

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATIONS- 2026

B.Tech-IV Semester (CSE/IT)

COURSE CODE (CREDITS): 24B11CI411(3)

MAX MARKS: 25

COURSE NAME: Artificial Intelligence (AI): Recent Trends and Applications

COURSE INSTRUCTOR: Dr. Rakesh Kanji, Dr. Harsh Srivastava

MAX. TIME: 1 Hour 30 Min

Note: (a) All questions are compulsory.

(b) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems

(c) Use of calculator is allowed

Q.No	Question					CO	Marks
Q1	Day	Outlook	Temperature	Humidity	Play	CO3	5
	1	Sunny	Hot	High	Yes		
	2	Sunny	Hot	High	No		
	3	Overcast	Cold	Low	Yes		
	4	Overcast	Cold	Low	No		
	5	Overcast	Cold	Medium	Yes		
	6	Overcast	Cold	Medium	No		
	Apply suitable algorithm between ID3 or c4.5 to create the decision tree with 2 level only.						
Q2	Point out the advantage of using Neural network over linear regression. Explain the neural network architecture with diagram and real life example. Derive the mathematical expression for the weight updation for the weight between i to j (w_{ij} or u_{ij}) by considering back propagation.					CO3	1+2+2
Q3	Explain the architecture of typical expert system with the diagram. Describe the CASENET system as part of Semantic Network architecture. Distinguish the expert system form machine learning approach.					CO2	2+2+1
Q4	Considering Rules (Knowledge Base): 1. Fever $\wedge$ Cough $\rightarrow$ Flu 2. Flu $\wedge$ Fatigue $\rightarrow$ ViralInfection 3. Fever $\wedge$ Rash $\rightarrow$ Measles 4. Cough $\wedge$ ChestPain $\rightarrow$ Pneumonia 5. Pneumonia $\rightarrow$ Antibiotics 6. ViralInfection $\rightarrow$ Rest 7. Measles $\rightarrow$ Isolation 8. Fatigue $\wedge$ WeightLoss $\rightarrow$ Tuberculosis					CO2	1+1+1.5+1.5

	9. Tuberculosis → Long Treatment a. Why this knowledge base is suitable for applying forward chaining? b. Test the medical diagnosis w.r.t having Fever, Cough and rash. c. What are the premise or features are required to be Isolation? d. Develop the Rete network of above knowledge base.		
Q5	a. Apply the Recency conflict resolution strategies w.r.t Q4 knowledge base. b. $G(x,y)$: x is greater than y. Find the correct predicate logic of “ for any given positive integer, there is a positive integer” (i) For all x there exists a y $G(x,y)$ (ii) There exists y for all x $G(x,y)$ (iii) For all y there exists a x $G(x,y)$ (iv) There exists x for all y $G(x,y)$ c. Explain with an example to shift towards predicate logic from propositional logic.	CO2,1	2+2+1