

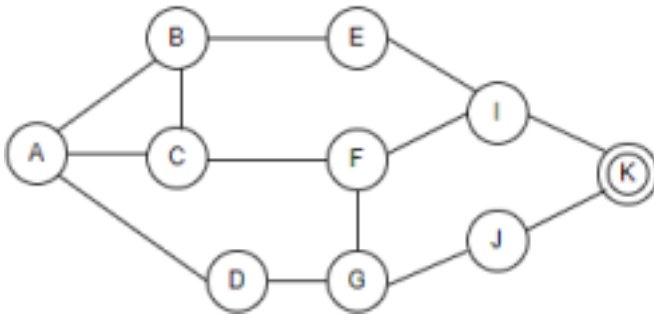
Bachelor Level / fourth-semester / Science Full marks: 60 **Computer Science and Information Technology(CSC261)** Pass marks: 24
(Artificial Intelligence) Time: 3 hours Candidates are required to give their answers in their own words as far as practicable.
The figures in the margin indicate full marks.

Section A

Long Answer Questions.

Attempt any Two questions. (2 x 10 = 20)

1. How are informed searches different from uniformed? Given the following state space, illustrate how depth limited search and iterative deepening search works? Use your own assumption for the depth limit.



Hence, S is the start and K is the goal. (3+7)

2. Consider following facts:

Every traffic chases some driver. Every driver who horns is smart. No traffic catches any smart driver. Any traffic who chases some driver but does not catch him is frustrated.

Now configure the FOPL knowledge base for above statements. Use a resolution algorithm to draw a conclusion that "If all drivers horn, then all traffic is frustrated". (3+2+5)

3. Describe mathematical model of neural network. What does it mean to train a neural network? Write an algorithm for perceptron learning.

Section B

Short Answer Questions.

Attempt any Eight questions. (8 x 5 = 40)

4. What is the Turing Test? How can it be used to measure the intelligence of machines?

5. How can it be configured using the PEAS framework? Illustrate with examples.

6. Construct semantic network for following facts:

Ram is a person. People are humans. All humans have a nose. Humans are instances of mammals. Ram has a weight of 60 kg. Weight of Ram is less than the weight of Sita.

7. What is crossover operation in genetic algorithms? The following chromosomes show the result of one-point and two point crossover.

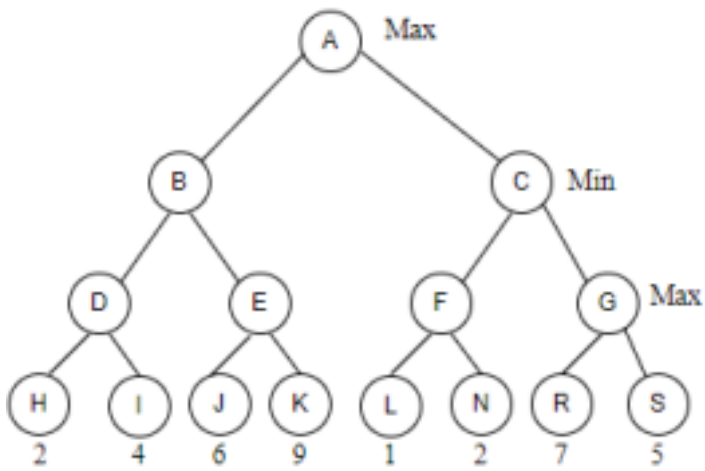
C1 = 01100010

C2 = 10101100

Choose appropriate crossover points as per your assumption.

8. What is an expert system? How does it work? Mention role of inference engine in expert system.

9. How semantic and pragmatic analysis is done in natural language processing.
10. How philosophy, sociology and economics influence the study of artificial intelligence?
11. Given the following search space, determine if there exists any alpha and beta cutoffs.



12. What is posterior probability? Consider a scenario that a patient has liver disease is 15% probability. A test says that 5% of patients are alcoholic. Among those patients diagnosed with liver disease, 7% are alcoholic. Now compute the chance of having liver disease, if the patient is alcoholic.