FR. CONCEICAO RODRIGUES COLLEGE OF ENGINEERING

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I-UNIT TEST QUESTION BANK

SEMESTER/BRANCH: **VI/Computer Engineering**

SUBJECT: **Machine Learning**

1. Define Machine Learning. State and explain the types of Machine Learning.

2. What are the key tasks of Machine Learning?

3. What are the issues in Machine Learning?

4. Explain the steps in developing a machine learning application.

5. Write short note on Machine Learning Applications.

6. Explain different types of Neural Network Architectures.

7. Explain McCulloch- Pitts Network with suitable example.

8. Implement XOR function using McCulloch-Pitts Network and check whether it is linearly separable.

9. Implement AND function using McCulloch-Pitts neuron.

10. The rent of a property is related to its area. Given the area in square feet and rent in rupees, find the relationship between area and rent using linear regression. Also predict the rent for a property of 790 sq. ft.

Sr. No.	1	2	3	4	5	6
Area (ft^2)	340	1080	640	880	990	510
Rent (₹)	500	1700	1100	800	1400	500

11. The values of independent variable x and dependent variable y are given below. Find the least square line y = ax + b. Estimate the value of y when x is 10.

x	0	1	2	3	4
y	2	3	5	4	6

12. Apply logistic regression algorithm to classify following data.
Use $b_0 = -0.4$, $b_1 = 0.8$, $b_2 = 1.1$

X_1	X_2	Y
1.64	2.63	0
3.4	4.1	0
7.2	2.7	1
6.5	1.8	1
7.6	3.5	1

Also find accuracy after classification.

13. For the following dataset, compute the Information Gain of each attribute and determine which attribute is the root attribute.

Engine	**SC/ Turbo**	**Weight**	**Fuel Eco**	**Fast**
Small	No	Average	Good	No
Small	No	Light	Average	No
Small	Yes	Average	Bad	Yes
Medium	No	Heavy	Bad	Yes
Large	No	Average	Bad	Yes
Medium	No	Light	Bad	No
Large	Yes	Heavy	Bad	No
Large	No	Heavy	Bad	No
Medium	Yes	Light	Bad	Yes
Large	No	Average	Bad	Yes
Small	No	Light	Good	No

Small	No	Average	Average	No
Medium	No	Heavy	Bad	No
Small	Yes	Average	Average	No
Medium	No	Heavy	Bad	No

14. For the following dataset, compute the Gini Index of each attribute and determine which attribute is the root attribute.

Tuple#	**Age**	**Salary**	**Job**	**Performance**	**Select**
1	Young	High	Private	Average	No
2	Young	High	Private	Excellent	No
3	Middle-aged	High	Private	Average	Yes
4	Old	Medium	Private	Average	Yes
5	Old	Low	Government	Average	Yes
6	Old	Low	Government	Excellent	No
7	Middle-aged	Low	Government	Excellent	Yes
8	Young	Medium	Private	Average	No
9	Young	Low	Government	Average	Yes
10	Old	Medium	Government	Average	Yes
11	Young	Medium	Government	Excellent	Yes
12	Middle-aged	Medium	Private	Excellent	Yes
13	Middle-aged	High	Government	Average	Yes
14	Old	Medium	Private	Excellent	No

15. For the SunBurn dataset given below, construct the decision tree.

Name	Hair	Height	Weight	Location	Class
Sunita	Blonde	Average	Light	No	Yes
Anita	Blonde	Tall	Average	Yes	No
Kavita	Brown	Short	Average	Yes	No
Sushma	Blonde	Short	Average	No	Yes
Xavier	Red	Average	Heavy	No	Yes
Balaji	Brown	Tall	Heavy	No	No
Ramesh	Brown	Average	Heavy	No	No
Swetha	Blonde	Short	Light	Yes	No