Code No: V3226 **R07** **Set No: 1**

III B.Tech. II Semester Supplementary Examinations, November/December - 2012

**ARTIFICIAL INTELLIGENCE AND NEURAL NETWORKS**

(Computer Science and Engineering)

**Time: 3 Hours** **Max Marks: 80**

Answer any FIVE Questions

All Questions carry equal marks

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1. a) Differentiate ANN with biological Neural Network.
   b) Explain A* algorithm with suitable example.

2. a) What are the basic learning laws? Explain.
   b) Explain alpha-beta pruning with illustration.

3. What is the concept of backpropagation? Derive its weight update algorithm with a schematic diagram of typical multi-layer feed forward neural network.

4. a) What is perceptron convergence theorem? What is its significance?
   b) What is propositional logic? How knowledge is represented by propositional logic?

5. a) What is the Hopfield model of a neural network?
   b) Write short note on forward and backward chaining.

6. a) Describe the basic learning feature of an instar and discuss its application.
   b) Explain the resolution algorithm for Predicate logic in detail.

7. a) Explain the different methods of implementing the feature mapping process.
   b) Compare inference in propositional logic with inference in first order logic.

8. a) Explain the following terms: intelligence, artificial intelligence, and agent.
   b) Explain the function of the goal-based agent.

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Code No: V3226 **R07** **Set No: 2**

III B.Tech. II Semester Supplementary Examinations, November/December - 2012

**ARTIFICIAL INTELLIGENCE AND NEURAL NETWORKS**

(Computer Science and Engineering)

**Time: 3 Hours** **Max Marks: 80**

Answer any FIVE Questions

All Questions carry equal marks

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1. a) Discuss in brief the classical models of neuron.
   b) What is rational agent? How it interacts with its environment?

2. a) What are the three functional units? Why are they called functional units?
   b) In what kind of problems the breadth first search be better than a depth first search?

3. a) Briefly explain the following:
   i) Task with back propagation network.
   ii) Limitations of back propagation.
   b) Write short note on searching with partial information.

4. a) What is meant by perceptron representation problem? Distinguish between linearly separable and linearly inseparable problems.
   b) Explain the concept of Unification and lifting.

5. a) Explain with the help of a state transition diagram the meaning of stable states and false minima.
   b) Explain resolution with an example.

6. a) What is perceptron learning for pattern classification?
   b) Explain the quantifiers used in first order logic with example.

7. List and explain different types of associative memory.

8. a) What is an agent? Explain any two kinds of agent programs.
   b) Explain the forward-chaining algorithm for proposition

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Code No: V3226 **R07** **Set No: 3**

III B.Tech. II Semester Supplementary Examinations, November/December - 2012

**ARTIFICIAL INTELLIGENCE AND NEURAL NETWORKS**

(Computer Science and Engineering)

**Time: 3 Hours** **Max Marks: 80**

Answer any FIVE Questions

All Questions carry equal marks

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1. a) With suitable diagrams explain the model of artificial neuron and also explain the important activation functions used in ANN.
   b) Explain A* algorithm with suitable example.

2. a) Distinguish between pattern association, pattern classification and pattern mapping tasks.
   b) Explain the function of the goal-based agent.

3. a) Explain how multilayer feedforward neural network with linear units in all the layers is equivalent to a linear associative network.
   b) Explain forward chaining in propositional logic.

4. a) How to solve the hard pattern storage problems?
   b) Explain the resolution algorithm for propositional logic.

5. Explain about the structure of a feedback neural network and how the stability of this network is established?

6. a) What are the components of a competitive learning network? Explain.
   b) What is forward chaining in first order logic?

7. a) What is a self-organization network? What are the salient features of the Kohonen's self-organizing learning algorithm?
   b) Explain Unification in first order logic.

8. a) Write Minimax algorithm and explain with suitable example the concept of Alpha and Beta cut offs.
   b) Explain the percept sequence for the vacuum cleaner world.

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Code No: V3226 **R07** **Set No: 4**

III B.Tech. II Semester Supplementary Examinations, November/December - 2012

**ARTIFICIAL INTELLIGENCE AND NEURAL NETWORKS**

(Computer Science and Engineering)

**Time: 3 Hours** **Max Marks: 80**

Answer any FIVE Questions

All Questions carry equal marks

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1. a) Explain what is meant by feature mapping? Explain the problem with a real life example from speech production.
   b) Explain alpha-beta pruning with illustration.

2. a) Explain the difference between autoassociation problem and heteroassociation problem.
   b) Explain the minimax procedure with an example.

3. a) Explain why it is preferable to have different values for $\eta$ for weights leading to the units in different layers in a feedforward neural network.
   b) Compare inference in propositional logic with inference in first order logic.

4. a) What is mean by generalization in feedforward networks?
   b) Explain backward chaining in first order logic.

5. What is a state transition diagram for a feedback network? Explain how to derive it for a given network.

6. a) What is a pattern clustering network? What are the basic competitive learning laws?
   b) Consider the following problem.
   - John likes all kinds of food.
   - Apples are food.
   - Chicken is food.
   - Anything any one eats and isn't killed by is food.
   - Bill ate peanuts and still alive.
   - Sue eats everything Bill eats.

   (i) Convert the formulas into clause form.
   (ii) Prove that "John likes peanuts" using resolution.

7. a) Explain the difference between pattern clustering and feature mapping.
   b) Explain knowledge-based agent, using "Wumpus World" as an example.

8. a) What is rational agent? How it interacts with its environment?
   b) Explain the problem characteristics.

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