JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
TEST-3 EXAMINATION- December, 2021
B. Tech 7th Semester

COURSE CODE: 18B1WCI732   MAX. MARKS: 35
COURSE NAME: ARTIFICIAL INTELLIGENCE
COURSE CREDITS: 3   MAX. TIME: 2 Hrs

Note: *All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means. Assumptions made if any, should be stated clearly at the beginning of your answer. Make use of diagrams where required.*

Q1. Represent following sentences using symbolic logic: **[CO-3, 5 Marks]**
    i. A drunker is enemy of himself
    ii. Father of john loves to mother of Merry
    iii. All students like a good teacher
    iv. Fruits and vegetables are nutrition
    v. God helps those who help themselves.

Q2. Attempt all the below questions: **[CO-1, CO-3, 5 Marks]**
    i. What are the characteristics of a production system?
    ii. Why is the Horn clause used in logical reasoning system?
    iii. List out the phases in Expert system development?
    iv. Give an example for representing knowledge using semantic nets?
    v. Write the resolution procedure for preposition logic?

Q3. You are a research student researching the performance of companies with relation to replacement of the CEO. As part of data analysis, you observed that 60% of the companies that increased their revenue by more than 5% in the last three years had replaced their CEO during the same period.

Also, 35% of the companies that did not increase their revenue by more than 5% in the same period had replaced their CEOs. The probability that the revenue of a company will grow by more than 5% is 4%. Find the probability that the revenue of a company that replaces its CEO will increase by more than 5%.   **[CO-2, 5 Marks]**

Q4. What is a cost function? Define the cost function for a linear regression algorithm and how is this optimized?   **[CO-4, 5 Marks]**

Q5. Define a Neural Network structure. What is the cost function and backward propagation for a Neural Network?   **[CO-4, 5 Marks]**

Q6. Define the process of creating a Decision Tree with the help of a suitable example. How can a Decision Tree algorithm help to solve continuous variable problem?
    [CO-4, CO-5, 5 Marks]

Q7. Use Naïve Bayes algorithm to train following text statements: **[CO-4, 5 Marks]**

Simply loved it	Positive
Most disgusting food, I ever had	Negative
Stay away, very disgusting food	Negative
Menu is absolutely perfect, loved it	Positive
A really good value for money	Positive
This is a very good restaurant	Positive
Terrible experience	Negative
This place has best food r	Positive
This place has most pathetic serving food	Negative

Use the trained model to tag following text 'Very good food and service'.

****************************Best of Luck***********************