani's Fuzzy Inference Method Was Designed To Attempt What?		Control any two combinations of any two products by synthesising a set of linguistic control rules obtained from experienced human operations.	Control any two combinations of any two products by synthesising a set of linguistic control rules obtained from experienced human operations.	Control a steam engine and a boiler combination by synthesising a set of linguistic control rules obtained from experienced human operations.	Control a air craft and fuel level combination by synthesising a set of linguistic control rules obtained from experienced human operations.	c
112	What Are The Two Types Of Fuzzy Inference Systems?		Model-Type and System-Type	Momfred-type and Semigi-type	Mamdani-type and Sugeno-type	Mihni-type and Sujgani-type	c
113	What Is Another Name For Fuzzy Inference Systems?		Fuzzy Expert system	Fuzzy Modelling	Fuzzy Logic Controller	All of the above	d
114	In Evolutionary programming, survival selection is		Probabilistic selection (μ+μ) selection	(μ, λ)- selection based on the children only (μ+λ)- selection based on both the set of parent and children	Children replace the parent	All the mentioned	a
115	In Evolutionary strategy, survival selection is		Probabilistic selection (μ+μ) selection	(μ, λ)- selection based on the children only (μ+λ)- selection based on both the set of parent and children	Children replace the parent	All the mentioned	b

116	In Evolutionary programming, recombination is		doesnot use recombination to produce offspring. It only uses mutation	uses recombination such as cross over to produce offspring	uses various recombination operators	none of the mentioned	a
117	In Evolutionary strategy, recombination is		doesnot use recombination to produce offspring. It only uses mutation	uses recombination such as cross over to produce offspring	uses various recombination operators	none of the mentioned	b
118	Step size in non-adaptive EP :		deviation in step sizes remain static	deviation in step sizes change over time using some deterministic function	deviation in step size change dynamically	size=1	a
119	Step size in dynamic EP :		deviation in step sizes remain static	deviation in step sizes change over time using some deterministic function	deviation in step size change dynamically	size=1	b
120	Step size in self-adaptive EP :		deviation in step sizes remain static	deviation in step sizes change over time using some deterministic function	deviation in step size change dynamically	size=1	c
121	What are normally the two best measurement units for an evolutionary algorithm? 1. Number of evaluations 2. Elapsed time 3. CPU Time 4. Number of generations		1 and 2	2 and 3	3 and 4	1 and 4	d
122	Evolutionary Strategies (ES)		(μ,λ): Select survivors among parents and offspring	(μ+λ): Select survivors among parents and offspring	(μ-λ): Select survivors among offspring only	(μ:λ): Select survivors among offspring only	b

123	In Evolutionary programming,		Individuals are represented by real-valued vector	Individual solution is represented as a Finite State Machine	Individuals are represented as binary string	none of the mentioned	b
124	In Evolutionary Strategy,		Individuals are represented by real-valued vector	Individual solution is represented as a Finite State Machine	Individuals are represented as binary string	none of the mentioned	a
125	(1+1) ES		offspring becomes parent if offspring's fitness is as good as parent of next generation	offspring become parent by default	offspring never becomes parent	none of the mentioned	a
126	(1+λ) ES		λ mutants can be generated from one parent	one mutant is generated	2λ mutants can be generated	no mutants are generated	a
127	Termination condition for EA		mazimally allowed CPU time is elapsed	total number of fitness evaluations reaches a given limit	population diveristy drops under a given threshold	All the mentioned	d
128	Which of the following operator is simplest selection operator?		Random selection	Proportional selection	tournament selection	none	a
129	Which crossover operators are used in evolutionary programming?		Single point crossover	two point crossover	Uniform crossover	evolutionary programming doesnot use crossover operators	d
130	(1+1) ES		Operates on population size of two	operates on populantion size of one	operates on populantion size of zero	operates on populantion size of λ	a
131	Which of these emphasize of development of behavioral models?		Evolutionary programming	Genetic programming	Genetic algorithm	All the mentioned	a
132	EP applies which evolutionary operators?		variation through application of mutation operators	selection	both a and b	none of the mentioned	c
133	Which selection strategy works with negative fitness value?		Roulette wheel selection	Stochastic universal sampling	tournament selection	Rank selection	d

Unit II --SCOA MCQ on Fuzzy Logic

1. What is Fuzzy Logic?

A. a method of reasoning that resembles human reasoning
B. a method of question that resembles human answer
C. a method of giving answer that resembles human answer.
D. None of the Above

View Answer

Ans : A

Explanation: Fuzzy Logic (FL) is a method of reasoning that resembles human reasoning.

2. How many output Fuzzy Logic produce?

A. 2
B. 3
C. 4
D. 5

View Answer

Ans : A

Explanation: The conventional logic block that a computer can understand takes precise input and produces a definite output as TRUE or FALSE, which is equivalent to human's YES or NO.

3. Fuzzy Logic can be implemented in?

A. Hardware
B. software
C. Both A and B
D. None of the Above

View Answer

Ans : C

Explanation: It can be implemented in hardware, software, or a combination of both.

4. 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

View Answer

Ans : A

Explanation: Refer the definition of Fuzzy set and Crisp set.

5. How many main parts are there in Fuzzy Logic Systems Architecture?

A. 3
B. 4
C. 5
D. 6

View Answer

Ans : B

Explanation: It has four main parts.

6. Each element of X is mapped to a value between 0 and 1. It is called ____.

A. membership value
B. degree of membership
C. membership value
D. Both A and B

View Answer

Ans : D

Explanation: each element of X is mapped to a value between 0 and 1. It is called membership value or degree of membership.

7. How many level of fuzzifier is there?

A. 4
B. 5
C. 6
D. 7

View Answer

Ans : B

Explanation: There is 5 level to fuzzifier

8. Fuzzy Set theory defines fuzzy operators. Choose the fuzzy operators from the following.

A. AND
B. OR
C. NOT
D. All of the above

View Answer

Ans : D

Explanation: The AND, OR, and NOT operators of Boolean logic exist in fuzzy logic, usually defined as the minimum, maximum, and complement;

9. 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. Both A and B
D. None of the Above

View Answer

Ans : A

Explanation: Fuzzy logic deals with linguistic variables.

10. What action to take when IF (temperature=Warm) AND (target=Warm) THEN?

A. Heat
B. No_Change
C. Cool
D. None of the Above

View Answer

Ans : B

Explanation: IF (temperature=Warm) AND (target=Warm) THEN No_change

11. What is the form of Fuzzy logic?

A. Two-valued logic
B. Crisp set logic
C. Many-valued logic
D. Binary set logic

View Answer

Ans : C

Explanation: With fuzzy logic set membership is defined by certain value. Hence it could have many values to be in the set.

12. Who was the inventor of Fuzzy Logic?

A. doug cutting
B. John McCarthy
C. Lotfi Zadeh
D. John cutting

View Answer

Ans : C

Explanation: The inventor of fuzzy logic, Lotfi Zadeh

13. Traditional set theory is also known as Crisp Set theory.

A. TRUE
B. FALSE
C. Traditional set theory is not there.
D. None of the Above

View Answer

Ans : A

Explanation: Traditional set theory set membership is fixed or exact either the member is in the set or not. There is only two crisp values true or false.

