

# 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.Intuition, 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 monotonically 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.**doesn't 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 Learning

**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. doesn't 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 predicate 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.	<b>Membership function defines the fuzziness in a fuzzy set irrespective of the elements in the set, which are discrete or continuous.</b>  <b><u>A.</u></b> True <b><u>B.</u></b> False	A
2.	<b>The membership functions are generally represented in</b>  <b><u>A.</u></b> Tabular Form <b><u>B.</u></b> Graphical Form <b><u>C.</u></b> Mathematical Form <b><u>D.</u></b> Logical Form	B
3.	<b>Membership function can be thought of as a technique to solve empirical problems on the basis of</b>  <b><u>A.</u></b> knowledge <b><u>B.</u></b> examples <b><u>C.</u></b> learning	D

	<u>D.</u> experience	
4.	<p><b>Three main basic features involved in characterizing membership function are</b></p> <p><u>A.</u>Intution, Inference, Rank Ordering</p> <p><u>B.</u>Fuzzy Algorithm, Neural network, Genetic Algorithm</p> <p><u>C.</u>Core, Support , Boundary</p> <p><u>D.</u>Weighted Average, center of Sums, Median</p>	C
5.	<p><b>The region of universe that is characterized by complete membership in the set is called</b></p> <p><u>A.</u>Core</p> <p><u>B.</u>Support</p> <p><u>C.</u>Boundary</p> <p><u>D.</u>Fuzzy</p>	A
6.	<p><b>A fuzzy set whose membership function has at least one element x in the universe whose membership value is unity is called</b></p> <p><u>A.</u>sub normal fuzzy sets</p>	B



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

	<p>are strictly monotonically increasing or strictly monotonically decreasing or strictly monotonically increasing than strictly monotonically decreasing with increasing values for elements in the universe</p> <p><u>A.</u>convex fuzzy set</p> <p><u>B.</u>concave fuzzy set</p> <p><u>C.</u>Non concave Fuzzy set</p> <p><u>D.</u>Non Convex Fuzzy set</p>	
10.	<p><b>The membership values of the membership function are nor strictly monotonically increasing or decreasing or strictly monoronically increasing than decreasing.</b></p> <p><u>A.</u>Convex Fuzzy Set</p> <p><u>B.</u>Non convex fuzzy set</p> <p><u>C.</u>Normal Fuzzy set</p> <p><u>D.</u>Sub normal fuzzy set</p>	B
11.	<p><b>Fuzzy Computing</b></p> <p><u>A.</u>doesnt deal with 2 valued logic</p>	D

	<p><u>B.</u> mimics human behaviour</p> <p><u>C.</u> deals with information which is vague, imprecise, uncertain, ambiguous, inexact, or probabilistic</p> <p><u>D.</u> All of the above</p>	
12.	<p>Defuzzification is done to obtain</p> <p>a) Crisp output</p> <p>b) The best rule to follow</p> <p>c) Precise fuzzy value</p> <p>d) None of the above</p>	a
13.	<p>“The train is running fast”. Here ‘fast’ can be represented by</p> <p>a) Fuzzy Set</p> <p>b) Crisp Set</p> <p>c) Fuzzy and Crisp Set</p> <p>d) None of the mentioned</p>	a
14.	<p>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</p> <p>a) 25</p> <p>b) 20</p> <p>c) 35</p> <p>d) 50</p>	a
15.	<p>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.</p> <p>a) with the median of all the area</p>	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 $(A^\lambda)_{\text{complement}} \neq (A^\lambda)_{\text{complement}}$ (a) except for value of $\lambda=0.5$ (b) except for value of $\lambda=1$ (c) except for value of $\lambda=0$ (d) for all values of $\lambda$	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) $(A \times B) + (B \times C)$ b) $A \times B \cup (A \times C)$	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.	<p>Fuzzy logic is a form of</p> <p>a) Two-valued logic b) Crisp set logic c) Many-valued logic d) Binary set logic</p>	<p>Answer: c</p> <p>Explanation: With fuzzy logic set membership is defined by certain value. Hence it could have many values to be in the set.</p>
27.	<p>Traditional set theory is also known as Crisp Set theory.</p> <p>a) True b) False</p>	<p>Answer: a</p> <p>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.</p> <p>3. The truth values of traditional set theory is _____ and that of fuzzy set is _____</p>
28.	The truth values of traditional set theory is _____ and that of fuzzy set is _____	<p>Answer: a</p> <p>Explanation: Refer the</p>

