

TE Sem VI C-scheme (Honours)

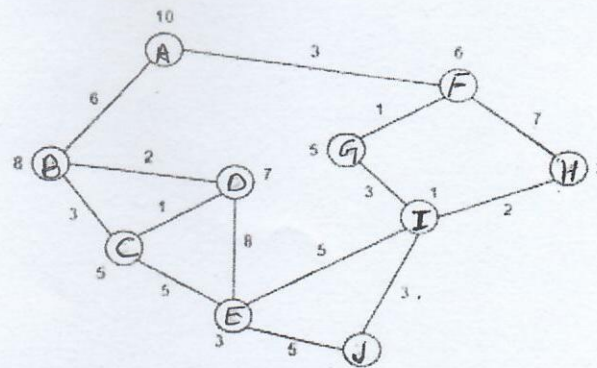
(3 hours)

EXTC / INFT / CMPN / EES

Total Marks: 80

- N.B. 1. Question No. 1 is compulsory
 2. Attempt any three questions from remaining five questions
 3. Assume suitable data if necessary and justify the assumptions
 4. Figures to the right indicate full marks

- Q1 Attempt any Four 20
- A Define Nash Equilibrium with a suitable example. 05
- B What is a heuristic function $h(n)$? Explain its role in informed search. 05
- C Define Propositional Logic with two examples. 05
- D Differentiate between Supervised and Unsupervised Learning. 05
- E Define Bayesian Games. Explain with a simple example how players make decisions under incomplete information. 05
- Q2 A Explain the Prisoner's Dilemma and identify the Nash Equilibrium. 10
- B Consider the following graph- 10



The numbers written on edges represent the distance between the nodes.

The numbers written on nodes represent the heuristic value.

Find the most cost-effective path to reach from start state A to final state J using A* Algorithm.

- Q3 A Explain the concept of Rationalizability. How does it help in eliminating dominated strategies? 10
- B Explain Uncertain Knowledge and Probabilistic Reasoning with example. 10
- Q4 A State and explain Cournot's model of oligopoly. 10
- B Explain Logistic Regression and its use in classification problems. 10
- Q5 A Explain Bayesian Networks and their applications. 10
- B Use the k-means algorithm and Euclidean distance to cluster the following 8 data points into 3 clusters: 10
- $C1 = A1 = (2,10)$, $C2 = A4 = (5,8)$, $C3 = A7 = (1,2)$
- Data points:
- $A1 = (2,10)$, $A2 = (2,5)$, $A3 = (8,4)$, $A4 = (5,8)$, $A5 = (7,5)$, $A6 = (6,4)$, $A7 = (1,2)$, $A8 = (4,9)$.
- Form the distance matrix with Euclidean distance and solve the problem up to two iterations.
- Q6 A Discuss types of learning can be accomplished by Hidden Markov Model? Discuss state transition diagram of HMM. 10
- B Compare Artificial Intelligence and Machine Learning with suitable examples. 10