14. Fuzzy logic is useful for both commercial and practical purposes.

A. True, False
B. True, True
C. False, False
D. False, True

View Answer

Ans : B

Explanation: Fuzzy logic is useful for commercial and practical purposes.

15. Which of the following is not a part of fuzzy logic Systems Architecture?

A. Fuzzification Module
B. Knowledge Base
C. Defuzzification Module
D. Interference base

View Answer

Ans : D

Explanation: Interference base is not a part of fuzzy logic Systems Architecture.

16. In Membership function graph x-axis represent?

A. universe of discourse.
B. degrees of membership in the [0, 1] interval
C. degrees of discourse
D. Universe of membership

View Answer

Ans : A

Explanation: x axis represents the universe of discourse.

17. 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 the Above

View Answer

Ans : C

Explanation: Fuzzy logic is usually represented as Both IF-THEN-ELSE rules & IF-THEN rules

18. The values of the set membership is represented by _____

A. Discrete Set
B. Degree of truth
C. Probabilities
D. Both Degree of truth & Probabilities

View Answer

Ans : D

Explanation: Both Probabilities and degree of truth ranges between 0 to 1.

19. What action to take when IF temperature=(Hot OR Very_Hot) AND target=Warm THEN?

A. Heat
B. No_Change
C. Cool
D. None of the Above

View Answer

Ans : C

Explanation: IF temperature=(Hot OR Very_Hot) AND target=Warm THEN Cool

20. Which of the following is not Application Areas of Fuzzy Logic?

A. Automotive Systems
B. Domestic Goods
C. Domestic Control
D. Environment Control

View Answer

Ans : C

Explanation: Domestic Controlis not Application Areas of Fuzzy Logic

Membership Functions

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

A.True

B.False

22. The membership functions are generally represented in

A.Tabular Form

B.Graphical Form

C.Mathematical Form

D.Logical Form

23. Membership function can be thought of as a technique to solve empirical problems on the basis of

A. Knowledge

B. Example

c. Learning

D. Experince

24. Three main basic features involved in characterizing membership function are

A.Intution, Inference, Rank Ordering

B.Fuzzy Algorithm, Neural network, Genetic Algorithm

C.Core, Support , Boundary

D.Weighted Average, center of Sums, Median

25. The region of universe that is characterized by complete membership in the set called

A.Core

B.Support

C.Boundary

D.Fuzzy

26. 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

27. In a Fuzzy set a prototypical element has a value

A.1

B.0

C.infinite

D.Not defined

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

A.normal fuzzy set

B.Subnormal 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.convex fuzzy set

B.concave fuzzy set

C.Non concave Fuzzy set

D.Non Convex Fuzzy set

30 .The membership values of the membership function are nor strictly monotonically increasing or decreasing or strictly monoronically increasing than decreasing.

A.Convex Fuzzy Set

B.Non convex fuzzy set

C.Normal Fuzzy set

D.Sub normal fuzzy set

31. The crossover points of a membership function are defined as the elements in the universe for which a particular fuzzy set has values equal to

A.infinite

B.1

C.0

D.0.5

32. Fuzzy Computing

A.doesnt deal with 2 valued logic

B.mimics human behaviour

C.deals with information which is vague, imprecise, uncertain, ambiguous, inexact, or probabilistic

D.All of the above

Unit IV

1. Artificial intelligence is

A. It uses machine-learning techniques. Here program can learn From past experience and adapt themselves to new situations

B. Computational procedure that takes some value as input and produces some value as output.

C. **Science of making machines performs tasks that would require intelligence when performed by humans**

D. None of these

2. 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

3. 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

4. **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

5. **Genetic Algorithm are a part of**

A. Evolutionary Computing

B. inspired by Darwin's theory about evolution - "survival of the fittest"

C. are adaptive heuristic search algorithm based on the evolutionary ideas of natural selection and genetics

D **All of the above**

.

6. What are the 2 types of learning

A. Improvised and unimprovised

B. **supervised and unsupervised**

C. Layered and unlayered

D. None of the above

7. **Supervised Learning is**

A. learning with the help of examples

B. learning without teacher

C. **learning with the help of teacher**

D. learning with computers as supervisor

8. Unsupervised learning is

A. learning without computers

B. problem based learning

C.

D. learning from teachers

9. Conventional Artificial Intelligence is different from soft computing in the sense

A. Conventional Artificial Intelligence deal with prdicate logic where as 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. **Both (a) and (b)**

D. None of the above

10. **In supervised learning**

A. classes are not predefined

B. **classes are predefined**

C. classes are not required

D. classification is not done

11. **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. None of these

12. **Quantitative attributes are**

A. A reference to the speed of an algorithm, which is quadratically dependent on the size of the data

B. **Attributes of a database table that can take only numerical values**

C. Tools designed to query a database

D. None of these

13: Subject orientation

A. The science of collecting, organizing, and applying numerical facts

B. Measure of the probability that a certain hypothesis is incorrect given certain observations.

C. **One of the defining aspects of a data warehouse, which is specially built around all the existing applications of the operational data**

D. None of these

14:

Vector

A. It do not need the control of the human operator during their execution

B. **An arrow in a multi-dimensional space. It is a quantity usually characterized by an ordered set of scalars**

C. The validation of a theory on the basis of a finite number of examples

D. None of these

15. **Transparency**

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

16. 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

17. Who initiated the idea of Soft Computing

A.Charles Darwin

B.Lofti A Zadeh

C.Rechenberg

D.Mc_Culloch

18. Fuzzy Computing

A.mimics human behaviour

B.doesnt deal with 2 valued logic

C.deals with information which is vague, imprecise, uncertain, ambiguous, inexact, or probabilistic

D.All of the above

19. **Neural Computing**

A.mimics human brain

B.information processing paradigm

C.Both (a) and (b)

D.None of the above

20. **Genetic Algorithm are a part of**

A.Evolutionary Computing

B.inspired by Darwin's theory about evolution - "survival of the fittest"

C.are adaptive heuristic search algorithm based on the evolutionary ideas of natural selection and genetics

D.All of the above

21. **What are the 2 types of learning**

A.Improvised and unimprovised

B.supervised and unsupervised

C.Layered and unlayered

D.None of the above

22. **Supervised Learning is**

A.learning with the help of examples

B.learning without teacher

C.learning with the help of teacher

D.learning with computers as supervisor

23. **Unsupervised learning is**

A. learning without computers

B. problem based learning

C. **learning from environment**

D. learning from teachers

24. Conventional Artificial Intelligence is different from soft computing in the sense

A. Conventional Artificial Intelligence deal with prdicate logic where as 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. **Both (a) and (b)**

D. None of the above

25. In supervised learning

A. classes are not predefined

B. **classes are predefined**

C. classes are not required

D. classification is not done

26. **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

27. **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

28. n(log n) is referred to

A. **A measure of the desired maximal complexity of data mining algorithms**

B. A database containing volatile data used for the daily operation of an organization

C. Relational database management system

D. None of these

29. 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**

30. Prolog 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

31.

