P(X1|OT)

LNMIIT
The LNM Institute of Information Technology

Artificial Intelligence (AI)

Quiz-II

Date: November 20, 2018

Max. Marks: 10

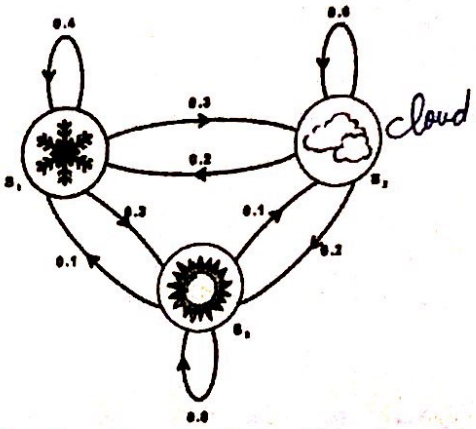
Time: 45 minutes

Name: Parul.

Roll No.

Q 1. Consider a simple three-state Markov model of the weather – **[3 marks]**

- State 1: precipitation (rain or snow),
- State 2: cloudy,
- State 3: sunny.



Transitions between states are described by the transition matrix

$$A=\{a_{ij}\}=\begin{bmatrix}0.4 & 0.3 & 0.3\\ 0.2 & 0.6 & 0.2\\ 0.1 & 0.1 & 0.8\end{bmatrix}$$

Given that the weather on day t=1 is sunny, what is the probability that the weather for the next 7 days will be "sun, sun, rain, rain, sun, clouds, sun" ?

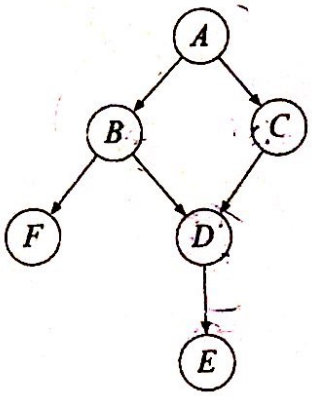
Q 2. In the given Bayes net, which of the following conditional independence assertions are true?

a) $A \perp\!\!\!\perp E$

b) $B \perp\!\!\!\perp C \mid A$

c) $F \perp\!\!\!\perp C \mid A$

d) $B \perp\!\!\!\perp C \mid A, E$



[1x4=4 marks]

Q 3. What will be the variable elimination order if the query is P(+f,E|+a,-b)? Why?

[3 marks] P(A) × P(B|A) × P(C|A) × P(F|B) × P(D|B,C) × P(E|D)

Q3) P(C) = P(C|A) P(D|B,C) C,D/A,B) 2²

m×2^(k+1)

(D,B,C,E) → 2³

CD.