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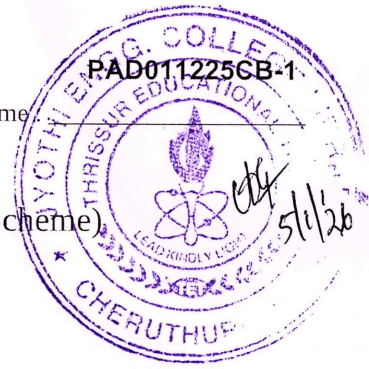
Name: _____



Jyothi Engineering College(Autonomous)

M.Tech Degree S1 (R) Examination, December 2025 (2025 Scheme)

25PADT103- INTRODUCTION TO AI AND NLP



Total Mark: 60

Total Time: 2hr 30min

CO MARK

PART A

Answer All Questions

1. Explain the various applications of Artificial Intelligence in real-world sectors such as healthcare, banking, and space exploration. CO1 (5)
2. Differentiate between match() and search() in Python's re module with examples. CO2 (5)
3. Explain the Markov assumption used in language modeling and describe its importance with a suitable example. CO3 (5)
4. Describe the process of topic modeling using Latent Dirichlet Allocation (LDA). CO4 (5)
5. Apply a simple Recurrent Neural Network (RNN) to process sequential data and explain how its structure enables it to capture dependencies in a sequence. CO5 (5)

PART B

Answer Any Five Question(s)

6. Apply the NLP pipeline to describe how a chatbot processes user queries from input to response generation. CO1 (7)
7. Apply different tokenization strategies (word-level, character-level, and BPE) on text data and compare how BPE addresses the drawbacks of the other two approaches. CO2 (7)
8. Explain the TF-IDF weighting scheme and compute TF-IDF for the following sentences:
S1: "AI improves decision making."
S2: "Machine learning improves AI."
S3: "Decision making uses machine learning." CO3 (7)
9. Given a document, apply vector-based sentence representation for text summarization and compare its output with TextRank summarization. CO4 (7)
10. Illustrate how a feed-forward ANN performs text classification in TensorFlow, with step-by-step explanation. CO5 (7)
11. Explain the working principle of the ELIZA chatbot and analyze why it is considered rule-based NLP. CO1 (7)
12. How can we create different versions of a document using an N-gram model? Explain the basic steps and equations used. CO3 (7)
