Model Question Paper-1/2 with effect from 2021(CBCS Scheme)

USN | | | | | | | | | | |

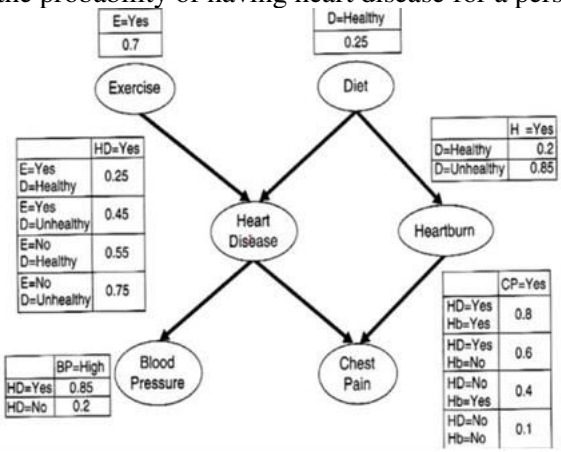
Sixth Semester B.E. Degree Examination

Machine Learning

TIME: 03 Hours **Max. Marks: 100**

Note: Answer any **FIVE** full questions, choosing at least **ONE** question from each **MODULE**.

<table>
<tr><th colspan="3">Module -1</th><th>*Bloom's Taxonomy Level</th><th>COs</th><th>Marks</th></tr>
<tr><td>Q.01</td><td>a</td><td>Explain different types of Machine Learning Systems in brief</td><td>L2</td><td>1</td><td>4</td></tr>
<tr><td></td><td>b</td><td>Illustrate some of the basic design issues and approaches to machine learning considering designing a program to learn to play checkers.</td><td>L2</td><td>1</td><td>6</td></tr>
<tr><td></td><td>c</td><td>Apply the Candidate Elimination algorithm to a set of training examples to demonstrate how it identifies the boundary hypotheses in the version space.
<table>
<tr><th>Sky</th><th>AirTemp</th><th>Humidity</th><th>Wind</th><th>Water</th><th>Forecast</th><th>EnjoySport</th></tr>
<tr><td>Sunny</td><td>Warm</td><td>Normal</td><td>Strong</td><td>Warm</td><td>Same</td><td>Yes</td></tr>
<tr><td>Sunny</td><td>Warm</td><td>High</td><td>Strong</td><td>Warm</td><td>Same</td><td>Yes</td></tr>
<tr><td>Rainy</td><td>Cold</td><td>High</td><td>Strong</td><td>Warm</td><td>Change</td><td>No</td></tr>
<tr><td>Sunny</td><td>Warm</td><td>High</td><td>Strong</td><td>Cool</td><td>Change</td><td>Yes</td></tr>
</table></td><td>L3</td><td>1</td><td>10</td></tr>
<tr><td colspan="3">OR</td><td></td><td></td><td></td></tr>
<tr><td>Q.02</td><td>a</td><td>Define the following terms: (i) Concept Learning (ii)Version Space (iii) Hypothesis Space (iv)General Boundary (v) Specific Boundary</td><td>L2</td><td>1</td><td>6</td></tr>
<tr><td></td><td>b</td><td>Discuss limitations of Find-S over Candidate Elimination Algorithm</td><td>L2</td><td>1</td><td>8</td></tr>
<tr><td></td><td>c</td><td>Explain inductive bias in brief</td><td>L2</td><td>1</td><td>6</td></tr>
<tr><td colspan="3">Module-2</td><td></td><td></td><td></td></tr>
<tr><td>Q. 03</td><td>a</td><td>Explain training of binary classifier</td><td>L2</td><td>2</td><td>10</td></tr>
<tr><td></td><td>b</td><td>Explain Error Analysis in brief</td><td>L2</td><td>2</td><td>10</td></tr>
<tr><td colspan="3">OR</td><td></td><td></td><td></td></tr>
<tr><td>Q.04</td><td>a</td><td>Explain the following with example:
a) Multi output classification
b) Multi-Label classification
c) Multi class Classification</td><td>L2</td><td>2</td><td>10</td></tr>
<tr><td></td><td>b</td><td>Explain the steps involved in classification using MNIST Dataset.</td><td>L2</td><td>2</td><td>10</td></tr>
<tr><td colspan="3">Module-3</td><td></td><td></td><td></td></tr>
<tr><td>Q. 05</td><td>a</td><td>Explain the following: (i) Batch Gradient Descent (ii) Stochastic Gradient Descent (iii) Mini-batch Gradient Descent</td><td>L2</td><td>3</td><td>6</td></tr>
<tr><td></td><td>b</td><td>Explain Linear Support Vector Classification in brief</td><td>L2</td><td>3</td><td>8</td></tr>
<tr><td></td><td>c</td><td>Explain Polynomial Regression in brief</td><td>L2</td><td>3</td><td>6</td></tr>
<tr><td colspan="3">OR</td><td></td><td></td><td></td></tr>
<tr><td>Q. 06</td><td>a</td><td>Explain Regularized Linear Models in brief</td><td>L2</td><td>3</td><td>4</td></tr>
<tr><td></td><td>b</td><td>Explain the difference between Linear and Non-Linear SVM Classification</td><td>L2</td><td>3</td><td>6</td></tr>
</table>

