

# POKHARA UNIVERSITY

Level: Bachelor  
Programme: BE  
Course: Artificial Intelligence

Semester: Fall

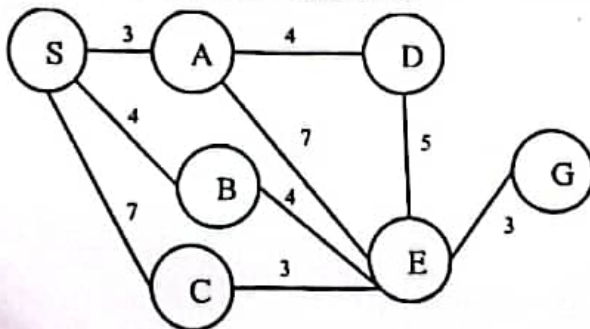
Year : 2024  
Full Marks : 100  
Pass Marks : 45  
Time : 3 hrs.

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

*The figures in the margin indicate full marks.*

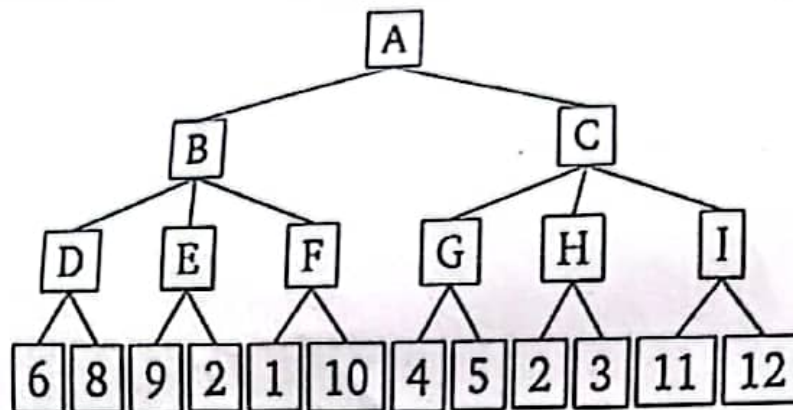
*Attempt all the questions.*

- a) Define Artificial Intelligence. Is the ChatGPT an intelligent agent? If yes, explain in detail. 7
- b) What is PEAS? Explain the architecture of reflex and goal-based agents with an example such as a vacuum cleaning agent. 8
- a) Design an intelligent agent that can solve a sliding tile puzzle (8-puzzle). The agent can slide tiles in different directions to reach the goal configuration. Formulate/model this problem as a production system. 8
- b) What is A\* search? Apply A\* search to determine the optimal path from Node S to Node G. 7



NODES	HEURISTIC
S	7
A	6
B	4
C	5
D	2
E	2
G	0

3. a) What is the idea of Mini-Max search algorithm? Explain how the alpha-beta pruning works with reference to the following game tree. Assume the root node is MAX node. 8



- b) What is Knowledge Representation? Discuss how Predicate logic extends the expressive power of propositional logic in detail. 7
- a) Define machine learning. Explain the learning by analogy approach with suitable examples. 7
- b) What is Clustering? Explain how the K-Means Clustering Algorithm works with an example. 8
- a) What is support vector machine? Explain in detail. 7
- b) What is Artificial Neural Network? Explain the perceptron training algorithm. Highlight the limitation of the perceptron training algorithm and mention a scenario where it might fail to perform well. 8
- a) What is an expert system? Explain the architecture of an expert system in detail. 8
- b) Provide examples of ambiguity at the phonetic, syntactic, semantic, and pragmatic levels in Natural Language Processing. 7

Write short notes on: (Any two)

2×5

- a) Turing Test
- b) Fuzzy Logic
- c) Reasoning under uncertainty