JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- 2026

B.Tech-VI Semester (BI)

COURSE CODE (CREDITS): 18B1WBI632 (3) MAX. MARKS: 15

COURSE NAME: Data Warehousing and Mining for Bioinformatics

COURSE INSTRUCTORS: Ekta Gandotra MAX. TIME: 1 Hour

Note: *(a) All questions are compulsory.*
(b) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems
(c) Calculator is allowed.

<table>
<tr><th>Q. No.</th><th>Question</th><th>CO</th><th>Marks</th></tr>
<tr><td>Q1.</td><td>The following data represent the number of hours studied by 12 students:
10, 12, 14, 4, 6, 8, 16, 18, 24, 30, 20, 22.
a. Calculate Q1, Q2 and Q3 using the interpolation method.
b. Construct a properly labelled box plot, using an appropriate scale.
c. Interpret the box plot with respect to the spread and skewness of the data.</td><td>3</td><td>

[2]
[1]
[1]</td></tr>
<tr><td>Q2.</td><td>Objects A and B are described using the following asymmetric binary attributes, where 1 indicates the presence of the attribute and 0 indicates its absence.
<table>
<tr><th></th><th>F1</th><th>F2</th><th>F3</th><th>F4</th><th>F5</th><th>F6</th></tr>
<tr><td>A</td><td>1</td><td>1</td><td>0</td><td>1</td><td>0</td><td>1</td></tr>
<tr><td>B</td><td>1</td><td>0</td><td>1</td><td>1</td><td>0</td><td>0</td></tr>
</table>
a. Compute the similarity index between objects A and B using an appropriate similarity measure for asymmetric binary attributes.
b. Interpret the obtained similarity value.</td><td>3</td><td>[2]
[1]</td></tr>
<tr><td>Q3.</td><td>A multinational retail company collects sales, inventory, and customer data from multiple regions. Briefly explain how a data warehouse supports strategic decision-making with respect to:
a. Transformation of data from OLTP systems into the data warehouse.
b. Role of OLAP in analyzing historical and aggregated data.
c. Limitations of using only OLTP systems for business intelligence.</td><td>1</td><td>[1]
[1]
[1]</td></tr>
<tr><td>Q4.</td><td>Consider the following dataset consisting of five data objects described by two numerical attributes F1 and F2.
<table>
<tr><th></th><th>A</th><th>B</th><th>C</th><th>D</th><th>E</th></tr>
<tr><td>F1</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr>
<tr><td>F2</td><td>300</td><td>400</td><td>500</td><td>600</td><td>700</td></tr>
</table>
a. Normalize attribute F2 using the Min-Max normalization technique so that its values lie in the same range as attribute F1.
b. For the normalized dataset, compute the distance matrix between all pairs of objects using:
i. L_2 norm
ii. L_∞ norm</td><td>1</td><td>[2]
[3]</td></tr>
</table>

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