NATIONAL ACADEMY OF SCIENCE AND TECHNOLOGY

(Affiliated to Pokhara University)

Dhangadhi, Kailali

Pre-University Examination

Semester: V_Fall

Level: Bachelor
Programme: B.E. Computer
Course: Artificial Intelligence
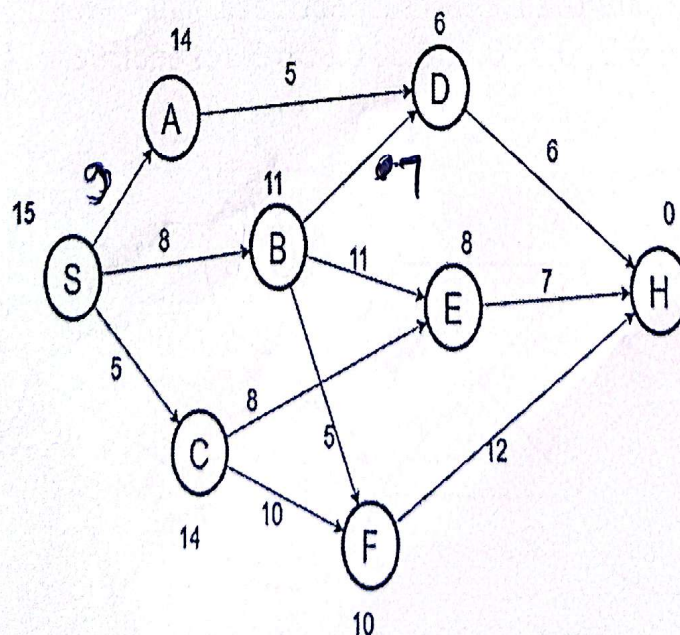
Year : 2024
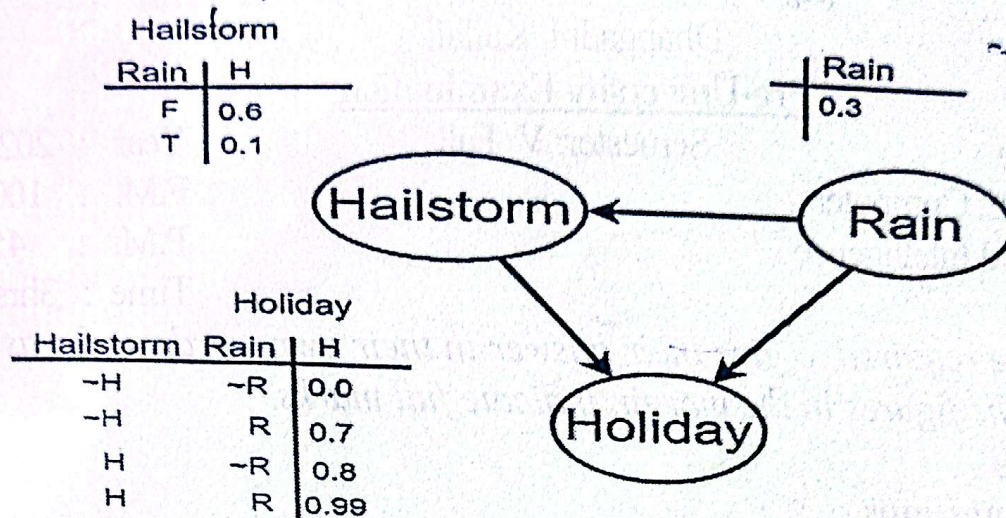F.M. : 100
P.M. : 45
Time : 3hrs

Candidates are required to give their answer in their own words as for as practicable. The figures in the margin indicate full marks.

Attempt all questions.

1 a. What are the different approaches to AI. Mention different types of Intelligence. 8 7

   b. Do you think AI should be bound under ethics? What are the different Governance and regulations used for AI?

