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JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATIONS- 2026

B.Tech-VI Semester (CSE/IT/BT)

COURSE CODE (CREDITS):18B1 WCI634(2)

MAX MARKS: 25

COURSE NAME: Machine Learning

COURSE INSTRUCTOR: KLK and Sandeep Kumar Patel

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 a calculator is allowed

Q.No	Question	CO	Marks																																													
Q1	List the following: (1) Inputs to the ID3 algorithm, (2) Boundary cases about the dataset (do not ask for explanation from examiners).	3	4																																													
Q2	<p style="text-align: center;">ID3 Numerical Problem Dataset</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Example</th> <th>SH</th> <th>A1</th> <th>A2</th> <th>Result</th> </tr> </thead> <tbody> <tr><td>1</td><td>High</td><td>Good</td><td>Yes</td><td>Pass</td></tr> <tr><td>2</td><td>High</td><td>Good</td><td>No</td><td>Pass</td></tr> <tr><td>3</td><td>High</td><td>Poor</td><td>Yes</td><td>Pass</td></tr> <tr><td>4</td><td>Medhum</td><td>Good</td><td>Yes</td><td>Pass</td></tr> <tr><td>5</td><td>Medhum</td><td>Poor</td><td>No</td><td>Fail</td></tr> <tr><td>6</td><td>Low</td><td>Good</td><td>No</td><td>Fail</td></tr> <tr><td>7</td><td>Low</td><td>Poor</td><td>Yes</td><td>Fail</td></tr> <tr><td>8</td><td>Low</td><td>Poor</td><td>No</td><td>Fail</td></tr> </tbody> </table> <p>Give the expression for information gain and entropy first, and then systematically apply ID3 to the above dataset.</p>	Example	SH	A1	A2	Result	1	High	Good	Yes	Pass	2	High	Good	No	Pass	3	High	Poor	Yes	Pass	4	Medhum	Good	Yes	Pass	5	Medhum	Poor	No	Fail	6	Low	Good	No	Fail	7	Low	Poor	Yes	Fail	8	Low	Poor	No	Fail	4	7
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8	Low	Poor	No	Fail																																												
Q3	Draw a decision tree for the following Boolean expression: $A'B' + AB$	3	2																																													

Q4	<p>List the assumptions of Linear Regression and briefly describe them on the dataset given below</p> <table border="1" data-bbox="311 414 1109 784"> <thead> <tr> <th>x1</th> <th>x2</th> <th>x3</th> <th>y</th> <th>y_pred</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>2</td> <td>-7</td> <td>8</td> <td>9</td> </tr> <tr> <td>2</td> <td>4</td> <td>-3</td> <td>14</td> <td>15</td> </tr> <tr> <td>3</td> <td>6</td> <td>-1</td> <td>16</td> <td>14</td> </tr> <tr> <td>4</td> <td>8</td> <td>0</td> <td>18</td> <td>20</td> </tr> <tr> <td>5</td> <td>10</td> <td>3</td> <td>20</td> <td>19</td> </tr> </tbody> </table>	x1	x2	x3	y	y_pred	1	2	-7	8	9	2	4	-3	14	15	3	6	-1	16	14	4	8	0	18	20	5	10	3	20	19	3	5
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5	10	3	20	19																													
Q5	<p>Formulate the linear regression model for the dataset provided in Q4. Derive the OLS closed-form expression. Compute the values of model parameters by the OLS closed-form expression</p>	4	7																														

JUIT TEST-2 EXAMINATIONS MARCH-2026