

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE- SEMESTER- VII EXAMINATION – SUMMER 2026****Subject Code:3170723****Date:20-05-2026****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) | Explain the components of NLP.                                                                          | 03    |
|     | (b) | Explain applications of NLP in brief.                                                                   | 04    |
|     | (c) | Provide a detailed explanation of the various phases in Natural Language Processing.                    | 07    |
| Q.2 | (a) | What is Natural Language Generation? Explain in brief.                                                  | 03    |
|     | (b) | Explain Parts of Speech Tagging and its importance.                                                     | 04    |
|     | (c) | Explain Bi-gram concepts using an example sentence: "The purpose of our life is to happy".              | 07    |
|     |     | <b>OR</b>                                                                                               |       |
|     | (c) | Explain Unigram, Bi-gram and Tri-gram concepts using an example sentence: "This is a Big Data AI Book". | 07    |
| Q.3 | (a) | Write a short note on Named Entity Recognition                                                          | 03    |
|     | (b) | Explain Chunking in NLP.                                                                                | 04    |
|     | (c) | Explain Word Sense Disambiguation with Lesk algorithm.                                                  | 07    |
|     |     | <b>OR</b>                                                                                               |       |
| Q.3 | (a) | Draw the Dependency tree for a sentence A big black dog runs after a poor cat                           | 03    |
|     | (b) | What is Morphology? Explain the approaches to Morphology.                                               | 04    |
|     | (c) | Enlist Word Sense Disambiguation approaches. Explain any one of them in detail.                         | 07    |
| Q.4 | (a) | What is Sentiment Mining and How Does it Work?                                                          | 03    |
|     | (b) | Analyze any application of NLP using the concept of Cross-Lingual IR.                                   | 04    |
|     | (c) | Explain types of IR-based question answering models.                                                    | 07    |
|     |     | <b>OR</b>                                                                                               |       |
| Q.4 | (a) | Explain Precision and Recall in brief.                                                                  | 03    |
|     | (b) | What is Information Extraction? How Does Information Extraction Work?                                   | 04    |
|     | (c) | Write a detailed note on Relation Extraction via Supervised Learning.                                   | 07    |
| Q.5 | (a) | Describe Knowledge Based Machine Translation System.                                                    | 03    |
|     | (b) | Draw and Explain Encoder- Decoder architecture in detail.                                               | 04    |
|     | (c) | What are the different approaches to machine translation? Explain in details with its pros and cons.    | 07    |

**OR**

- Q.5**
- (a)** Explain the dimensions used to evaluate Machine Translation. **03**
  - (b)** Explain Deep Neural Machine Translation **04**
  - (c)** Explain the concept of SMT and NMT in detail. Also state the differences between them with example. **07**

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