Adani Institute of Infrastructure Engineering

Information and Communication Technology

Subject:2180703: Artificial Intelligence

Date: 16/03/2021

Total Marks: 30   Duration: 90 Minutes

Instructions:

1. There are total two questions.
2. Attempt any three out of Four in Question 1.
3. Question 2 is compulsory.
4. Figures to the right indicate the full marks of the question.

Q : 1 Attempt Any Three out of Four.   [24]

(a) Solve the following cryptarithmetic puzzle in a step-by-step manner. Each alphabet must be assigned a unique digit between 0 to 9.

	B	E	S	T
	B	E	L	L
H	E	A	T	S

(b) Convert the following statements into predicate logic and clause form.

1. Arjun was a pandav.
2. All pandvas were brave.
3. Anyone who attempts to abduct females is not brave.
4. Jaydrath attempted to abduct Draupadi.
5. Draupati was a wife of pandav.
6. Jaydrath supported Duryodhan.
7. Duryodhan was an evil person.
8. Duryothan was the enemy of Pandav.
9. Anyone who supports an evil person is evil.

Prove that Jaydrath was a coward using resolution.

(c) Consider the following Burgalry-Alarm problem given with conditional probability distribution in the figure shown on the next page. And Compute the probability of Burglary given that Mary calls (P(B|MC)) from the given network.

(d) Consider the following sentences.

1. If x is greater that y and y is greater than z then x is also greater than z.

2. If a is a successor of b then a is a greater than b.
3. Any number is never greater than itself.

Then prove that 5 is greater than 2.

[Note: 3 is a successor of 2.]

Q: 2 compare the working behaviour of Breadth First Search and Hill climbing for the 8 Puzzle problem. Mention limitations of BFS and Hill climbing for the same problem. [6]

P(B)
.001

Burglary

P(E)
.002

Earthquake

B	E	P(A|B,E)
T	T	.95
T	F	.94
F	T	.29
F	F	.001

Alarm

JohnCalls

A	P(J|A)
T	.90
F	.05

MaryCalls

A	P(M|A)
T	.70
F	.01