

Total No. of Questions : 12]

SEAT No. :

P970

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[5871]-644

**B.E. (Electronics)**

**ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING**

**(2015 Pattern) (Semester - II) (Elective - III)**

*Time : 2½ Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8, Q.9 or Q.10, Q.11 or Q.12.*
- 2) *Neat diagrams must be drawn whenever necessary.*
- 3) *Assume suitable data if necessary.*

**Q1)** List various environments for an agent. Compare between following environments. [7]

- a) Fully observable versus partially observable
- b) Deterministic versus stochastic

OR

**Q2)** Give types of Agent and Explain simple reflex agent with the help of a neat diagram. [7]

**Q3)** Explain simulated annealing algorithm in detail. Also explain how to select an annealing schedule. [6]

OR

**Q4)** Explain greedy best first search algorithm. [6]

**Q5)** Explain knowledge representation and knowledge-engineering process of the electronic circuit domain. [7]

OR

**Q6)** Explain the properties of Forward chaining and Backward Chaining and state the Differences between them? [7]

**Q7) a)** What is a Bayesian Belief Network and explain how it can be used for building models. [12]

b) How to represent OR Gate using linear classifiers. [5]

OR

**Q8)** Rohit installed a new burglary alarm at his home to detect burglary. The alarm reliably responds at detecting a burglary but also responds for minor earthquakes. Rohit has two neighbors Vinay and Sundar, who have taken a responsibility to inform Rohit at work when they hear the alarm. Vinay always calls Rohit when he hears the alarm, but sometimes he got confused with the phone ringing and calls at that time too. On the other hand, Sundar likes to listen to high music, so sometimes he misses to hear the alarm. Here we would like to compute the probability of Burglary Alarm.

Problem :

Calculate the probability that alarm has sounded, but there is neither a burglary, nor an earthquake occurred, and Vinay and Sundar both called the Vinay. [17]

**Q9) a)** Explain biological and artificial neural network. [8]

b) What is the difference between Forward propagation and Backward Propagation in Neural Networks? Explain. [8]

OR

**Q10)a)** Explain any four activation functions used in a neural network. [8]

b) Draw and explain perceptron algorithm for OR Logic Gate with 2-bit Binary input. [8]

- Q11)a)** Explain supervised and unsupervised learning with the help of example.[9]
- b) What is use of clustering? Explain the methods to decide number of clusters in K means clustering. [8]

OR

- Q12)a)** What are Support Vectors in SVMs? What is the basic principle of a Support Vector Machine? What is use of Kernels in SVM ? [9]
- b) Explain decision tree algorithm and state its advantages and limitations.[8]

