JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- 2026

M.Tech-I Semester (Data Warehousing & Data Mining)

COURSE CODE (CREDITS): 22M1WCI131 (3) MAX. MARKS: 15

COURSE NAME: DATA WAREHOUSING AND DATA MINING

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 |
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| Q1 | A data cube has 3 dimensions with concept hierarchies (excluding the virtual 'all' level): Time → Day, Month, Year (3 levels); Product → Item, Category (2 levels); Location → City, State, Country (3 levels). Compute the total number of cuboids in the complete cuboid lattice for this cube. | CO-1 | 2 |
| Q2 | Fact table 'Sales' has 4 dimensions: Time (2 years, 365 days/year), Product (1200 products), Store (75 stores), Promotion (5 types incl. 'None').<br>(a) Compute the fully dense row count. (b) If actually only 2% dense, compute the actual row count. (c) At 32 bytes/row, compute the storage in MB (1 MB = $10^6$ bytes). | CO-1 | 4 |
| Q3 | For A = (3, –1, 2, 5, 0) and B = (–2, 4, 1, 3, 6), compute (a) Euclidean distance, (b) Manhattan distance, (c) Minkowski distance with p = 3. Show all steps. | CO-2 | 3 |
| Q4 | A parent node has 12 records: 5 Class A, 4 Class B, 3 Class C. Splitting on attribute X gives Child-1 (7 records: 5A, 2B, 0C) and Child-2 (5 records: 0A, 2B, 3C).<br>Compute the Gini index of the parent, of each child, the weighted Gini of the split, and the Gini gain. | CO-3 | 3 |
| Q5 | A classifier tested on 150 records gives: TP = 52, FP = 18, FN = 13, TN = 67.<br>Compute Accuracy, Precision, Recall, Specificity, and the Matthews Correlation Coefficient MCC = $(TP \cdot TN - FP \cdot FN)/\sqrt{[(TP+FP)(TP+FN)(TN+FP)(TN+FN)]}$. Show all steps. | CO-3 | 3 |

MID TERM EXAMINATION AUG-2026



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