R20 Regulation *Subject code: 3P6HB*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous, Accredited by NAAC with 'A+' Grade)

B.Tech VI Semester Supplementary Examinations, April 2026

NATURAL LANGUAGE PROCESSING

(CSE(DS))

Maximum Marks: 70 Date: 16.04.2026 Duration: 3 hours

Note: **1.This question paper contains two parts A and B.**
2. Part A is compulsory which carries 20 marks. Answer all questions in Part A.
3. Part B consists of 5 Units. Answer any one full question from each unit.
4. Each question carries 10 marks and may have a, b, c, d as sub questions.

Part-A

All the following questions carry equal marks (10X2M=20 Marks)		Marks	CO	BTL
1	Define Tokenization and Hybrid Approaches.	2M	1	L1
2	Perform parsing using simple top down parsing for the sentence "The dogs cried" using the grammar given below: S->NP VP,NP->ART N NP->ART ADJ N ,VP->V, VP->V NP	2M	1	L1
3	Write the Structural ambiguity and Semantic ambiguity.	2M	2	L1
4	List the semantic rules.	2M	2	L1
5	What is baye's rule?	2M	3	L1
6	Name the other resources of prop bank.	2M	3	L1
7	Define argument structure.	2M	4	L1
8	Write the various challenges in processing natural language?	2M	4	L1
9	Why language modeling is crucial in modern NLP applications?	2M	5	L1
10	Which software is used for NLP?	2M	5	L1

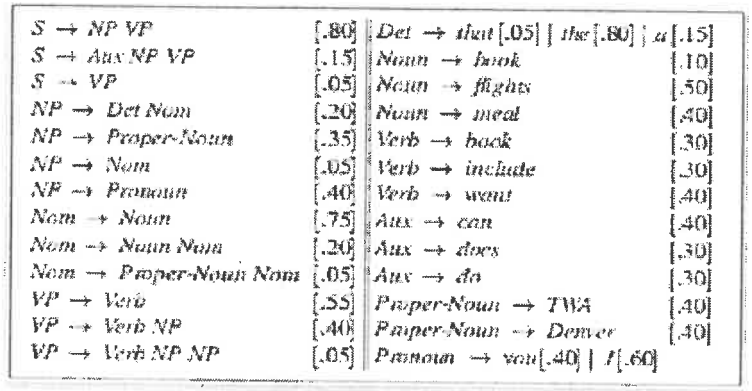
Part-B

Answer All the following questions. (5X10M=50Marks)		Marks	CO	BTL
11	Write about Generative Model. Apply the naïve Bayes algorithm to obtain Likelihood table by finding the probabilities of given features.	10M	1	L2

Sl. No.	Play	Outlook	Sl. No.	Play	Outlook
0	Rainy	Yes	7	Overcast	Yes
1	Sunny	Yes	8	Rainy	No
2	Overcast	Yes	9	Sunny	No
3	Overcast	Yes	10	Sunny	Yes
4	Sunny	No	11	Rainy	No
5	Rainy	Yes	12	Overcast	Yes
6	Sunny	Yes	13	Overcast	Yes

OR

12	a) Discuss Hybrid Approaches In NLP. b) What are the Issues and Challenge of NLP?	5M 5M	1	L2
13	Differentiate between top-down & bottom-up parsing with an example.	10M	2	L2

	OR			
14	Describe Probabilistic Context Free Grammar for given sentence. "Book the flight through the Houston"  $S \rightarrow NP\ VP$ [.80] | $Det \rightarrow that$ [.05] | the [.80] | a [.15] $S \rightarrow Aux\ NP\ VP$ [.15] | $Noun \rightarrow book$ [.10] $S \rightarrow VP$ [.05] | $Noun \rightarrow flights$ [.50] $NP \rightarrow Det\ Nom$ [.20] | $Noun \rightarrow meal$ [.40] $NP \rightarrow Proper\text{-}Noun$ [.35] | $Verb \rightarrow book$ [.30] $NP \rightarrow Nom$ [.05] | $Verb \rightarrow include$ [.30] $NP \rightarrow Pronoun$ [.40] | $Verb \rightarrow want$ [.40] $Nom \rightarrow Noun$ [.75] | $Aux \rightarrow can$ [.40] $Nom \rightarrow Noun\ Nom$ [.20] | $Aux \rightarrow does$ [.30] $Nom \rightarrow Proper\text{-}Noun\ Nom$ [.05] | $Aux \rightarrow do$ [.30] $VP \rightarrow Verb$ [.55] | $Proper\text{-}Noun \rightarrow TWA$ [.40] $VP \rightarrow Verb\ NP$ [.40] | $Proper\text{-}Noun \rightarrow Denver$ [.40] $VP \rightarrow Verb\ NP\ NP$ [.05] | $Pronoun \rightarrow you$ [.40] | I [.60]	10M	2	L2
15	a) Describe Building blocks of Semantic System. b) Discuss Semi Supervised WSD Algorithm.	5M 5M	3	L2
	OR			
16	a) Explain about Systems and Software. b) Discuss Word Sense and its applications.	5M 5M	3	L2
17	Explain the Mihalcea & Moldovan algorithm.	10M	4	L2
	OR			
18	Explain Semantic Role Labeling Algorithm.	10M	4	L2
19	Explain bigram using following corpus. Find the Probability. <s>Iam Jack</s> <s>Jack Iam</s> <s>Jack I like</s> <s>Jack I do like</s> <s>do I like Jack</s>	10M	5	L2
	OR			
20	Describe Syntax Based Language Models & variable length language models.	10M	5	L2