## UNIVERSITY OF PETROLEUM AND ENERGY STUDIES End Semester Examination, April/May 2018

Course: Natural Language Processing
Program: B.Tech CS with Cyber Law

Semester: VIII
Time: 03 hrs.
Max. Marks: 100

## **Instructions:**

	SECTION A		
S. No.		Marks	CO
Q 1	Briefly define what is meant by the <i>semantics</i> of a natural language utterance, and now this differs from the <i>pragmatics</i>		CO1
Q2	Describe the person and number features in Natural language processing	4	CO2
Q3	Explain the different V-Form features in verb sub-categorization?	4	CO2
Q4	Construct parsing tree for "vinken will join the board as a non-executive director"		
Q5	Describe the different types of Ambiguities with example?	4	CO2
	SECTION B	-	
Q6	Define Natural Language Processing? Explain different phases involved in NLP, with example?  A bank uses handwriting recognition software to read the amounts written as text on	10	CO1
Q7	cheques and convert it to numerical amounts.  Examples: 1. Rupees Forty Eight and paise thirty-three only. → 48.33  2. Rupees Nine only. → 9.00  Design a finite state transducer (FST) which does the above. Assume a) The FST gets a stream of tokens representing words/punctuation. b) The smallest amount on a cheque can be one paise and the largest amount can be ninety-nine Rupees and ninety-nine paise. Carefully define your input and output alphabet and draw the FST as a state transition diagram labelling the arcs suitably	10	CO1
Q8	Given the grammar and lexicon below, show the final chart for the following sentence after applying the bottom-up chart parser. Remember that the final chart contains all edges added during the parsing process. You may use either the notation from class (i.e. nodes/links). Sentences: Find the men in suits. $S \rightarrow VP$ $Det \rightarrow the$	10	CO2

	$VP \rightarrow Verb NP$	Verb → Find		
	$NP \rightarrow NP PP$	$Prep \rightarrow in$		
	NP → Det Noun	Noun → men   suits		
	PP → Prep Noun			
Q9	Design the CKY chart for sentence <b>The rain rains down</b> by considering following rules:			
	1. $S \rightarrow NP VP$ 2. $NP \rightarrow N$ 3. $NP \rightarrow DT N$ 4. $VP \rightarrow V AD$ 5. $VP \rightarrow V$ 6. $ADVP \rightarrow AD$	$ \begin{array}{ccc} 10. & V \rightarrow rain \\ 11. & V \rightarrow rains \end{array} $	10	CO2
		SECTION-C		
Q 10 A	Explain the Earley algorith	nm in detail and Simulate the Earley algorithm for below		
	given grammar and The s			
	spoon"			
	S-> NP VP	NP -> Ram		
	S -> VP NP	N -> spoon		
	NP->Det N	N->payasam	10	CO2
	NP-> NP PP	V -> ate		
	VP-> V NP	N -> dish		
	V P -> V NP NP	P -> with		
	VP-> VP PP	P -> in		
	PP-> P NP	Det -> the  a		
Q10 B	Explain the following term		10	CO3
	i. content Determination	ii. Sentence Planning iii. Surface Realization	10	CO3
Q11A	Explain the terms verb p	hrases and simple sentences, five verb forms and some	10	CO1
	common verb compliment structure in English.			CO2
Q11B	Briefly explain about the r	nachine translation	10	CO4
Name:	ent No:	<b>UPES</b>		

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	SECTION .	A		
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Q 1	Briefly define what is meant by the <i>semantics</i> of a natural language utterance, and now this differs from the <i>pragmatics</i>		4	CO1
Q2	Describe the person and number features in Natural l	anguage processing	4	CO2
Q3	" Kathy Jumped the horse " Parse the given se Bottom-Up Methods	entence by using Top-Down &	4	CO2
Q4	Define Morphology and illuminate the various types	Morphologies?	4	CO2
Q5	Explain with an example the elements of the simple noun phrases.		4	CO2
	SECTION			
Q6	Define Natural Language Processing? Explain different phases involved in NLP, with example?		10	CO1
	PP → Prep Noun	You may use either the notation  the Find  in  → men   suits	10	CO2
Q8		un to the man " by considering  LEXICON  ProperNoun -> Vincent	10	CO2

Q11B	Briefly explain about the machine	e translation	8	CO4
	<b>junk into a bin</b> ", write the grammar rules after applying the sub-categorization of verb, and pre-position.		12	CO2
Q11A	<ul> <li>i. content Determination</li> <li>ii. Sentence Planning</li> <li>iii. Surface Realization</li> </ul> 11A Construct the parsing tree for the sentence "workers dumped sacks of garbage and			
Q10 B	Explain the following terms	Santanga Dlanning iii Surface Dealization	10	CO3
	PP-> P NP	Det -> the   a		
	VP-> VP PP	P -> in		
	V P -> V NP NP	P -> with		
	VP-> V NP	N -> dish		
	NP-> NP PP	V -> ate	-	
	S -> VP NP NP->Det N	N -> spoon N->payasam	10	CO2
	spoon" S-> NP VP	NP -> Ram		
	given grammar and The sentence is "Ram ate the payasam in the dish with a			
Q 10 A				
		SECTION-C		
Q9	Explain Transition Networks? Represent a Noun Phrase Segment of a Transition Network?		10	CO2
	PP -> Preposition NP	IV -> fell		
	VP -> DV NP PP	Preposition -> to		
	VP -> TV NP	TV -> loved		
	VP -> IV	Wh -> who  that		
	Rel -> Wh VP	DV -> gave		
	Nominal -> Noun Rel	Noun -> gun  robber		
	Nominal -> Noun!	Det -> her		
	NP -> ProperNoun Rel	Det -> a		
	NP ->ProperNoun	ProperNoun -> Mia		