



CBCS SCHEME

USN

--	--	--	--	--	--	--	--	--	--

17CS741

Seventh Semester B.E. Degree Examination, June/July 2024 Natural Language Processing

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Illustrate with suitable examples the different levels on NLP. (08 Marks)
- b. List and explain the challenges of Natural Language Processing. (06 Marks)
- c. Explain the role of transformational rules in transformational grammar with the help of an example. (06 Marks)

OR

- 2 a. Explain Statistical Language Model and find the probability of the test sentence $P(\text{they play in a big garden})$ in the following training set using bi-gram model
<S> There is a big garden
Children play in the garden
They play inside beautiful garden </S> (06 Marks)
- b. Explain applications of Natural Language Processing. (06 Marks)
- c. List the problems associated with n-gram model. Explain how these problems are handled. (08 Marks)

Module-2

- 3 a. Write a regular expression for the following :
 - i) To validate the general email address for educational institutions of the form abc@xyz.ac.in.
 - ii) To match the floating points numbers. (10 Marks)
- b. Explain Context Free Grammar with an example. (10 Marks)

OR

- 4 a. Draw a deterministic finite automata which either starts with 01 or end with 01 of a string containing 0, 1 in it. (05 Marks)
- b. Draw a non-deterministic finite automata, which either starts with 01 or end with 01 of a string containing 0, 1 in it. (05 Marks)
- c. What is Morphological parsing Techniques? Explain with an example. (10 Marks)

Module-3

- 5 a. Explain the shortest path Hypothesis and learning with dependency path in detail. (10 Marks)
- b. Explain with neat diagram the learning frame Architecture. (10 Marks)

OR

- 6 a. Explain the following Indexing services
 - i) Document processing
 - ii) Clause processing
 - iii) Linguistic processing (10 Marks)
- b. Explain Frame semantics and semantics Role labeling in detail. (10 Marks)

Module-4

- 7 a. Explain the functioning of Word Matching Feedback Systems. (08 Marks)
b. Discuss iSTART system and their modules. (08 Marks)
c. Illustrate Topic Models (TM) Feedback system. (04 Marks)

OR

- 8 a. Define:
i) Cohesion
ii) Coh- Metrix
iii) Latent Semantic Analysis. (10 Marks)
b. Write a note on various approaches to analyzing texts. (10 Marks)

Module-5

- 9 Explain in details the classical model of information retrieval.
i) Boolean Model (05 Marks)
ii) Vector Space Model. (15 Marks)

OR

- 10 Explain in details of the classical model of information Retrieval.
i) Set model (05 Marks)
ii) Probabilistic model (15 Marks)
