

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
T3 EXAMINATION, DECEMBER 2021

B.Tech 5th Semester (ECE)

Course Code: 20B1WEC532

MAX. MARKS: 35

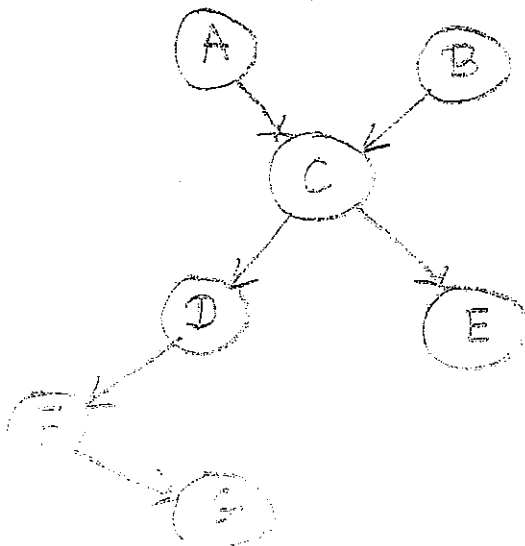
Course Name: Introduction of Machine Learning

Course Credits: 03

MAX. TIME: 2 Hrs

Note: All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means. Marks are indicated in square brackets against each question.

- Q1. Write short notes on:
- a. Overfitting [1] [CO1]
 - b. Confusion Matrix [1]
 - c. Decision Boundary [1]
 - d. Regularization [1]
 - e. F-score [1]
- Q2.
- a. What is the significance to divide data into training, validation and testing? [1] [CO1]
 - b. Write the steps of KNN algorithm. Why KNN is known as 'Lazy Learner'? [2]
 - c. How does ROC curve and AUC value help measure how good a model is? [1]
 - d. Write cost (loss) function equation of regularized Logistic Regression model. [1]
- Q3.
- a. What is "Curse of Dimensionality"? How does it affect KNN? [2] [CO2]
 - b. What is Bias-variance tradeoff? Explain with example. [3]
- Q4. Answer following questions related to given Bays Net: [CO3]

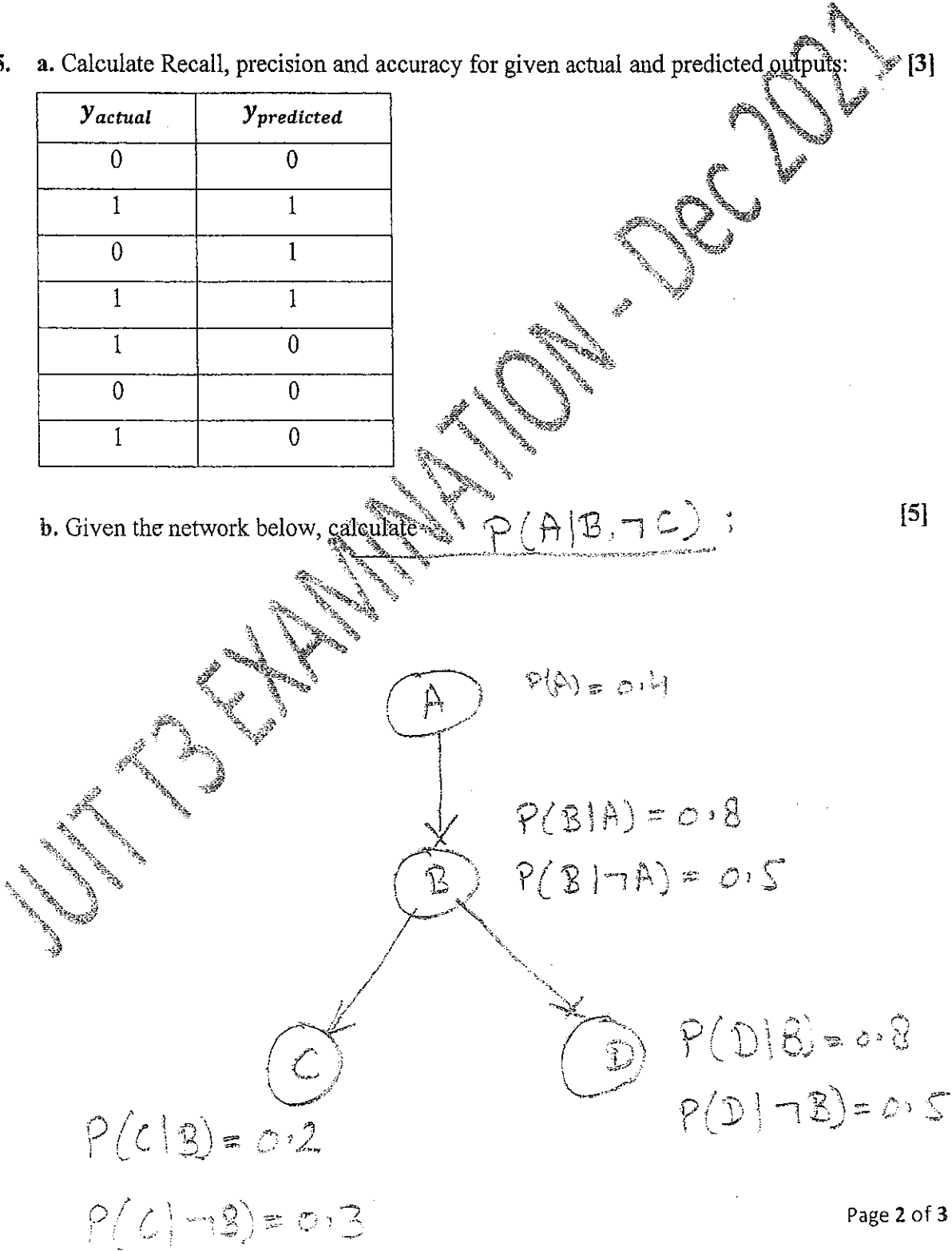


- a. Are A and B conditionally independent, given D and F? [1]
- b. Are A and B conditionally independent, given C? [1]
- c. Are D and E conditionally independent, given C? [1]
- d. Are D and E conditionally independent, given A and B? [1]
- e. Are F and E conditionally independent? [1]

Q5. a. Calculate Recall, precision and accuracy for given actual and predicted outputs: [3] [CO4]

y_{actual}	$y_{predicted}$
0	0
1	1
0	1
1	1
1	0
0	0
1	0

b. Given the network below, calculate $P(A|B, \neg C)$: [5]



Q6.

[7] [CO5]

RID	age	income	student	credit_rating	buys_computer
1	<=30	high	no	fair	no
2	<=30	high	no	excellent	no
3	31-40	high	no	fair	yes
4	>40	medium	no	fair	yes
5	>40	low	yes	fair	yes
6	>40	low	yes	excellent	no
7	31-40	low	yes	excellent	yes
8	<=30	medium	no	fair	no
9	<=30	low	yes	fair	yes
10	>40	medium	yes	fair	yes
11	<=30	medium	yes	excellent	yes
12	31-40	medium	no	excellent	yes
13	31-40	high	yes	fair	yes
14	>40	medium	no	excellent	no

Given the training data in the table above (Buys computer data), predict the class of the following new example using Naïve Bays classification:

Age <=30, income = medium, student = yes and credit_rating = fair

