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END SEMESTER EXAMINATION –NOV/DEC 2025

COMPUTER SCIENCE – III SEMESTER BCA

25BCA36.1: ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING - FEATURE ENGINEERING

Time: 1 Hour 30 Minutes **Max. Marks: 40**

Instruction: *Answer should be written completely in English.*

SECTION - A

Answer any **TWO** questions. Each question carries **TWO** marks. **(2X2=4)**

1. Differentiate between Categorical Data and Numerical Data. Give examples each.
2. A dataset contains the feature "Temperature in Celsius". If converted to Fahrenheit, will the data type change (interval/ratio)? Justify.
3. Define Feature Selection.
4. What is a filter method in feature selection?

SECTION - B

Answer any **FOUR** questions. Each question carries **FIVE** marks. **(4X5=20)**

5. What are the characteristics of Categorical Data, and how does it differ from Numerical Data?
6. Explain Ratio Data, its characteristics and why Ratio Data is important in Feature Engineering.
7. Describe Transformation. Explain its types and examples for each.
8. Find Min - Max Scaling for the given sequence 10, 30, 50, 70, 90.
9. Distinguish between feature extraction and feature selection.
10. Explain how data quality issues impact the performance of a Machine Learning model.

SECTION - C

Answer any **TWO** questions. Each question carries **EIGHT** marks. **(2X8=16)**

11. Define the term 'feature' in machine learning. Explain the different categories of features with suitable examples from real-world datasets.
12. Describe Feature Scaling and apply different Feature Scaling techniques using suitable examples.
13. Compare and evaluate binning and discretization techniques. Which one would you prefer for continuous data and why?
14. Describe the steps in PCA and explain the purpose of each step with an example.