Artificial Intelligence Questions and Answers – Fuzzy Logic – 1

This set of Artificial Intelligence MCQs focuses on “Fuzzy Logic – 1”.

1. Fuzzy logic is a form of
a) Two-valued logic
b) Crisp set logic
c) Many-valued logic
d) Binary set logic
View Answer

Answer: c
Explanation: With fuzzy logic set membership is defined by certain value. Hence it could have many values to be in the set.

2. Traditional set theory is also known as Crisp Set theory.
a) True
b) False
View Answer

Answer: a
Explanation: Traditional set theory set membership is fixed or exact either the member is in the set or not. There is only two crisp values true or false. In case of fuzzy logic there are many values. With weight say x the member is in the set

3. 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
View Answer

Answer: a
Explanation: Refer the definition of Fuzzy set and Crisp set.

4. Fuzzy logic is extension of Crisp set with an extension of handling the concept of Partial Truth.
a) True
b) False
View Answer

Answer: a
Explanation: None.

5. How many types of random variables are available?
a) 1
b) 2
c) 3
d) 4
View Answer
Answer: c
Explanation: The three types of random variables are Boolean, discrete and continuous.

6. The room temperature is hot. Here the hot (use of linguistic variable is used) can be represented by _____ .
a) Fuzzy Set
b) Crisp Set
View Answer

Answer: a
Explanation: Fuzzy logic deals with linguistic variables.

7. The values of the set membership is represented by
a) Discrete Set
b) Degree of truth
c) Probabilities
d) Both b & c
View Answer

Answer: b
Explanation: Both Probabilities and degree of truth ranges between 0 – 1.

8. What is meant by probability density function?
a) Probability distributions
b) Continuous variable
c) Discrete variable
d) Probability distributions for Continuous variables
View Answer

Answer: d
Explanation: None.

9. Japanese were the first to utilize fuzzy logic practically on high-speed trains in Sendai.
a) True
b) False
View Answer
Answer: a
Explanation: None.

10. Which of the following is used for probability theory sentences?
a) Conditional logic

b) Logic
c) Extension of propositional logic
d) None of the mentioned
View Answer

Answer: c
Explanation: The version of probability theory we present uses an extension of propositional logic for its sentences.

Artificial Intelligence Questions and Answers – Fuzzy Logic – 2

This set of Artificial Intelligence MCQs focuses on "Fuzzy Logic – 2".

1. Fuzzy Set theory defines fuzzy operators. Choose the fuzzy operators from the following.
a) AND
b) OR
c) NOT
d) EX-OR
View Answer

Answer: a, b, c
Explanation: The AND, OR, and NOT operators of Boolean logic exist in fuzzy logic, usually defined as the minimum, maximum, and complement;

2. There are also other operators, more linguistic in nature, called _____ that can be applied to fuzzy set theory.
a) Hedges
b) Lingual Variable
c) Fuzz Variable
d) None of the mentioned
View Answer

Answer: a
Explanation: None.

3. Where does the Bayes rule can be used?
a) Solving queries
b) Increasing complexity
c) Decreasing complexity
d) Answering probabilistic query
View Answer

Answer: d
Explanation: Bayes rule can be used to answer the probabilistic queries conditioned on one piece of evidence.

4. What does the Bayesian network provides?
a) Complete description of the domain
b) Partial description of the domain
c) Complete description of the problem
d) None of the mentioned
View Answer

Answer: a
Explanation: A Bayesian network provides a complete description of the domain.

5. Fuzzy logic is usually represented as
a) IF-THEN-ELSE rules
b) IF-THEN rules
c) Both a & b
d) None of the mentioned
View Answer
Answer: b
Explanation: Fuzzy set theory defines fuzzy operators on fuzzy sets. The problem in applying this is that the appropriate fuzzy operator may not be known. For this reason, fuzzy logic usually uses IF-THEN rules, or constructs that are equivalent, such as fuzzy associative matrices.
Rules are usually expressed in the form:
IF variable IS property THEN action

6. Like relational databases there does exists fuzzy relational databases.
a) True
b) False
View Answer

Answer: a
Explanation: Once fuzzy relations are defined, it is possible to develop fuzzy relational databases. The first fuzzy relational database, FRDB, appeared in Maria Zemankova's dissertation.

7. _____ is/are the way/s to represent uncertainty.
a) Fuzzy Logic
b) Probability
c) Entropy
d) All of the mentioned
View Answer

Answer: d
Explanation: Entropy is amount of uncertainty involved in data. Represented by H(data).

8. _____ are algorithms that learn from their more complex environments (hence eco) to generalize, approximate and simplify solution logic.
a) Fuzzy Relational DB
b) Ecorithms

c) Fuzzy Set
d) None of the mentioned
View Answer

Answer: c
Explanation: Local structure is usually associated with linear rather than exponential growth in complexity.

9. 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 the mentioned
View Answer
Answer: b
Explanation: None.

10. What is the consequence between a node and its predecessors while creating Bayesian network?
a) Conditionally dependent
b) Dependent
c) Conditionally independent
d) Both a & b
View Answer

Answer: c
Explanation: The semantics to derive a method for constructing Bayesian networks were led to the consequence that a node can be conditionally independent of its predecessors

Artificial Intelligence Questions and Answers – Neural Networks – 1

This set of Artificial Intelligence MCQs focuses on “Neural Networks – 1”.

1. 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
View Answer

Answer: c
Explanation: The truth table before generalization is:
Inputs Output
000 $
001 $
010 $
011 $
100 $
101 $
110 0
111 1
where $ represents don’t know cases and the output is random.
After generalization, the truth table becomes:
Inputs Output
000 0
001 1
010 0
011 1
100 0
101 1
110 0
111 1
.

2. A perceptron is:
a) a single layer feed-forward neural network with pre-processing
b) an auto-associative neural network
c) a double layer auto-associative neural network
d) a neural network that contains feedback
View Answer

Answer: a
Explanation: The perceptron is a single layer feed-forward neural network. It is not an

auto-associative network because it has no feedback and is not a multiple layer neural network because the pre-processing stage is not made of neurons.

3. An auto-associative network is:
a) a neural network that contains no loops
b) a neural network that contains feedback
c) a neural network that has only one loop
d) a single layer feed-forward neural network with pre-processing
View Answer

Answer: b
Explanation: An auto-associative network is equivalent to a neural network that contains feedback. The number of feedback paths(loops) does not have to be one.

4. 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
View Answer

Answer: a
Explanation: The output is found by multiplying the weights with their respective inputs, summing the results and multiplying with the transfer function. Therefore:
Output = 2 * (1*4 + 2*10 + 3*5 + 4*20) = 238.

