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New Delhi – 110062
Examination Even Semester Examination 2023

Paper Name: Speech & Natural Language Processing
Time: 3 Hours

Paper Code: BTCSEAI 606
Maximum Marks: 75

COURSE OUTCOMES:

After taking this module students should be able to:

CO1: Give an overview of the components of state-of-the art speech recognition and speech synthesis systems. (Cognitive level: Analyse)

CO2: Understand the main concepts and what each component does. (Cognitive level: Understand)

CO3: Describe a simple version of each component. (Cognitive level: Create)

CO4: Analyze classifier Algorithm for speech recognition. (Cognitive level: Create)

CO5: Understand the Applications that are in speech recognition and synthesis. (Cognitive level: Apply)

Follow proper numbering for answering the questions.

Section-A				
All questions are compulsory in this Section				
Q. No.		Marks	CO	BL
1.	What are the Various Methods of speech production process and discuss the Acoustic theory of speech production?	5	1	1,3
2.	What is NLP? Explain a method to build NLP pipeline with suitable example.	5	1	1,2
3.	Explain the benefits of eliminating stop words. Give examples in which stop word elimination may be harmful?	5	2	3,4
4.	Describe Part-of-Speech Tagging with suitable example?	5		1,2
5.	Analyze the naive Bayes classifier approach to Word Sense Disambiguation in NLP.	5	3	5,6
6.	Explain how Natural Language Processing is useful in Information Retrieval.	5	4	1,2
7.	Explain encode-decoder model of machine translation?	5	5	1,2
Section-B				
Attempt any FOUR Questions from this Section				
1	Explain Human Speech Production Model with suitable diagram?	10	1	1,3
2	What are the Different word Embedding techniques? Explain in Details.	10	2	2,5,6
3	Describe in detail, using appropriate equations and diagrams, the skip-gram model and how it can be used to learn dense distributed word representations from a corpus.	10	3	2,5
4	Explain probability Language model of the given sentence using Bi-gram model Technique.	10	3,4	1,2

	<s> I am SAM </s> <s> SAM I AM </s> <s> I Fly </s>			
5	Write notes on any two: - (a) Speech recognition (b) Speaker verification (c) Sentiment Analysis	10	4	4,5,6
6	What are the Different Machine Translation Approaches and Methods? Explain.	2.5x4=10	5	1,2

BL- Bloom's Taxonomy Levels (1-Remembering, 2-Understanding, 3-Applying, 4-Analysing, 5- Evaluating, 6-Creating), CO- Course Outcomes