

GUJARAT TECHNOLOGICAL UNIVERSITY**BE- SEMESTER- VII EXAMINATION – SUMMER 2026****Subject Code:3174205****Date:08-06-2026****Subject Name: Natural Language Processing****Time: 02:30 PM TO 05:00 PM****Total Marks:70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

		MARKS
Q.1	(a) State advantages and disadvantages of Natural Language Processing.	03
	(b) Explain NLP pipeline?	04
	(c) Explain phases of Natural Language Processing in detail.	07
Q.2	(a) Explain Unigram Language Model.	03
	(b) Explain Add-one smoothing with example.	04
	(c) Deconstruct the concept of Named Entity Recognition and solve the following example: 'Steve Jobs co-founded Apple Inc. in 1976, revolutionizing the technology industry with innovations like the iPhone and MacBook.	07
	OR	
	(c) Deconstruct the concept of Part-of-Speech Tagging with suitable example.	07
Q.3	(a) What is one-hot encoding, and how does it help in representing categorical data for natural language processing tasks?	03
	(b) Deconstruct the concept of skip-gram.	04
	(c) How does a knowledge-based approach to word sense disambiguation utilize lexical databases like WordNet to determine the correct meaning of a word in context?	07
	OR	
Q.3	(a) Explain the concept of word embedding in brief.	03
	(b) Deconstruct the concept of the Continuous Bag of Words (CBOW) model with an example.	04
	(c) In what ways does supervised word sense disambiguation leverage annotated corpora to train models, and what challenges arise when the training data lacks sufficient examples for certain senses?	07
Q.4	(a) What is information extraction, and how does it differ from data retrieval?	03
	(b) What is text summarization? Also, give different dimensions of text summarization.	04
	(c) Explain how Natural Language Processing is useful in Information Retrieval.	07
	OR	
Q.4	(a) What is sentiment mining? Provide a brief explanation of it.	03
	(b) What is relation extraction, and why is it important in natural language processing?	04
	(c) Describe phases of IR-based question answering model.	07

Q.5	(a) What is Machine Translation? Why we need Machine Translation.	03
	(b) Explain encode-decoder architecture of machine translation.	04
	(c) Make a short note on Statistical Machine Translation.	07
OR		
Q.5	(a) Discuss the challenges of machine translation.	03
	(b) Explain Rule-Based Machine Translation.	04
	(c) Make a short note on Neural Machine Translation.	07
