NET/JRF-COMPUTER SCIENCE & APPLICATIONS

UNIT TEST : ARTIFICIAL NEURAL NETWORK & FUZZY

Time: 00 : 50 Hour **Date : 08-05-2017**
M.M. : 50

INSTRUCTION: Attempt all the 25 questions. Each question carry TWO marks.

1. If A and B are two fuzzy sets with membership functions
$\mu A(x) = \{0.6,0.5,0.1,0.7, 0.8\}$; $\mu B(x) = \{0.9,0.2,0.6, 0.8, 0.5\}$
Then the value of $\mu AUB(x)$ will be
(a) {0.9, 0.5, 0.6, 0.8, 0.8} (b) {0.6, 0.2, 0.1, 0.7, 0.5}
(c) {0.1, 0.5, 0.4, 0.2, 0.2} (d) {0.1, 0.5, 0.4, 0.2, 0.3}

2. Which of the following systems analyzes spatial information?
(a) Neural network (b) Genetic algorithm (c) Intelligent agent (d) Geographical information system

3. Which of the following systems mimics human thinking?
(a) Artificial intelligence (b) Intelligent agent
(c) Bot (d) Database management system

4. Which AI system provides a diagnosis to a specific problem?
(a) Intelligent agent (b) Expert system
(c) Geographical information system (d) Data mining system

5. Which AI system finds and identifies patterns; for instance; in the words you use?
(a) Expert system (b) Intelligent system (c) Neural network (d) Fuzzy logic

6. Generally, AI systems analyze imprecise and subjective information. This information is called
(a) Blurred data (b) Inclusive information
(c) Fuzzy logic (d) Dirty data

7. Which AI system will work for you to find information on the internet?
(a) Intelligent agent (b) Neural network
(c) Genetic algorithm (d) Expert system

8. Which AI system will continue to analyze a problem until it finds the best solution?
(a) Genetic algorithm (b) Neural network
(c) Intelligent agent (d) Expert system

9. Which Intelligent Agent will monitor systems and report back to you when there is a problem?
(a) Shopping bot (b) Buyer agent
(c) Information agent (d) Predictive agent

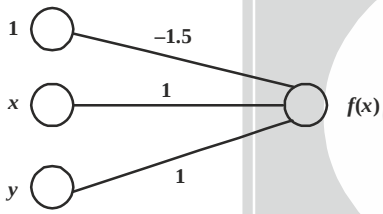
10. Which Intelligent Agent can play an Internet game on your behalf?
(a) Information agent (b) User agent
(c) Predictive agent (d) Game agent

11. Which of the following is not true regarding the principles of fuzzy logic ?
(a) Fuzzy logic is a concept of 'certain degree'.
(b) Fuzzy logic follows the principle of Aristotle and Buddha.
(c) Japan is currently the most active users of fuzzy logic.
(d) Boolean logic is a subset of fuzzy logic.

12. The height of h(A) of a fuzzy set A is defined as
$h(A) = \sup A(x)$
$= x \in A$
Then the fuzzy set A is called normal when
(a) $h(A) = 0$ (b) $h(A) < 0$ (c) $h(A) = 1$ (d) $h(A) < 1$

13. An artificial neurons receives *n* inputs $x_1, x_2,...,x_n$ with weights $w_1,w_2,...,w_n$ attached to the input links. The weighted sum ..... is computed to be passed on to a non-linear filter ϕ calledactivation function to release the output.
(a) Σw_i (b) Σx_i (c) $\Sigma w_i + \Sigma x_i$ (d) $\Sigma w_i . \Sigma x_i$

14. Consider a single perception with weights as given in the following figure:



and $f(t)$ defines $f(t) = \begin{cases} 1, t > 0 \\ 0, t \le 0 \end{cases}$
The above perception can solve
(a) OR problem (b) AND problem (c) XOR problem (d) All of the above

15. Who invented the Single-Layer Perceptron?
(a) Frank Rosenblatt (b) Marvin Minsky (c) Seymour Papert (d) None of these

16. Why are linearly separable problems of interest to neural network researchers?
(a) Because they are the only class of problems that a network can solve sucessfully
(b) Because they are the only mathematical functions that are continuous
(c) Because they are the only mathematical functions you can draw
(d) Because they are the only class of problems a perceptron can solve successfully

