JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- 2026

B.Tech- Backlog (CSE/IT/BT/ECE/CE)

COURSE CODE (CREDITS): 18B1WCI634 (3) MAX. MARKS: 15

COURSE NAME: MACHINE LEARNING

COURSE INSTRUCTOR: Dr. Aman Sharma MAX. TIME: 1 Hour

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***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 | Apply the Find-S algorithm on the training examples below (attributes: Size, Colour, Shape; target: Class) to find the maximally specific hypothesis. Show the hypothesis after processing each positive example.<br>Ex1: (Small, Red, Round) → Yes<br>Ex2: (Large, Red, Round) → Yes<br>Ex3: (Small, Blue, Round) → No<br>Ex4: (Large, Red, Square) → Yes | CO1 | 3 |
| Q2 | Using the same four training examples as Q1, run the Candidate-Elimination algorithm and give the final specific boundary set S and general boundary set G. | CO1 | 3 |
| Q3 | The table below gives 5 examples of attribute Outlook and target PlayTennis:<br>(Sunny,No), (Sunny,No), (Overcast,Yes), (Rain,Yes), (Rain,Yes).<br>Compute the entropy of PlayTennis and the information gain of splitting on Outlook. Use log base 2 and show all steps. | CO2 | 4 |
| Q4 | For the 5 training examples below (attributes: Attendance, Assignment; target: Result), compute the information gain of both attributes and construct the resulting decision tree by selecting the root attribute using ID3. Show all computation steps.<br>Ex1: (Regular, Submitted) → Pass<br>Ex2: (Regular, Not Submitted) → Pass<br>Ex3: (Irregular, Submitted) → Fail<br>Ex4: (Irregular, Not Submitted) → Fail<br>Ex5: (Regular, Submitted) → Pass | CO2 | 3 |
| Q5 | Fit a simple linear regression line y = wx + b to the data points (1,2), (2,3), (3,5), (4,6) using the least-squares formulas. Compute w and b, and predict y for x = 5. Show all steps. | CO2 | 2 |

UNDER EXAMINATION AUG-2026



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