



Name :

Roll No. :

Invigilator's Signature :

CS / B.TECH (EE-NEW) / SEM-8 / EE-802C / 2011

2011

AI AND SOFT COMPUTING

Time Allotted : 3 Hours

Full Marks : 70

The figures in the margin indicate full marks.

*Candidates are required to give their answers in their own words
as far as practicable.*

GROUP – A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for any *ten* of the following :

$$10 \times 1 = 10$$

- i) Find out the most appropriate predicate representation for “every child like to play game”
- a) $\exists x : [\text{CHILD}(x) \rightarrow [\forall y : [\text{GAME}(y) \wedge \text{LIKES}(x,y)]]]$
 - b) $\forall x : [\text{CHILD}(x) \rightarrow [\exists y : [\text{GAME}(y) \wedge \text{LIKES}(x,y)]]]$
 - c) $\forall x : [\text{CHILD}(x) \rightarrow [\forall y : [\text{GAME}(y) \wedge \text{LIKES}(x,y)]]]$
 - d) $\exists x : [\text{CHILD}(x) \rightarrow [\exists y : [\text{GAME}(y) \wedge \text{LIKES}(x,y)]]]$.
- ii) AI does not overlap with
- a) linguistics
 - b) psychology & philosophy
 - c) both (a) and (b)
 - d) none of these.



- iii) Hill climbing has potential problems like
 - a) Lake
 - b) Foothill trap
 - c) Garden
 - d) all of these.
- iv) The form of heuristic function of A^* search is
 - a) $f^*(n) = g^*(n) * h^*(n)$
 - b) $f^*(n) = g^*(n) + h^*(n)$
 - c) $f^*(n) = g(n) + h(n)$
 - d) none of these.
- v) Search techniques are used for
 - a) goal node searching
 - b) optimization of search space
 - c) finding goal distance of the goal node from start node
 - d) all of these.
- vi) Computers are better than human beings in the matter of non-numeric symbolic processing.
 - a) always
 - b) sometimes
 - c) never
 - d) most of the time.
- vii) Knowledge consists of
 - a) concepts and procedures
 - b) facts and rules
 - c) both (a) and (b)
 - d) none of these.
- viii) The major components of neuron are
 - a) Dendrites, Cell Body and Axon
 - b) Cell Body and Axon
 - c) Dendrites and Axon
 - d) Frontal & temporal lobe.
- ix) The graph of sigmoidal function is
 - a) V-shaped
 - b) S-shaped
 - c) step shaped
 - d) none of these.
- x) Which characteristic is not present in ANN ?
 - a) Speed
 - b) Storage
 - c) Fault tolerance
 - d) Software dependency.

- ## GROUP – B

Answer any *three* of the following.

$$3 \times 5 = 15$$

- $1 + 4$

GROUP – C

Answer any *three* of the following.

$$3 \times 15 = 45$$

- $$2 + 1 + 5 + 2 + 2 + 3$$



8. What do you mean by soft computing ? What is knowledge representation in AI ? Describe different types of activation functions in ANN. What is the role of hidden layer in the training process in ANN ? Distinguish between biological neural network and ANN. 2 + 3 + 4 + 2 + 4
9. Point out any four characteristics of an AI system. Explain the characteristics. Explain the equivalence relationship in predicate logic. Give an example of equivalence relationship. Can a system engaged in purely numeric computation be called a non-intelligent system ? Explain with suitable arguments. 4 + 4 + 3 + 1 + 3
10. a) Distinguish between supervised learning and unsupervised learning techniques.
- b) How is the speed of convergence increased in Black Propagation learning technique ?
11. Write short notes on any *three* of the following : 3 × 5
- a) Activation Function
 - b) Classification Problem
 - c) Kohonen's self organising map
 - d) Hill Climbing Search
 - e) Unsupervised Training
 - f) ART-I.

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