

Mid-West University
Examinations Management Office

Chance Examinations 2081

Bachelor level/ B.E. Computer/ 7th Semester

Time: 3 hours

Subject: Artificial Intelligence (CO471/CO519)

Full Marks: 50

Pass Marks: 25

- *Attempt all the questions*
 - *Figures in the margin indicate full marks.*
 - *Assume suitable values, with a stipulation, if necessary.*
 - *Candidates are required to answer the questions in their own words as far as possible.*
1. When a machine is said to be passed Turing Test? If the Turing Test is passed, does this mean that computers exhibit intelligence? Give your reason. [2+3]
 2. What is production system? How does AI solve complex problems? Explain. [1+4]
 3. What is alpha beta procedure? A heuristic function $h(n)$ estimates the cost to reach the goal from node n . If, $h(n) = 0$ for all n , how does A* behave compared to BFS? [1+4]
 4. Define tautology. How can you compare predicate logic with propositional logic? [1+4]
 5. What is FOPL? A doctor knows that the disease meningitis causes the patient to have a stiff neck 40% of the time. The doctor also knows that the probability that a patient has meningitis is $1/40,000$, and the probability that any patient has a stiff neck is 2%. Find the probability that a patient with a stiff neck has meningitis. [Use Bayes's Theorem] [1+4]
 6. What are the issues in knowledge representation? A semantic network has nodes connected by edges representing relationships. If it takes 3 steps to traverse from "Animal" to "Dog" through the following path: **Animal** → **Mammal** → **Canine** → **Dog**, how many intermediate nodes exist? [1+4]
 7. How can you relate AI with machine learning? A neural network has 3 input neurons, 2 hidden layers with 4 and 3 neurons respectively, and 1 output neuron. How many weights are there in total if all neurons are fully connected? [2+3]
 8. What is perceptron in neural network? Explain the structure of neural network. [1+4]
 9. Draw and explain the architecture of expert system. [5]
 10. Write Short Notes on *Any Two*: [2x2.5=5]
 - a) Natural Language Processing
 - b) Machine Vision
 - c) Genetic Algorithm

The End