

Model Question Paper-1 with effect from 2019-20 (CBCS Scheme)

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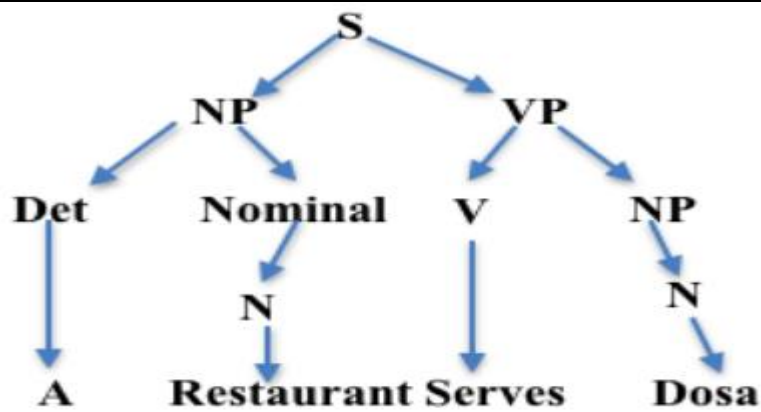
Sixth Semester B.E. Degree Examination Natural Language Processing

TIME: 03 Hours

Max. Marks: 100

Note: 01. Answer any **FIVE** full questions, choosing at least **ONE** question from each **MODULE**.

Module – 1			
Q.1	(a)	List and explain different phases of analysis in Natural Language Processing with an example for each.	08M
	(b)	Write Regular Expression for the following: <ul style="list-style-type: none"> • To accept strings book or books • To accept colour and color. • To accept any +ve integer with an optional decimal point • To check a string is an email address or not. 	08M
	(c)	Identify the morphological type (Noun phrase, Verb Phrase, Adjective Phrase) of following sentence segments 1. Important to Bill 2. Looked up the tree	04M
OR			
Q.2	(a)	Consider the following Corpus of three sentences <ul style="list-style-type: none"> • There is a big garden. • Children play in a garden • They play inside beautiful garden Calculate P for the sentence “They play in a big Garden” assuming a bi-gram language model.	10M
	(b)	Construct the Surface structure and Deep Structure for the following sentences: <ul style="list-style-type: none"> • The Police will catch the snatchers. • She saw stars in the sky. 	10M
Module – 2			
Q.3	(a)	The parse tree for the sentence “A restaurant serves dosa” is given below. Perform semantic analysis and show the semantic interpretations of the constituents. Explain the process.	10M



- (b) Write the algorithm for Minimum edit distance and compute the minimum edit distance between tutor and tumour. **10M**

OR

- Q.4** (a) Perform parsing using simple top down parsing for the sentence “The dogs cried” using the grammar given below: **10M**
 $S \rightarrow NP VP$
 $NP \rightarrow ART N$
 $NP \rightarrow ART ADJ N$
 $VP \rightarrow V$
 $VP \rightarrow V NP$

- (b) Derive a top-down, depth-first, left-to-right parse tree for the given sentence: **10M**
 • The angry bear chased the frightened little squirrel
 Use the following grammar rules to create the parse tree:

$S \rightarrow NP VP$	Det \rightarrow the
$NP \rightarrow Det Nom$	Adj \rightarrow little angry frightened
$VP \rightarrow V NP$	N \rightarrow squirrel bear
$Nom \rightarrow Adj Nom N$	V \rightarrow chased

Module – 3

- Q.5** (a) What are the three principles that predict when garden paths will arise in syntactic interpretations of sentences? **8M**
- (b) What are the thematic roles associated with the sentence?
 • John broke the window with the hammer. **8M**
- (c) Between the words eat and find which would you expect to be more effective in selection restriction-based sense disambiguation. Explain. **4M**

OR

- (a) With a neat diagram explain the learning frame work architecture. **10M**
- Q.6** (b) Explain the following: **10 M**
 • Domain Knowledge
 • Knowledge Roles

Module – 4

- Q.7** (a) Explain the semantically guided model for effective text mining. **10M**
- (b) Define the following with an example for each: **10M**
 • Cohesion
 • Co-Matrix
 • LSI

OR

Q.8	(a)	Describe Text Coherence. Discuss the significance of Text Coherence in Discourse Segmentation	10M
	(b)	With the neat diagram explain the evolutionary model for KDT (Knowledge Discovery from Text).	10M
Module – 5			
Q.9	(a)	State and explain Zipf's law.	10M
	(b)	Define the following with respect to Information Retrieval: a) Vector Space Model b) Term Frequency c) Inverse Document Frequency	10M
OR			
Q.10	(a)	Explain the architecture of an Information Retrieval system with a neat diagram.	10M
	(b)	Write the hypernym chain for "RIVER" extracted from the wordnet 2.0	5M
	(c)	How stemming affects, the performance of IR systems?	5M

Table showing the Bloom's Taxonomy Level, Course Outcome and Programme Outcome				
Question		Bloom's Taxonomy Level attached	Course Outcome	Programme Outcome
Q.1	(a)	L1	CO1	PO1
	(b)	L1	CO2	PO1
	(c)	L2	CO2	PO1
Q.2	(a)	L2	CO2	PO2
	(b)	L3	CO2	PO2
Q.3	(a)	L3	CO3	PO3
	(b)	L4	CO2	PO3
Q.4	(a)	L2	CO1	PO3
	(b)	L2	CO1	PO3
Q.5	(a)	L2	CO2	PO3
	(b)	L2	CO2	PO4
	(c)	L2	CO2	PO4
Q.6	(a)	L1	CO2	PO5
	(b)	L2	CO2	PO6
Q.7	(a)	L4	CO2	PO9
	(b)	L2	CO2	PO12
Q.8	(a)	L3	CO2	PO6
	(b)	L4	CO2	PO9
Q.9	(a)	L3	CO4	PO9
	(b)	L3	CO3	PO4
Q.10	(a)	L3	CO3	PO5
	(b)	L3	CO3	PO12
	(c)	L3	CO3	PO5
Bloom's Taxonomy Levels	Lower order thinking skills			
	Remembering(knowledge): <i>L</i> ₁	Understanding Comprehension): <i>L</i> ₂	Applying (Application): <i>L</i> ₃	
	Higher order thinking skills			
	Analyzing (Analysis): <i>L</i> ₄	Valuating (Evaluation): <i>L</i> ₅	Creating (Synthesis): <i>L</i> ₆	

