

Bachelor Level / fourth-semester / Science Full marks: 60 **Computer Science and Information Technology(CSC261)** Pass marks: 24 (Artificial Intelligence) Time: 3 hours 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 questions. (10x6=60)

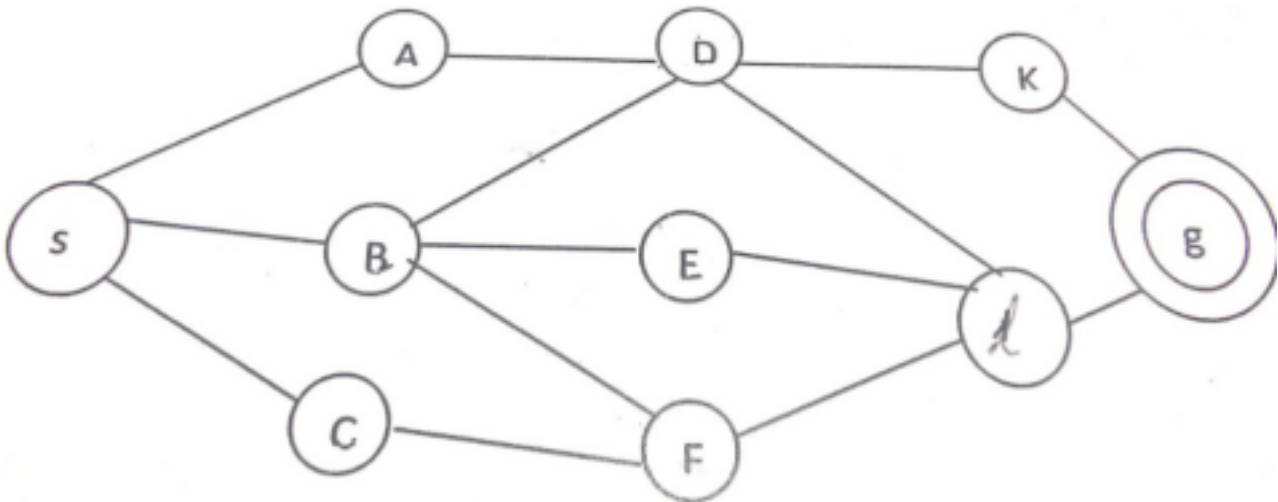
1. How can you define AI from the dimension of rationality?

2. What is an intelligent agent? Design PEAS framework for,

- Soccer playing agent
- Internet shopping assistant

3. Converting the following statement into FOPL, every friend of Ramesh has visited pokhara. Everyone who visits Pokhara does boating in Fewa Lake. Ramesh has done boating in Fewa Lake. Now using resolution try to infer; some friend of Ramesh has done boating in Fewa Lake.

4. How iterative deepening search is better than DFS and BFS. Consider following state space, use iterative deepening search considering S as start and g as goal.



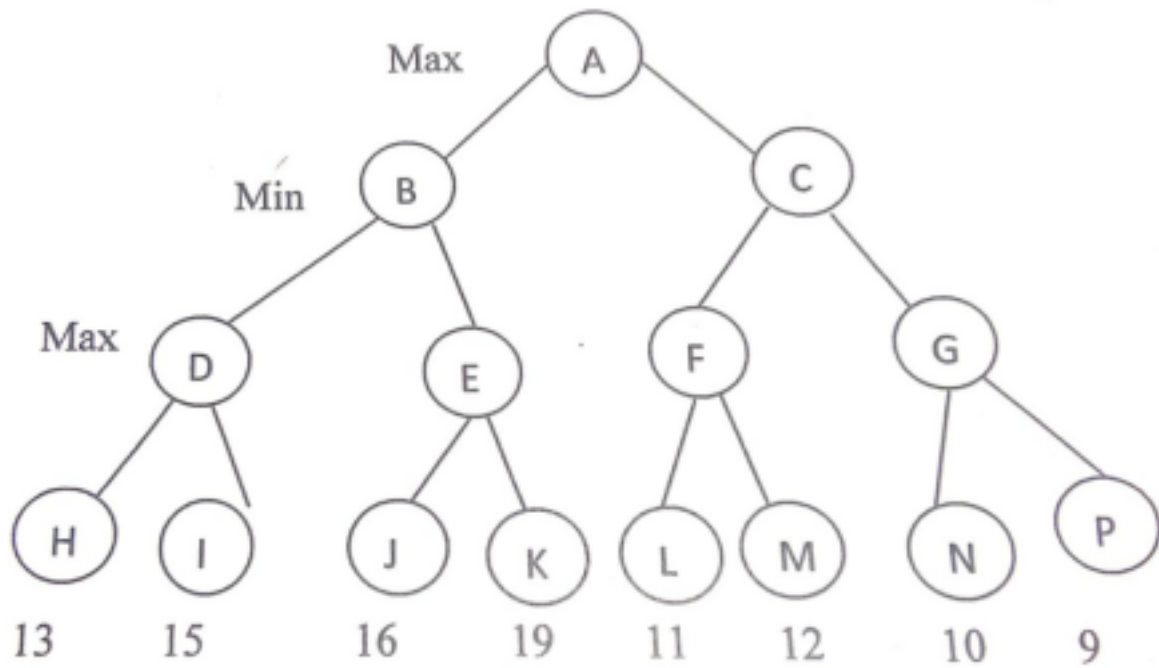
5. What is a script? How is knowledge represented in script? Illustrate components of script with an example

6. What is machine learning? How can genetic algorithms be used to train agents? Discuss the operations of genetic algorithms.

7. Configure a feed-forward neural network with your own assumptions of inputs and weights and express it mathematically. Write an algorithm for training neural networks using allebbian learning.

8. What is natural language processing? How is morphological analysis done during processing?

9. Consider the following state space representing a game. Use minimax search to find a solution and perform alpha-beta pruning, if it exists.



10. How facts in uncertain knowledge are represented? Configure a Bayesian network for following:

The probability of having rain is 60%. The chances of getting cold if it rains is 80%. The probability of not having sunshine is 90%. The probability that it will be hot if it is sunshine is 0.67.