5. Which of the following is true?
(i) On average, neural networks have higher computational rates than conventional computers.
(ii) Neural networks learn by example.
(iii) Neural networks mimic the way the human brain works.
a) All of the mentioned are true
b) (ii) and (iii) are true
c) (i), (ii) and (iii) are true
d) None of the mentioned
View Answer
Answer: a
Explanation: Neural networks have higher computational rates than conventional computers because a lot of the operation is done in parallel. That is not the case when the neural network is simulated on a computer. The idea behind neural nets is based on the way the human brain works. Neural nets cannot be programmed, they cam only learn by examples.

6. Which of the following is true for neural networks?
(i) The training time depends on the size of the network.
(ii) Neural networks can be simulated on a conventional computer.
(iii) Artificial neurons are identical in operation to biological ones.

a) All of the mentioned
b) (ii) is true
c) (i) and (ii) are true
d) None of the mentioned
View Answer

Answer: c
Explanation: The training time depends on the size of the network; the number of neuron is greater and therefore the number of possible 'states' is increased. Neural networks can be simulated on a conventional computer but the main advantage of neural networks – parallel execution – is lost. Artificial neurons are not identical in operation to the biological ones.

7. 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) (i) and (ii) are true
b) (i) and (iii) are true
c) Only (i)
d) All of the mentioned
View Answer

Answer: d
Explanation: Neural networks learn by example. They are more fault tolerant because they are always able to respond and small changes in input do not normally cause a change in output. Because of their parallel architecture, high computational rates are achieved.

8. 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) (ii) and (iii) are true
b) (ii) is true
c) All of the mentioned
d) None of the mentioned
View Answer

Answer: a
Explanation: Pattern recognition is what single layer neural networks are best at but they don't have the ability to find the parity of a picture or to determine whether two shapes are connected or not.

9. 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 the mentioned
View Answer
Answer: d
Explanation: All mentioned are the characteristics of neural network.

10. 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 Neuro surgeon
View Answer

Answer: b
Explanation: None.

Artificial Intelligence Questions and Answers – Neural Networks – 2

This set of Artificial Intelligence MCQs focuses on "Neural Networks – 2".

1. Why is the XOR problem exceptionally interesting to neural network researchers?
a) Because it can be expressed in a way that allows you to use a neural network
b) Because it is complex binary operation that cannot be solved using neural networks
c) Because it can be solved by a single layer perceptron
d) Because it is the simplest linearly inseparable problem that exists.
View Answer

Answer: d
Explanation: None.

2. What is back propagation?
a) It is another name given to the curvy function in the perceptron
b) It is the transmission of error back through the network to adjust the inputs
c) It is the transmission of error back through the network to allow weights to be adjusted so that the network can learn.
d) None of the mentioned
View Answer

Answer: c
Explanation: Back propagation is the transmission of error back through the network to allow weights to be adjusted so that the network can learn.

3. Why are linearly separable problems of interest of neural network researchers?
a) Because they are the only class of problem that network can solve successfully
b) Because they are the only class of problem that Perceptron can solve successfully

c) Because they are the only mathematical functions that are continue
d) Because they are the only mathematical functions you can draw
View Answer

Answer: b
Explanation: Linearly separable problems of interest of neural network researchers because they are the only class of problem that Perceptron can solve successfully

4. Which of the following is not the promise of artificial neural network?
a) It can explain result
b) It can survive the failure of some nodes
c) It has inherent parallelism
d) It can handle noise
View Answer

Answer: a
Explanation: The artificial Neural Network (ANN) cannot explain result.

5. Neural Networks are complex _____ with many parameters.
a) Linear Functions
b) Nonlinear Functions
c) Discrete Functions
d) Exponential Functions
View Answer
Answer: a
Explanation: Neural networks are complex linear functions with many parameters.

6. A perceptron adds up all the weighted inputs it receives, and if it exceeds a certain value, it outputs a 1, otherwise it just outputs a 0.
a) True
b) False
c) Sometimes – it can also output intermediate values as well
d) Can't say
View Answer

7. The name for the function in question 16 is
a) Step function
b) Heaviside function
c) Logistic function
d) Perceptron function
View Answer

Answer: b
Explanation: Also known as the step function – so answer 1 is also right. It is a hard thresholding function, either on or off with no in-between.

8. Having multiple perceptrons can actually solve the XOR problem satisfactorily: this is because each perceptron can partition off a linear part of the space itself, and they can then combine their results.

a) True – this works always, and these multiple perceptrons learn to classify even complex problems.
b) False – perceptrons are mathematically incapable of solving linearly inseparable functions, no matter what you do
c) True – perceptrons can do this but are unable to learn to do it – they have to be explicitly hand-coded
d) False – just having a single perceptron is enough
View Answer

Answer: c
Explanation: None.

9. The network that involves backward links from output to the input and hidden layers is called as ____.
a) Self organizing maps
b) Perceptrons
c) Recurrent neural network
d) Multi layered perceptron
View Answer
Answer: c
Explanation: RNN (Recurrent neural network) topology involves backward links from output to the input and hidden layers.

10. Which of the following is an application of NN (Neural Network)?
a) Sales forecasting
b) Data validation
c) Risk management
d) All of the mentioned
View Answer

Answer: d
Explanation: All mentioned options are applications of Neural Network

Artificial Intelligence Questions and Answers – Learning – 3

This set of Artificial Intelligence MCQs focuses on “Learning – 3”.

1. Which is not a desirable property of a logical rule-based system?
a) Locality
b) Attachment
c) Detachment
d) Truth-Functionality

e) Global attribute
View Answer

Answer: b
Explanation: Locality: In logical systems, whenever we have a rule of the form A => B, we can conclude B, given evidence A, without worrying about any other rules. Detachment: Once a logical proof is found for a proposition B, the proposition can be used regardless of how it was derived .That is, it can be detachment from its justification. Truth-functionality: In logic, the truth of complex sentences can be computed from the truth of the components. However, there are no Attachment properties lies in a Rule-based system. Global attribute defines a particular problem space as user specific and changes according to user's plan to problem.

2. How is Fuzzy Logic different from conventional control methods?
a) IF and THEN Approach
b) FOR Approach
c) WHILE Approach
d) DO Approach
e) Else If approach
View Answer

Answer: a
Explanation: FL incorporates a simple, rule-based IF X AND Y THEN Z approach to a solving control problem rather than attempting to model a system mathematically.

3. In an Unsupervised learning
a) Specific output values are given
b) Specific output values are not given
c) No specific Inputs are given
d) Both inputs and outputs are given
e) Neither inputs nor outputs are given
View Answer

Answer: b
Explanation: The problem of unsupervised learning involves learning patterns in the input when no specific output values are supplied. We cannot expect the specific output to test your result. Here the agent does not know what to do, as he is not aware of the fact what propose system will come out. We can say an ambiguous un-proposed situation.

4. Inductive learning involves finding a
a) Consistent Hypothesis
b) Inconsistent Hypothesis
c) Regular Hypothesis
d) Irregular Hypothesis
e) Estimated Hypothesis
View Answer

Answer: a
Explanation: Inductive learning involves finding a consistent hypothesis that agrees with examples. The difficulty of the task depends on the chosen representation.