2 a. What are different types of Agents. Explain intelligent Agent in contrast to evolution of any relevant example. 7

   b. What is a well-defined and ill-defined problem. Explain Learning agent with its block diagram. 8

3 a. What do you understand by CSP? What are its components, illustrate it with a relevant example. 7

   b. Find the best path and its cost using A* search for the below graph. 8

4 a. What do you understand by Ontological Based Representation? **7**
   Analyze the given graph and find the probability of holiday given
   that there is rain, and hailstorm.

Hailstorm

Rain	H
F	0.6
T	0.1

Rain	
	0.3

Holiday

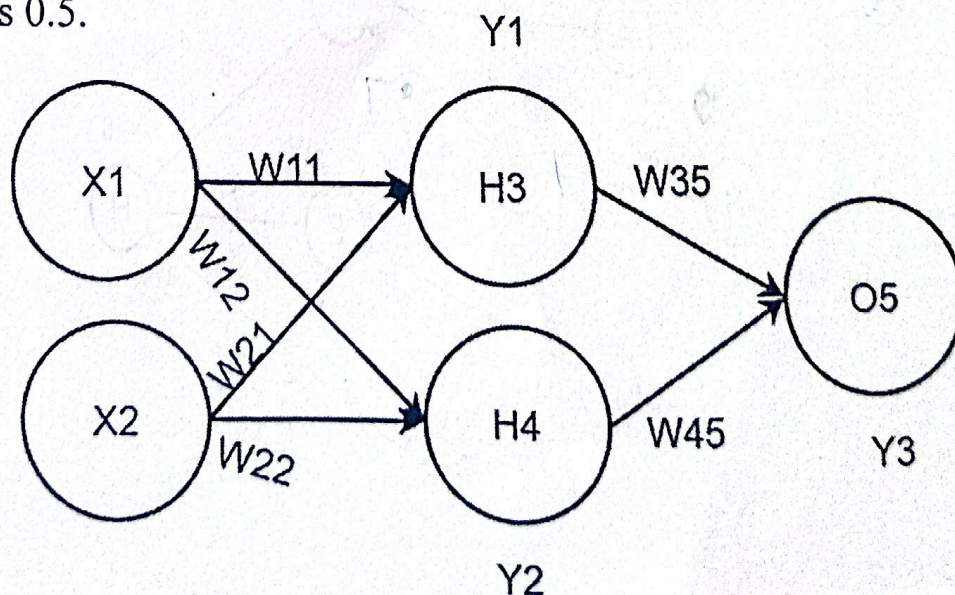| Hailstorm	Rain	H
~H	~R	0.0
~H	R	0.7
H	~R	0.8
H	R	0.99

8

b. Differential between Propositional Logic and Predicate logic.
   Convert the following into Logic and prove "I will be holiday"
   using resolution.
   1. There is hailstorm or it is raining, $H \lor R$
   2. If there is rain, then it will be a holiday. $R \to H$
   3. If hailstorms are high, then the temperature is cold. $\neg H \to T$
   4. It is not cold $\neg C$

5 a. How do you differentiate K means clustering and K nearest   **7**
   neighbor algorithm? Using K-means Clustering, cluster the
   following data into clusters. Where k= 3 for data: 25, 52,14, 23, 5,   **8**
   11, 10, 30, 36, 18.

b. Perform backward propagation with learning rate of 1 where
   inputs X1, X2, are 0.25, 0.80 respectively. W11, W12, W21, W22,
   W35, W45 are 0.2, 0.3, 0.4, 0.3, 0.9, 0.3 respectively. The target
   output is 0.5.

6 a. Explain the basic components of the Expert System. How do we update the expert system's knowledge base? 7

   b. What are different Steps that are used in Mamdani. Explain different types of fuzzification methods. 8

7 Write shorts notes on (any two): 1
   a. Min max algorithm.
   b. Iterative Deepening Search
   c. Genetic Algorithm