

[22/A-30]

SEAT No. \_\_\_\_\_

No. of Printed Pages: 02

Sardar Patel University  
Master of Computer Applications (M C A) V Semester Examinations

PS05CMCA01: Artificial Intelligence

Date: 05/04/2019

Friday

Time: 10:00 am to 1:00 pm

Marks: 70

Q.1 Select an appropriate answer for each the following questions: [08]

- 1) AI is a branch of \_\_\_\_\_.
  - a) Machine learning
  - b) Artificial neural network
  - c) Computer science
  - d) Heuristic learning
- 2) The data driven approach of searching is also known as \_\_\_\_\_.
  - a) Forward chaining
  - b) Backward chaining
  - c) Depth searching
  - d) None of these
- 3) A variable which acquires fuzzy value in term of word is called as \_\_\_\_\_ variable.
  - a) Heuristic
  - b) Probabilistic
  - c) Linguistic
  - d) Crisp
- 4) The rule which states if  $P \rightarrow Q$  and  $Q \rightarrow R$ , then  $P \rightarrow R$  is called as \_\_\_\_\_.
  - a) Modus ponens
  - b) Chain rule
  - c) Modus tollens
  - d) Absolute rule
- 5) \_\_\_\_\_ is also known as data processing or transfer function of a neuron.
  - a) Activation
  - b) Center
  - c) Inference
  - d) None of these
- 6) \_\_\_\_\_ learns with help of parallel relaxation.
  - a) Perceptron
  - b) Multi layer perceptron
  - c) SOM
  - d) None of these
- 7) \_\_\_\_\_ is an example of typical genetic operator.
  - a) Mutation
  - b) Crossover
  - c) Both mutation and crossover
  - d) None of these
- 8) \_\_\_\_\_ agent has ability to move in predefined environment.
  - a) Mobile agent
  - b) Information agent
  - c) Query agent
  - d) None of these

(1)

(P.T.O)

- Q.2 Answer following questions in brief. [ANY SEVEN] [14]**
- 1) Differentiate between natural and artificial intelligence.
  - 2) Mention steps for generate-and-test algorithm.
  - 3) Define fuzzy logic and state any two uses of fuzzy logic.
  - 4) Give any two advantages of weak search methods.
  - 5) List any tool for knowledge discovery.
  - 6) Explain in brief the use of information agent.
  - 7) Explain any one genetic operator in brief with example.
  - 8) List any two constituents of soft computing.
  - 9) List any two activation functions of a perception in typical ANN.
- Q.3 [A] Draw and explain the components of knowledge based system in detail. [06]**
- [B] Write a detailed note on expert systems. [06]**
- OR**
- [B] List and explain in detail the tests available for testing intelligence of machine. [06]**
- Q.4 [A] Define and find (i) Product and (ii) Disjunctive sum operations for following fuzzy sets: [06]**  
 $\tilde{A} = \{(x1,0.3), (x2,0.6), (x3,0.8)\}$  and  
 $\tilde{B} = \{(x1,0.4), (x2,0.4), (x3,0.7)\}$ .
- [B] If  $T(\tilde{A}) = 0.23$  and  $T(\tilde{B}) = 0.81$ , then find (i)  $T(\tilde{A} \wedge \tilde{B})$ , (ii)  $T(\tilde{A} \vee \sim \tilde{B})$ , and (iii)  $T(\tilde{A} \Rightarrow \tilde{B})$ . [06]**
- OR**
- [B] Explain fuzzy rule based system with appropriate example. [06]**
- Q.5 [A] Write a short note on working of genetic algorithms. Also list a few applications of it. [06]**
- [B] Take any problem of function optimization and solve it with genetic algorithm. Show encoding, genetic operations and fitness functions with the final optimization results. [06]**
- OR**
- [B] Give structure of multi layer perceptron. Explain the structure by taking suitable example. [06]**
- Q.6 [A] Draw and compare biological neuron and artificial neuron. Also list two applications of artificial neural networks. [06]**
- [B] Draw knowledge management cycle and explain it in detail. [06]**
- OR**
- [B] Explain any one hybrid soft computing system with its structure, working and applications. [06]**

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