5. Computational learning theory analyzes the sample complexity and computational complexity of
a) Unsupervised Learning
b) Inductive learning
c) Forced based learning
d) Weak learning
e) Knowledge based learning
View Answer
Answer: b
Explanation: Computational learning theory analyzes the sample complexity and computational complexity of inductive learning. There is a tradeoff between the expressiveness of the hypothesis language and the ease of learning.

6. If a hypothesis says it should be positive, but in fact, it is negative, we call it
a) A consistent hypothesis
b) A false negative hypothesis
c) A false positive hypothesis
d) A specialized hypothesis
e) A true positive hypothesis
View Answer

Answer: c
Explanation: Consistent hypothesis go with examples, If the hypothesis says it should be negative but infect it is positive, it is false negative. If a hypothesis says it should be positive, but in fact, it is negative, it is false positive. In a specialized hypothesis we need to have certain restrict or special conditions.

7. Neural Networks are complex ——————with many parameters.
a) Linear Functions
b) Nonlinear Functions
c) Discrete Functions
d) Exponential Functions
e) Power Functions
View Answer

Answer: b
Explanation: Neural networks parameters can be learned from noisy data and they have been used for thousands of applications, so it varies from problem to problem and thus use nonlinear functions.

8. A perceptron is a ————————————.
a) Feed-forward neural network
b) Back-propagation algorithm
c) Back-tracking algorithm
d) Feed Forward-backward algorithm

e) Optimal algorithm with Dynamic programming
View Answer

Answer: a
Explanation: A perceptron is a Feed-forward neural network with no hidden units that can be representing only linear separable functions. If the data are linearly separable, a simple weight updated rule can be used to fit the data exactly.

9. Which of the following statement is true?
a) Not all formal languages are context-free
b) All formal languages are Context free
c) All formal languages are like natural language
d) Natural languages are context-oriented free
e) Natural language is formal
View Answer
Answer: a
Explanation: Not all formal languages are context-free.

10. Which of the following statement is not true?
a) The union and concatenation of two context-free languages is context-free
b) The reverse of a context-free language is context-free, but the complement need not be
c) Every regular language is context-free because it can be described by a regular grammar
d) The intersection of a context-free language and a regular language is always context-free
e) The intersection two context-free languages is context-free
View Answer

Answer: e
Explanation: The union and concatenation of two context-free languages is context-free; but intersection need not be.

Artificial Intelligence Questions and Answers – Learning – 2

This set of Artificial Intelligence MCQs focuses on “Learning – 2”.

1. 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
View Answer

Answer: d
Explanation: Factors which affect the performance of learner system does not include good data structures.

2. Different learning method does not include:
a) Memorization
b) Analogy
c) Deduction
d) Introduction
View Answer

Answer: d
Explanation: Different learning methods include memorization, analogy and deduction.

3. Which of the following is the model used for learning?
a) Decision trees
b) Neural networks
c) Propositional and FOL rules
d) All of the mentioned
View Answer

Answer: d
Explanation: Decision trees, Neural networks, Propositional rules and FOL rules all are the models of learning.

4. Automated vehicle is an example of _____.
a) Supervised learning
b) Unsupervised learning
c) Active learning
d) Reinforcement learning
View Answer

Answer: a
Explanation: In automatic vehicle set of vision inputs and corresponding actions are available to learner hence it's an example of supervised learning.

5. Following is an example of active learning:
a) News Recommender system
b) Dust cleaning machine
c) Automated vehicle
d) None of the mentioned
View Answer
Answer: a
Explanation: In active learning, not only the teacher is available but the learner can ask suitable perception-action pair example to improve performance.

6. 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
View Answer

Answer: b
Explanation: Reinforcement learning is the type of learning in which teacher returns award or punishment to learner.

7. Decision trees are appropriate for the problems where:
a) Attributes are both numeric and nominal
b) Target function takes on a discrete number of values.
c) Data may have errors
d) All of the mentioned
View Answer

Answer: d
Explanation: Decision trees can be used in all the conditions stated.

8. Which of the following is not an application of learning?
a) Data mining
b) WWW
c) Speech recognition
d) None of the mentioned
View Answer

Answer: d
Explanation: All mentioned options are applications of learning.

9. Which of the following is the component of learning system?
a) Goal
b) Model
c) Learning rules
d) All of the mentioned
View Answer
Answer: d
Explanation: Goal, model, learning rules and experience are the components of learning system.

10. Following is also called as exploratory learning:
a) Supervised learning
b) Active learning
c) Unsupervised learning
d) Reinforcement learning
View Answer

Answer: c
Explanation: In unsupervised learning no teacher is available hence it is also called unsupervised learning.

Artificial Intelligence Questions and Answers – Learning – 1

This set of Artificial Intelligence MCQs focuses on “Learning – 1”.

1. What will take place as the agent observes its interactions with the world?
a) Learning
b) Hearing
c) Perceiving
d) Speech
View Answer

Answer: a
Explanation: Learning will take place as the agent observes its interactions with the world and its own decision making process.

2. Which modifies the performance element so that it makes better decision?
a) Performance element
b) Changing element
c) Learning element
d) None of the mentioned
View Answer

Answer: c
Explanation: A learning element modifies the performance element so that it can make better decision.

3. How many things are concerned in design of a learning element?
a) 1
b) 2
c) 3
d) 4
View Answer

Answer: c
Explanation: The three main issues are affected in design of a learning element are components, feedback and representation.

4. What is used in determining the nature of the learning problem?
a) Environment
b) Feedback
c) Problem
d) All of the mentioned
View Answer

Answer: b
Explanation: The type of feedback is used in determining the nature of the learning problem that the agent faces.

5. How many types are available in machine learning?
a) 1
b) 2
c) 3
d) 4
View Answer
Answer: c
Explanation: The three types of machine learning are supervised, unsupervised and reinforcement.

6. Which is used for utility functions in game playing algorithm?
a) Linear polynomial
b) Weighted polynomial
c) Polynomial
d) Linear weighted polynomial
View Answer

Answer: d
Explanation: Linear weighted polynomial is used for learning element in the game playing programs.

7. Which is used to choose among multiple consistent hypotheses?
a) Razor
b) Ockham razor
c) Learning element
d) None of the mentioned
View Answer

Answer: b
Explanation: Ockham razor prefers the simplest hypothesis consistent with the data intuitively.

8. What will happen if the hypothesis space contains the true function?
a) Realizable
b) Unrealizable
c) Both a & b
d) None of the mentioned
View Answer

Answer: b
Explanation: A learning problem is realizable if the hypothesis space contains the true function.

9. What takes input as an object described by a set of attributes?
a) Tree

b) Graph
c) Decision graph
d) Decision tree
View Answer
Answer: d
Explanation: Decision tree takes input as an object described by a set of attributes and returns a decision.

10. How the decision tree reaches its decision?
a) Single test
b) Two test
c) Sequence of test
d) No test
View Answer

Answer: c
Explanation: A decision tree reaches its decision by performing a sequence of tests

1: ANN is composed of large number of highly interconnected processing elements(neurons) working in unison to solve problems.

A.
True

B.
False

C.

D.