	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

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



		<p>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.</p> <p>Rules are usually expressed in the form: IF variable IS property THEN action</p>
36.	<p>_____ is/are the way/s to represent uncertainty.</p> <p>a) Fuzzy Logic b) Probability c) Entropy d) All of the mentioned</p>	<p>Answer: d</p> <p>Explanation: Entropy is amount of uncertainty involved in data. Represented by <math>H(\text{data})</math>.</p>
37.	<p>_____ are algorithms that learn from their more complex environments (hence eco) to generalize, approximate and simplify solution logic.</p> <p>a) Fuzzy Relational DB b) Ecorithms c) Fuzzy Set d) None of the mentioned</p>	<p>Answer: c</p> <p>Explanation: Local structure is usually associated with linear rather than exponential growth in complexity</p>



21	what does the 0 membership value means in the set	the object is fully in	the object is not in	the object is partial	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 involves	membership function	fuzzy logic operation	if-then rules	all the above	d
24	What does a fuzzifier do	converts crisp input to	converts crisp output	converts fuzzy input to	converts fuzzy output to	a
25	Which of the following is not defuzzifier method	centroid of area	mean of maximum	largest of maximum	hypotenuse of triangle	d
26	Which of the following is/are type of fuzzy interference method	mamdani	sugeno	riverst	only a and b	d
27	A Fuzzy rule can have	multiple part of antecedent	only single part of antecedent	multiple part of antecedent	only single part of antecedent	c
28	The $\alpha$ cut of a fuzzy set A is a crisp set defined by :-	$\{x \mid \mu_A(x) > \alpha\}$	$\{x \mid \mu_A(x) \geq \alpha\}$	$\{x \mid \mu_A(x) < \alpha\}$	$\{x \mid \mu_A(x) \leq \alpha\}$	b
29	The bandwidth(A) in a fuzzy set is given by	$(A) =  x_1 * x_2 $	$(A) =  x_1 + x_2 $	$(A) =  x_1 - x_2 $	$(A) =  x_1 / x_2 $	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 union of A and B	$\{0/a, 0.7/b, 0.8/c, 0.2/d, 0.2/e\}$	$\{0/a, 0.9/b, 0.7/c, 0.2/d, 0.2/e\}$	$\{0.8/a, 0.7/b, 0.8/c, 0.2/d, 0.2/e\}$	$\{0/a, 0.7/b, 0.8/c, 0.9/d, 0.2/e\}$	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 union of A and B	$\{1/a, 0.9/b, 0.1/c, 0.5/d, 0.2/e\}$	$\{0.8/a, 0.9/b, 0.2/c, 0.8/d, 0.2/e\}$	$\{1/a, 0.9/b, 0.2/c, 0.8/d, 0.2/e\}$	$\{1/a, 0.9/b, 0.2/c, 0.8/d, 0.2/e\}$	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 intersection of A and B	$\{0.6/a, 0.3/b, 0.1/c, 0.3/d, 0.2/e\}$	$\{0.6/a, 0.8/b, 0.1/c, 0.3/d, 0.2/e\}$	$\{0.6/a, 0.3/b, 0.1/c, 0.3/d, 0.2/e\}$	$\{0.6/a, 0.3/b, 0.2/c, 0.3/d, 0.2/e\}$	a
34	What denotes the support(A) in a fuzzy set?	$\{x \mid \mu_A(x) > 0\}$	$\{x \mid \mu_A(x) < 0\}$	$\{x \mid \mu_A(x) < 0\}$	$\{x \mid \mu_A(x) < 0.5\}$	a
35	What denotes the core(A) in a fuzzy set?	$\{x \mid \mu_A(x) > 0\}$	$\{x \mid \mu_A(x) = 1\}$	$\{x \mid \mu_A(x) \geq 0.5\}$	$\{x \mid \mu_A(x) > 0.8\}$	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 designing a fuzzy logic machine	fuzzification->Rule Evaluation->Aggregation->Defuzzification	defuzzification->Rule Evaluation->Aggregation->Fuzzification	rule evaluation->fuzzification->aggregation->defuzzification	rule evaluation->defuzzification->aggregation->fuzzification	a
38	can a crisp set be a fuzzy set?	no	yes	depends	all of the above	b
39	Genetic algorithm belongs to the family of methods in the	artificial intelligence	optimization area	complete enumeration	Non computer based is	A
40	All of the following are suitable problems for genetic algorithm EXCEPT	pattern recognition	simulation of biological systems	simple optimization	dynamic process control	C
41	Tabu search is an example of ?	heuristic	Evolutionary algorithm	ACO	PSO	a