<table>
<tr><td></td><td>c</td><td>Explain Logistic Regression in brief</td><td>L2</td><td>3</td><td>10</td></tr>
<tr><td colspan="3">Module-4</td><td></td><td></td><td></td></tr>
<tr><td>Q. 07</td><td>a</td><td>Demonstrate working of Voting classifier with code that creates and trains it.</td><td>L2</td><td>4</td><td>8</td></tr>
<tr><td></td><td>b</td><td>Explain Bagging and Pasting in brief.</td><td>L2</td><td>4</td><td>4</td></tr>
<tr><td></td><td>c</td><td>Demonstrate how new predictors can correct its predecessor by using training instances of underfitted predecessor.</td><td>L3</td><td>4</td><td>8</td></tr>
<tr><td colspan="3">OR</td><td></td><td></td><td></td></tr>
<tr><td>Q. 08</td><td>a</td><td>Explain the following in brief: a) Training and visualizing of decision tree b) Making predictions</td><td>L2</td><td>4</td><td>6</td></tr>
<tr><td></td><td>b</td><td>Explain Stack Generalization in brief.</td><td>L2</td><td>4</td><td>4</td></tr>
<tr><td></td><td>c</td><td>Construct a regression using the following data which consists of 10 data instances and three attributes “Assessment’, ‘Assignment’ and Project.
<table>
<tr><th>Sl. no</th><th>Assessments</th><th>Assignment</th><th>Project</th><th>Result(%)</th></tr>
<tr><td>1</td><td>Good</td><td>Yes</td><td>Yes</td><td>95</td></tr>
<tr><td>2</td><td>Average</td><td>Yes</td><td>No</td><td>70</td></tr>
<tr><td>3</td><td>Good</td><td>No</td><td>Yes</td><td>75</td></tr>
<tr><td>4</td><td>Poor</td><td>No</td><td>No</td><td>45</td></tr>
<tr><td>5</td><td>Good</td><td>Yes</td><td>Yes</td><td>98</td></tr>
<tr><td>6</td><td>Average</td><td>No</td><td>Yes</td><td>80</td></tr>
<tr><td>7</td><td>Good</td><td>No</td><td>No</td><td>75</td></tr>
<tr><td>8</td><td>Poor</td><td>Yes</td><td>Yes</td><td>65</td></tr>
<tr><td>9</td><td>Average</td><td>No</td><td>No</td><td>58</td></tr>
<tr><td>10</td><td>Good</td><td>Yes</td><td>Yes</td><td>89</td></tr>
</table></td><td>L3</td><td>4</td><td>10</td></tr>
<tr><td colspan="3">Module-5</td><td></td><td></td><td></td></tr>
<tr><td>Q. 09</td><td>a</td><td>Explain Gibbs Algorithm in brief</td><td>L2</td><td>5</td><td>4</td></tr>
<tr><td></td><td>b</td><td>Given the conditional probability, using the Naïve Bayes Classifier, estimate the probability of having heart disease for a person with high blood pressure.

</td><td>L3</td><td>5</td><td>10</td></tr>
<tr><td></td><td>c</td><td>Explain EM algorithm in brief</td><td>L2</td><td></td><td>6</td></tr>
<tr><td colspan="3">OR</td><td></td><td></td><td></td></tr>
<tr><td>Q. 10</td><td>a</td><td>Estimate the conditional probability of each attribute {color, legs, height, smelly} for the species classes:{M, H} using the data given in the table behind. Using these probabilities estimate the probability values for the new instance-{color=green, legs=2, height=tall, and smelly=No}</td><td>L3</td><td>5</td><td>10</td></tr>
</table>

			No.	Color	Legs	Height	Smelly	Species
			1	White	3	Short	Yes	M
			2	Green	2	Tall	No	M
			3	Green	3	Short	Yes	M
			4	White	3	Short	Yes	M
			5	Green	2	Short	No	H
			6	White	2	Tall	No	H
			7	White	2	Tall	No	H
			8	White	2	Short	Yes	H
	b	Explain Minimum Description Length Principle in brief.					L2		6
	c	Explain Maximum Likelihood in brief					L2		4

*Bloom's Taxonomy Level: Indicate as L1, L2, L3, L4, etc. It is also desirable to indicate the COs and POs to be attained by every bit of question.