Answer Report Discuss

Option: A

Explanation :

2:
Artificial neural network used for

A.
Pattern Recognition

B.
Classification

C.
Clustering

D.
All of these

Answer Report Discuss

Option: D

Explanation :

3:

A Neural Network can answer

A.
For Loop questions

B.
what-if questions

C.
IF-The-Else Analysis Questions

D.
None of these

Answer Report Discuss

Option: B

Explanation :

4:

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

Answer Report Discuss

Option: B

Explanation :

5:

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 Learniing

Answer Report Discuss

Option: B

Explanation :

Read more: http://www.avatto.com/computer-science/test/mcqs/soft-computing/ann/514/1.html#ixzz46VE8CQAp

6:

In artificial Neural Network interconnected processing elements are called

A.
nodes or neurons

B.
weights

C.
axons

D.
Soma

Answer Report Discuss

Option: A

Explanation :

7:

Each connection link in ANN is associated with _____ which has information about the input signal.

A.
neurons

B.
weights

C.

bias

D.

activation function

Answer Report Discuss

Option: B

Explanation :

8:

Neurons or artificial neurons have the capability to model networks of original neurons as found in brain

A.

True

B.

False

C.

D.

Answer Report Discuss

Option: A

Explanation :

9:

Internal state of neuron is called _____, is the function of the inputs the neurons receives

A.

Weight

B.
activation or activity level of neuron

C.
Bias

D.
None of these

Answer Report Discuss

Option: B

Explanation :

10:
Neuron can send _____ signal at a time.

A.
multiple

B.
one

C.
none

D.
any number of

Answer Report Discuss

Option: B

Explanation :

Read more: http://www.avatto.com/computer-science/test/mcqs/soft-computing/ann/514/2.html#ixzz46VEVzf3a

1:

Artificial intelligence is

A. It uses machine-learning techniques. Here program can learn From past experience and adapt themselves to new situations

B. Computational procedure that takes some value as input and produces some value as output.

C. Science of making machines performs tasks that would require intelligence when performed by humans

D. None of these

Answer Report Discuss

Option: C

Explanation :

2:

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

Answer Report Discuss

Option: C

Explanation :

3:
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

Answer Report Discuss

Option: B

Explanation :

4:
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

Answer Report Discuss

Option: B

Explanation :

5:
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

Answer Report Discuss

Option: A

Explanation :

Read more: http://www.avatto.com/computer-science/test/mcqs/soft-computing/questions/192/1.html#ixzz46VEoNPTw

6:
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

Answer Report Discuss

Option: B

Explanation :

7:
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

Answer Report Discuss

Option: A

Explanation :

8:
n(log n) is referred to

A.
A measure of the desired maximal complexity of data mining algorithms

B.
A database containing volatile data used for the daily operation of an organization

C.
Relational database management system

D.
None of these

Answer Report Discuss

Option: A

Explanation :

9:
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

Answer Report Discuss

Option: D

Explanation :

10:

Prolog 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

Answer Report Discuss

Option: A

Explanation :

Read more: http://www.avatto.com/computer-science/test/mcqs/soft-computing/questions/192/2.html#ixzz46VF3O07W

11:

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
. None of these

Answer Report Discuss

Option: B

Explanation :

12:
Quantitative attributes are

A.
A reference to the speed of an algorithm, which is quadratically dependent on the size of the data

B.
Attributes of a database table that can take only numerical values

C.
Tools designed to query a database

D.
None of these

Answer Report Discuss

Option: B

Explanation :

13:

Subject orientation

A. The science of collecting, organizing, and applying numerical facts

B. Measure of the probability that a certain hypothesis is incorrect given certain observations.

C. One of the defining aspects of a data warehouse, which is specially built around all the existing applications of the operational data

D. None of these

Answer Report Discuss

Option: C

Explanation :

14:

Vector

A. It do not need the control of the human operator during their execution

B.
An arrow in a multi-dimensional space. It is a quantity usually characterized by an ordered set of scalars

C.
The validation of a theory on the basis of a finite number of examples

D.
None of these

Answer Report Discuss

Option: B

Explanation :

15:
Transparency

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

Answer Report Discuss

Option: C

Explanation :

Read more: http://www.avatto.com/computer-science/test/mcqs/soft-computing/questions/192/3.html#ixzz46VFK5DKd

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

Answer Report Discuss

Option: A

Explanation :

2:

Who initiated the idea of Soft Computing

A.

Charles Darwin

B.

Lofti A Zadeh

C.
Rechenberg

D.
Mc_Culloch

Answer Report Discuss

Option: B

Explanation :

3:
Fuzzy Computing

A
. mimics human behaviour

B.
doesnt deal with 2 valued logic

C.
deals with information which is vague, imprecise, uncertain, ambiguous, inexact, or probabilistic

D
. All of the above

Answer Report Discuss

Option: D

Explanation :

4:

Neural Computing

A.
mimics human brain

B.
information processing paradigm

C.
Both (a) and (b)

D.
None of the above

Answer Report Discuss

Option: C

Explanation :

5:

Genetic Algorithm are a part of

A
. Evolutionary Computing

B.
inspired by Darwin's theory about evolution - "survival of the fittest"

C.
are adaptive heuristic search algorithm based on the evolutionary ideas of natural selection and genetics

D
. All of the above

Answer Report Discuss

Option: D

Explanation

Read more: http://www.avatto.com/computer-science/test/mcqs/soft-computing/introduction/512/1.html#ixzz46VFZ9z1x

6:
What are the 2 types of learning

A.
Improvised and unimprovised

B.
supervised and unsupervised

C.
Layered and unlayered

D.
None of the above

Answer Report Discuss

Option: B

Explanation :

7:
Supervised Learning is

A.
learning with the help of examples

B.
learning without teacher

C.
learning with the help of teacher

D.
learning with computers as supervisor

Answer Report Discuss

Option: C

Explanation :

8:
Unsupervised learning is

A.
learning without computers

B.
problem based learning

C.
learning from environment

D.
learning from teachers

Answer Report Discuss

Option: C

Explanation :

9:

Conventional Artificial Intelligence is different from soft computing in the sense

A.

Conventional Artificial Intelligence deal with prdicate logic where as 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.

Both (a) and (b)

D.

None of the above

Answer Report Discuss

Option: C

Explanation :

10:

In supervised learning

A.

classes are not predefined

B.
classes are predefined

C.
classes are not required

D.
classification is not done

Answer Report Discuss

Option: B

Explanation :

Read more: http://www.avatto.com/computer-science/test/mcqs/soft-computing/introduction/512/2.html#ixzz46VFqvgSd

1:
Membership function defines the fuzziness in a fuzzy set irrespective of the elements in the set, which are discrete or continuous.

A.
True

B.
False

C.

D.

Answer Report Discuss

Option: A

Explanation :

2:

The membership functions are generally represented in

A.

Tabular Form

B.

Graphical Form

C.

Mathematical Form

D.

Logical Form

Answer Report Discuss

Option: B

Explanation :

3:

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

Answer Report Discuss

Option: D

Explanation :

4: Three main basic features involved in characterizing membership function are

A.

