



**NP – 412**

**V Semester B.C.A. Examination, Jan./Feb. 2025  
(NEP) (Freshers/Repeaters)  
ARTIFICIAL INTELLIGENCE**

Time : 2½ Hours

Max. Marks : 60

**Instruction : Answer any 4 questions from each Part.**

**PART – A**

I. Answer **any four** questions. **Each** question carries **2** marks : **(4×2=8)**

- 1) What is a heuristic function ?
- 2) What is predicate logic ?
- 3) Mention any 2 applications of NLP in AI.
- 4) Write any two advantages of expert system.
- 5) What are neural networks ?
- 6) List the steps on the object detection process.

**PART – B**

II. Answer **any four** questions. **Each** question carries **5** marks. **(4×5=20)**

- 7) Explain the structure of an intelligent agents with a neat diagram.
- 8) Explain knowledge based Agent.
- 9) Explain the Robot Kinematics.
- 10) Explain the various parsing techniques in NLP with example.
- 11) Differentiate forward chaining and backward chaining.
- 12) What is Minimax search in game playing ? Explain how alpha-beta is an improvement over minimax search.

**P.T.O.**

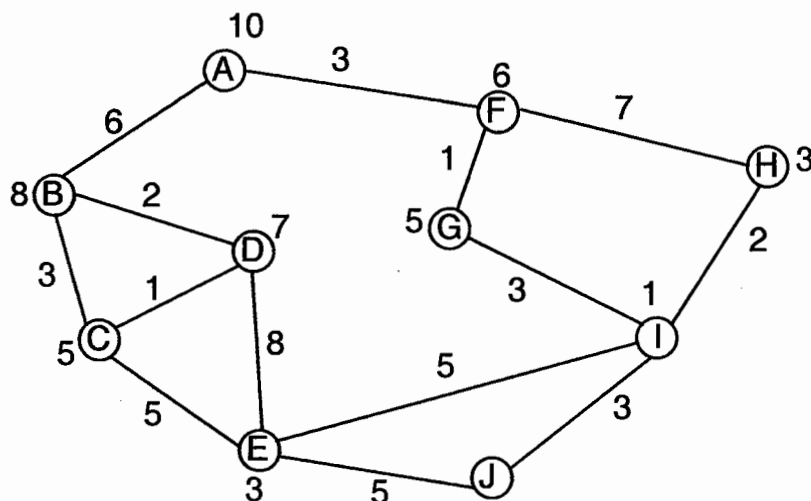


## PART – C

III. Answer **any four** questions. **Each** carries **8** marks.

(4×8=32)

- 13) a) Explain Bayes' theorem in AI. 4  
 b) What is fuzzy logic ? 4
- 14) Explain any 2 learning techniques in detail with example. 8
- 15) a) Explain the components of planning. 4  
 b) Construct a parse tree for the following sentence.  
 "John wants to eat icecream with a spoon". 4
- 16) What is a neural network ? Explain the architecture of ANN in detail. 8
- 17) a) What is machine learning ? Explain the machine learning techniques with an example. 4  
 b) For the following graph find the cost-effective path from (A) to (J) using A\* algorithm. 4



\* Numbers on the edges are distances between the nodes.

\* Numbers on the nodes are heuristic value.

- 18) For the following sentences using resolution prove that "John likes peanuts". 8

- 1) John likes all kinds of food.
- 2) Apples are food.
- 3) Chicken is food.
- 4) Anything anyone eats and isn't killed by is food.
- 5) Bill eats peanuts and is still alive.
- 6) Sue eats everything Bill eats.