**BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI**
**(MID SEMESTER EXAMINATION MO/2024)**

**CLASS: BCA** **SEMESTER : V**
**BRANCH: BCA** **SESSION : MO/2024**

**SUBJECT: CA333 MACHINE LEARNING**

**TIME: 02 Hours** **FULL MARKS: 25**

**INSTRUCTIONS:**
**1. The question paper contains 5 questions each of 5 marks and total 25 marks.**
**2. Attempt all questions.**
**3. The missing data, if any, may be assumed suitably.**
***4*. Tables/Data handbook/Graph paper etc., if applicable, will be supplied to the candidates**

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| Q.1(a) | Explain about your understanding regarding the machine learning. | [2] | 1 | 2 |
| Q.1(b) | Differentiate the Supervised and Unsupervised learning methods of machine learning. Give the names of different techniques used in supervised machine learning. | [3] | 1 | 2 |
| Q.2(a) | Find the determinant of the following matrix. Is the inverse of this matrix possible? Specify the reason also. $\begin{bmatrix} 2 & 4 & 6 \\ 2 & 0 & 2 \\ 6 & 8 & 14 \end{bmatrix}$ | [2] | 1 | 3 |
| Q.2(b) | Explain the utility of eigen value decomposition. Find the eigen values only for the following matrix. $A = \begin{bmatrix} -5 & 2 \\ -7 & 4 \end{bmatrix}$ | [3] | 1 | 3 |
| Q.3(a) | Explain, why the gradient descent approached is needed in the linear regression. | [2] | 2 | 2 |
| Q.3(b) | Explain the simple linear regression with suitable small example. | [3] | 2 | 4 |
| Q.4(a) | What are strategies we use in multi-classes classifier design? | [2] | 2 | 2 |
| Q.4(b) | Explain the principle behind the Logistic regression with suitable example. | [3] | 2 | 4 |
| Q.5(a) | Explain the various issues related to classification problems. | [2] | 3 | 2 |
| Q.5(b) | Explain the Naïve Bayes classifiers with its formula. What are the conditions in which we use Gaussian Naïve bayes classifiers? | [3] | 3 | 3 |

**::::::23/09/2024::::::M**