Intution, Inference, Rank Ordering

B.

Fuzzy Algorithm, Neural network, Genetic Algorithm

C.

Core, Support , Boundary

D.

Weighted Average, center of Sums, Median

Answer Report Discuss

Option: C

Explanation :

5: The region of universe that is characterized by complete membership in the set is called

A.

Core

B.

Support

C.

Boundary

D.

Fuzzy

Answer Report Discuss

Option: A

Explanation :

Read more: http://www.avatto.com/computer-science/test/mcqs/soft-computing/questions/369/1.html#ixzz46VG385ou

6: 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

Answer Report Discuss

7:

In a Fuzzy set a prototypical element has a value

A.
1

B.
0

C.
infinite

D.
Not defined

Answer Report Discuss

Option: A

Explanation :

8:

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

A.
normal fuzzy set

B.
subnormal fuzzy set.

C.
convex fuzzy set

D.

concave fuzzy set

Answer Report Discuss

Option: B

Explanation :

9: 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.

convex fuzzy set

B.

concave fuzzy set

C.

Non concave Fuzzy set

D.

Non Convex Fuzzy set

Answer Report Discuss

Option: A

Explanation :

10:

The membership values of the membership function are nor strictly monotonically increasing or decreasing or strictly monoronically increasing than decreasing.

A.

Convex Fuzzy Set

B.

Non convex fuzzy set

C.

Normal Fuzzy set

D.

Sub normal fuzzy set

Answer Report Discuss

Option: B

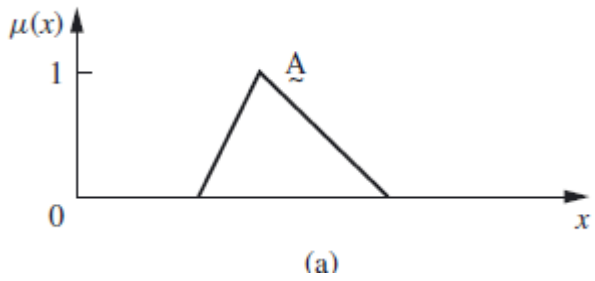
Explanation :

Read more: http://www.avatto.com/computer-science/test/mcqs/soft-computing/questions/369/2.html#ixzz46VGHJtYr

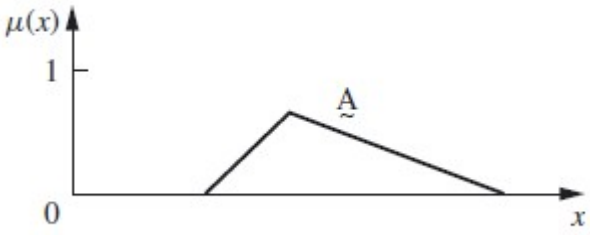
11:

Match the Column

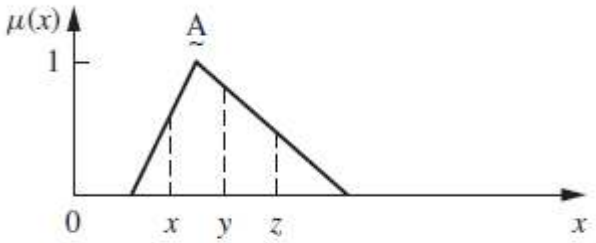
List I



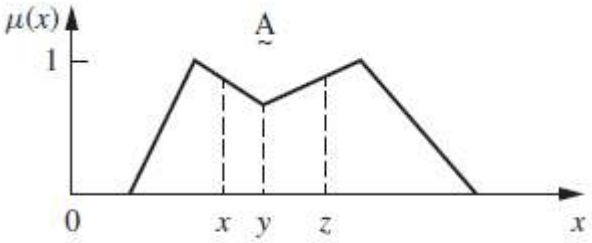
(a)



(b)



(c)



(d)

List II

1 Subnormal Fuzzy Set

2 Normal Fuzzy Set

3 Non Convex Normal Fuzzy Set

4 Convex Normal Fuzzy Set

A.

a b c d

2 1 4 3

B.

a b c d

1 2 3 4

C.

a b c d

4 3 2 1

D.

a b c d

3 2 1 4

Answer Report Discuss

Option: A

Explanation :

12: The crossover points of a membership function are defined as the elements in the universe for which a particular fuzzy set has values equal to

A.

infinite

B.

1

C.

0

D.

0.5

Answer Report Discuss

Option: D

Explanation :

Read more: http://www.avatto.com/computer-science/test/mcqs/soft-computing/questions/369/3.html#ixzz46VGTKXoG

Questions

1. Which of the following(s) is/are found in Genetic Algorithms?

   (i)

   evolution

   (ii)

   selection

   (iii)

   reproduction

   (iv)

   mutation


: Your answer is

(a)

i & ii only

(b)

i, ii & iii only

(c)

ii, iii & iv only

(d)

all of the above

2. Matching between terminologies of Genetic Algorithms and Genetics:

Genetic Algorithms	Genetics (biology)
(a) representation structures	(i) external disturbance, such as cosmic radiation
(b) crossover	(ii) chromosomes
(c) mutation	(iii) survivability
(d) selection	(iv) sexual reproduction

: Your answer is .3

4. (a)
5. _____
6. (b)
7. _____
8. (c)
9. _____
10. (d)
11. _____

12. Where are Genetic Algorithms applicable?

(i)

real time application

(ii)

biology

(iii)

Artificial Life

(iv)

economics

 : Your answer is

(a)

i, ii & iii only

(b)

ii, iii & iv only

(c)

i, iii & iv only

(d)

all of the above

13. Which of the following(s) is/are the pre-requisite(s) when Genetic Algorithms are applied to solve problems?

(i)

encoding of solutions

(ii)

well-understood search space

(iii)

method of evaluating the suitability of the solutions

(iv)

contain only one optimal solution

 : Your answer is

(a)

i & ii only

(b)

ii & iii only

(c)

i & iii only

(d)

iii & iv only

14. Which of the following statement(s) is/are true?

(i)

Genetic Algorithm is a randomised parallel search algorithm, based on the principles of natural selection, the process of evolution.

(ii)

GAs are exhaustive, giving out all the optimal solutions to a given problem.

(iii)

GAs are used for solving optimization problems and modeling evolutionary phenomena in the natural world.

(iv)

Despite their utility, GAs remain a poorly understood topic.


: Your answer is

(a)

i, ii & iii only

(b)

ii, iii & iv only

(c)

i, iii & iv only

(d)

all of the above

15. If crossover between chromosome in search space does not produce significantly different offsprings, what does it imply? (if offspring consist of one half of each parent)

(i)

The crossover operation is not succesful.

(ii)

Solution is about to be reached.

(iii)

Diversity is so poor that the parents involved in the crossover operation are similar.

(iv)

The search space of the problem is not ideal for GAs to operate.

 : Your answer is

(a)

ii, iii & iv only

(b)

ii & iii only

(c)

i, iii & iv only

(d)

all of the above

16. Which of the following comparison is true?

 : Your answer is

(a)

In the event of restricted acess to information, GAs win out in that they require much fewer information to operate than other search.