17. Where is the *minimum* criterion used ?
(a) When there is an AND operation (b) When there is an OR operation
(c) In De-Morgan's theorem (d) None of the above

18. 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.
(a) I, II and III (b) I and II only (c) I, III only (d) II and III

19. What is the Fuzzy Approximation Theorem(FAT) ?
(a) A fuzzy sytem can model *any* continoussytem
(b) The conversion of fuzzy logic to probability.
(c) A continoussytem can model *a* fuzzy system.
(d) Fuzzy patches covering a series of fuzzy rules.

20. What is the main difference between probability and fuzzy logic ?
(a) Fuzzy logic is probability in disguise.
(b) Fuzzy logic is the likelihood of an event occuring and probablility is the extent of that event.
(c) Probability is ADDITIVE, meaning all its values must add up to one.
(d) Probability dissipates with decreasing information.

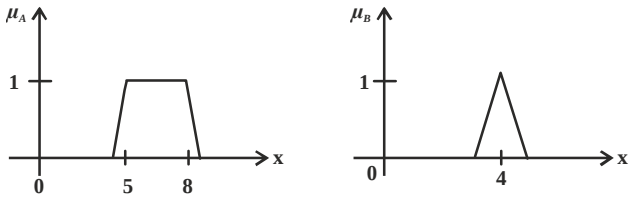
21. In an adaptive fuzzy system
(I) The machine learns as more data are fed into it.
(II) Nueral network is used to find the fuzzy rules.
(III) The system creates rules without the intervention of human beings.
(a) I, II and III (b) I and II (c) I, III only (d) II and III

22. What are the following sequence of steps taken in designing a fuzzy logic machine?
(a) Fuzzification $\rightarrow$ Rule evaluation $\rightarrow$ Defuzzification
(b) Rule evaluation $\rightarrow$ Fuzzification $\rightarrow$ Defuzzification
(c) Fuzzy Sets $\rightarrow$ Defuzzification $\rightarrow$ Rule evaluation
(d) Defuzzification $\rightarrow$ Rule evaluation $\rightarrow$ Fuzzification

23. Fuzzy logic has rapidly become one of the most successful of today's technologies for developing sophisticated control systems. The reason for this is:
(I) Fuzzy logic resembles the human way of thinking.
(II) Fuzzy logic enables the ability to generate precise solutions from certain or approximate information.
(III) Fuzzy logic is easy to implement.
(a) I, II and III (b) I and II (c) II and III only (d) none of the above

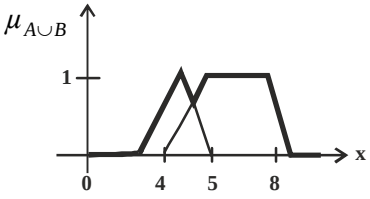
24. Who is the founder of fuzzy logic?
(a) Aristotle (b) Buddha (c) ZaderLotfi (d) Bart Kosko

25. Given these fuzzy graphs for member functions A and B.

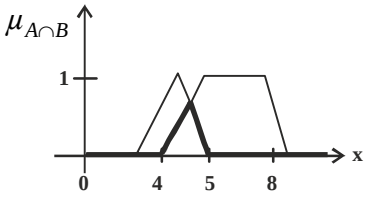


Which of the following graphs yields the result of the operation A OR B.

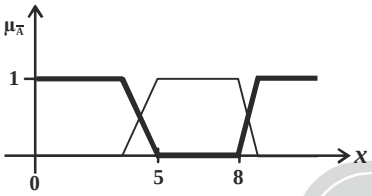
(a)



(b)



(c)



(d) None of the above

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ANSWER KEY

1. (c)	**2. (d)**	**3. (a)**	**4. (c)**	**5. (d)**	**6. (b)**	**7. (c)**
8. (d)	**9. (a)**	**10. (b)**	**11. (b)**	**12. (c)**	**13. (d)**	**14. (b)**
15. (a)	**16. (b)**	**17. (a)**	**18. (a)**	**19. (b)**	**20. (a)**	**21. (c)**
22. (b)	**23. (a)**	**24. (c)**	**25. (b)**			