

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATIONS-2022

B.Tech-VIII Semester (CSE/IT)

COURSE CODE: 19B1WCI832

MAX. MARKS: 25

COURSE NAME: Probabilistic Graphical Models

COURSE CREDITS: 03

MAX. TIME: 1 Hour 30 Min

Note: All questions are compulsory. Each question carries equal marks.

Q1. Find the probability distribution or factorized probability distribution for following Bayesian Networks:

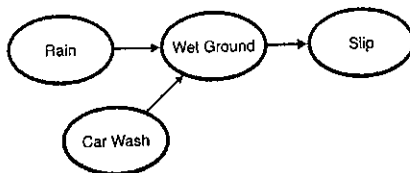


Fig. 1.

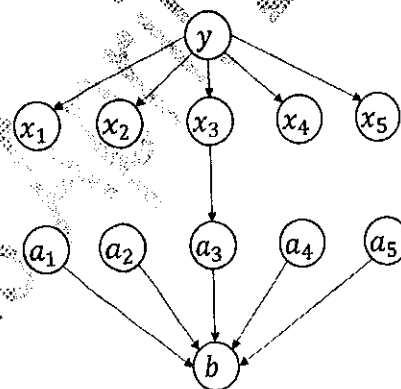


Fig. 2.

Q2. (a) Find the probability of $P(d^0, i^1, g^3, s^0, l^1)$ and $(d^1, i^1, g^3, s^1, l^1)$ from Fig. 3.

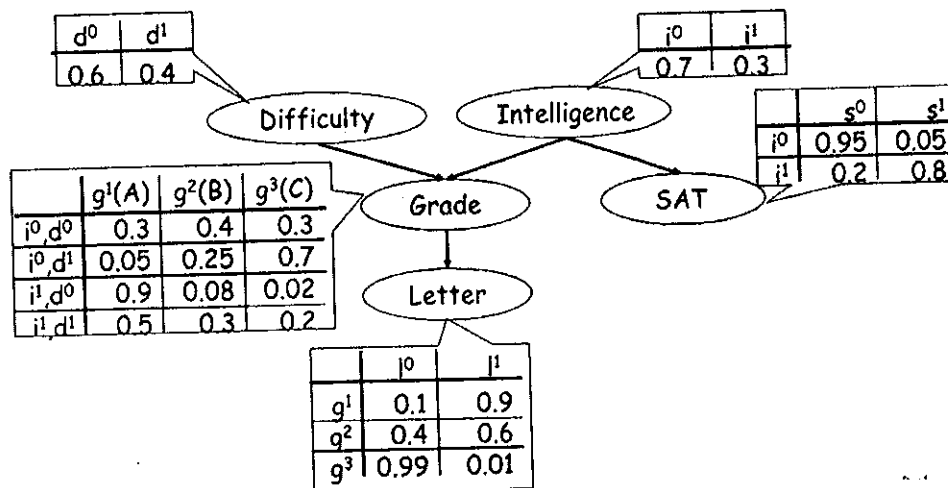


Fig. 3.

(b) for following intercausal reasoning scenario:

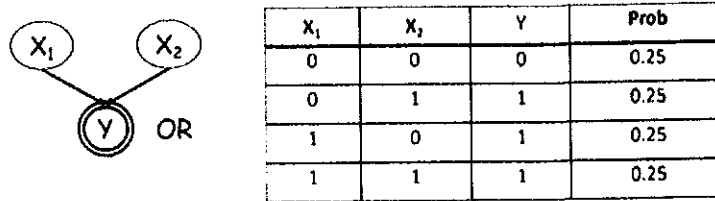


Fig. 4.

- Find probability distribution for $Y=1$.
- $P(x_2 = 1)|(x_1 = 1)$

Q3 (a) Explain the following trails and flow of probability influence with the impact on Z in the active path of X-Y

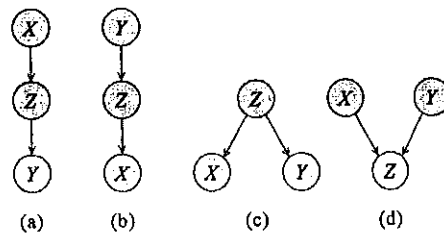


Fig. 5

(b) List the conditions for a trail $X_1 \rightarrow \dots \rightarrow X_n$ to be active for given Z.

Q4 (a) Mark the possible Markov blankets in following Bayesian Network:

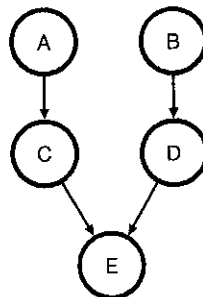


Fig. 6.

(b) What are Independencies in Graphs? Indicate the possible Independencies in Fig. 6.

Q5 What are Naive Bayes Classifiers? Explain the following Bayes Classifiers in detail:

- Bernoulli Naive Bayes for text
- Multinomial Naive Bayes for text