(b)

Under any circumstances, GAs always outperform other algorithms.

(c)

The qualities of solutions offered by GAs for any problems are always better than those provided by other search.

(d)

GAs could be applied to any problem, whereas certain algorithms are applicable to limited domains.

17. Which of the following statement(s) is/are true?

(i)

Artificial Life is analytic, trying to break down complex phenomena into their basic components.

(ii)

Alife is a kind of Artificial Intelligence (AI).

(iii)

Alife pursues a two-fold goal: increasing our understanding of nature and enhancing our insight into artificial models, thereby providing us with the ability to improve their performance.

(iv)

Alife extends our studies of biology, life-as-we-know-it, to the larger domain of possible life, life-as-it-could-be.


: Your answer is

(a)

i & ii only

(b)

iii & iv only

(c)

i, ii & iii only

(d)

all of the above

18. Where is Artificial Life applicable?

(i)

film (movie, video) production

(ii)

biology

(iii)

robotics

(iv)

air traffic control

 : Your answer is

(a)

i, ii & iii only

(b)

ii, iii & iv only

(c)

i, iii & iv only

(d)

all of the above

19. Who can be benefited from Alife?

(i)

children

(ii)

designers

(iii)

artists

(iv)

patients

 : Your answer is

(a)

i, ii & iii only

(b)

ii, iii & iv only

(c)

i, iii & iv only

(d)

all of the above

: Answers

Q1.

Which of the following(s) is/are found in Genetic Algorithms?

The correct answer is *(d)*.

An initial population evolves to some optimal solutions. Selection biases for better individuals, judged by their fitness values; two individuals are chosen for reproducing offspring. By combining portions of good individuals, this process is likely to create even better individuals.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Q2.

Matching between terminologies of Genetic Algorithms and Genetics:

The correct answer is :

(a)

(ii)

(b)

(iv)

(c)

(i)

(d)

(iii)


...Go Back

Q3.

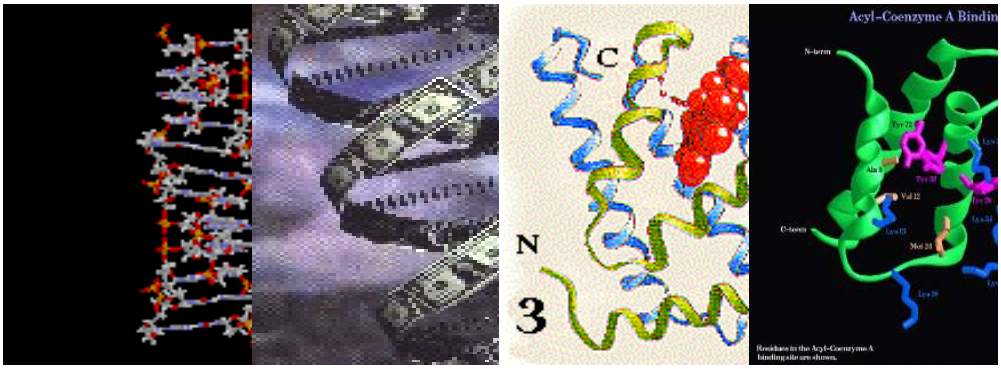
Where are Genetic Algorithms applicable?

The correct answer is *(b)*.

Genetic Algorithms can be used to evolve strategies for interaction in the Prisoner's Dilemma in economics. GAs are used as a computational method in

Alife - simulation of living systems starting with single cells and evolving to orgranisms, societies or even whole economic systems. These features compete for the limited resources in this virtual world. In biology, GAs are used in protein structure prediction, protein folding, stability of DNA hairpins .and modeling of immune system

DNA structures Protein Structures



It cannot be applied in real time systems. The response time is critical. However, GAs cannot guarantee to find a solution. The time spent in evaluation of fitness function and other genetic operations is substantially .large, especially in a poorly- understood, complex search space

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Q4.

Which of the following(s) is/are the requirement(s) when Genetic Algorithms are applied to solve problems?

The correct answer is *(c)*.

The problem is mapped into a set of strings with each string representing a potential solution (i.e. chromosomes). A fitness function is required to compare and tell which solution is better. GA performance is heavily .dependent on the representation chosen

GAs are designed to efficiently search large, non-linear, poorly understood search space where expert knowledge is scarce or difficult to encode and where traditional techniques fail. However, domain knowledge guides GAs to obtain the optimal solutions. Moreover, GAs are powerful enough to solve for .a set of (nearly) optimal solutions

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Q5.

Which of the following statement(s) is/are true?

The correct answer is *(c)*.

The search space is too complex for exhaustive search such that GAs successfully find robust solutions after evaluating only a few percent of the full parameter space.

It can never be guaranteed that GAs will find an optimal solution or even any solution at all.

Their probabilistic nature and reliance on frequent interactions of members of a large population make a complete analytic understanding of GAs extremely difficult.


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Q6.

If crossover between chromosome in search space does not produce significantly different offspring, what does it imply? (if offspring consist of one half of each parent)

The correct answer is *(b)*.

When crossover operation does not produce siginificantly different offsprings, it shows that the parents involved are almost identical. Hence, it means that solution is about to be reached. However, this solution derived is not neccessarily the optimal solution. From here, we could see that mutation is necessary to maintain the diversity of the population so that GAs would not be trapped in partial solutions.


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Q7.

Which of the following comparison is true?

The correct answer is *(a)*.

- This is true since GAs require only information that would evaluate the fitness function for the possible soulutions (individuals in search space). But for other searches which generally require more information, like differentiability of problem function, might find it hard to find them.
- This holds true in most circumstances. However, if the search space is small enough, other search like hill-climbing or heuristic, which are very effective in explorating small space, would just perform as good.
- GAs have only been developed for a couple of decades while traditional searches have been investigated for a longer time. Thus GAs do not necessarily produce a better quality solution.
- Evidently certain algorithms are only applicable to limited domains . However, certain difficulties, like encoding of problems, might hinder the use of GAs.

Q8.

Which of the following statement(s) is/are true?

The correct answer is *(b)*.

Alife is characterised by a bottom-up synthesis approach, so that the robotics work tends to aim for insect-like capability rather than human, and complex hebaviours are developed by putting together more simple ones. Artificial forms of evolution such as Genetic Algorithms and Genetic Programming are widely used to evolve solutions or behaviours rather than designing them in a .top-down fashion in Artificial Intelligence

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Q9.

Where is Artificial Life applicable?

The correct answer is *(d)*.

Alife is applicable in many fields, such as a walking robot .shown on the right

...Go Back

Q10.

Who can be benefited from Alife?

The correct answer is *(d)*.

Children can use various computational tools (including [illegible] Logo and Electronic Bricks) to build artificial creatures, exploring

.some of the central ideas of Alife

GAs can be applied to the design of laminated composite structures, circuit designs and the improvement of Pareto optimal designs. Genetic programming can help artists to create many pictures. Medical problems can also be .detected: Medibrains

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