65	GA stands for		genetic algorithm	genetic assurance	genese alorithm	noneof these	a	
66	LCS stands for		learning classes syste	learning classifier	learned class system	noneof these	b	
67	GBML stands for		Genese based Machi	Genes based mob	Genetic bsd 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 representa	Circular representa	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 algo	ACO	PSO	a	
76	Genetic algorithms are example of		heuristic	Evolutionary algo	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	

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 $\sim \rightarrow$ complement)		$\{(4, 0.7), (2, 1), (1, 0.8)\}$	$\{(4, 0.3): (5, 0), (6, 0)\}$	$\{(1, 1), (2, 1), (3, 0.3)\}$	$\{(3, 0.3), (6, 0.2)\}$	c
95	What are the following sequence of steps taken in designing a fuzzy logic machine ?		Fuzzification → Rule Evaluation → Defuzzification	Fuzzification → Rule Evaluation → Defuzzification	Fuzzification → Rule Evaluation → Defuzzification	Fuzzification → Rule Evaluation → Defuzzification	Fuzzification → Rule Evaluation → Defuzzification

101	2. If A,B and C are three fuzzy sets defined over the same universe of discourse such that $A \leq B$ and $B \leq C$ and $A \leq C$ 3. Membership function defines the fuzziness in a fuzzy set irrespective 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 $\approx$ Prediction	Fuzzy $\approx$ Forecasting	Probability $\approx$ Forecasting	None of these	b
103	Both fuzzy logic and artificial neural network are soft computing techniques because		Both gives precise answer	ANN gives accurate answer	In each, no precise answer	Fuzzy gives exact result	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 function of two propositions		propositions	Linguistic 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 conjunctives antecedents is method of ----- in FLC		decomposition rule	formation of rule	truth tables	All of the above	a
108	Multiple disjunctives antecedents is method of ----- in FLC		decomposition rule	formation of rule	truth tables	All of the above	a

114	In Evolutionary programming, survival selection is		Probabilistic selection ( $\mu+\mu$ ) selection	( $\mu, \lambda$ )- selection based on the children only ( $\mu+\lambda$ )- 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 ( $\mu+\mu$ ) selection	( $\mu, \lambda$ )- selection based on the children only ( $\mu+\lambda$ )- selection based on both the set of parent and children	Children replace the parent	All the mentioned	b

	Step size in dynamic EP :		deviation in step sizes remain static	deterministic function	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)		$(\mu, \lambda)$ : Select survivors among parents and offspring	$(\mu + \lambda)$ : Select survivors among parents and offspring	$(\mu - \lambda)$ : Select survivors among offspring only	$(\mu : \lambda)$ : Select survivors among offspring only	b



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 population size of $\lambda$	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