Enrollment No......................................

Faculty of Engineering
End Sem Examination Dec-2023
OE00080 Natural Language Processing

Programme: B.Tech.   Branch/Specialisation: All

Duration: 3 Hrs.   **Maximum Marks: 60**

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d. Assume suitable data if necessary. Notations and symbols have their usual meaning.

Q.1

i. What is the main challenge/s of NLP?   **1**
(a) Handling ambiguity of sentences
(b) Handling tokenization
(c) Handling POS-tagging
(d) All of these

ii. Choose from the following areas where NLP can be useful: **1**
(a) Automatic text summarization
(b) Automatic question-answering systems
(c) Information retrieval
(d) All of these

iii. Which of the following error is expected to recognize by semantic analyzer?   **1**
(a) Type mismatch   (b) Undeclared variable
(c) Reserved identifier misuse   (d) All of these

iv. Which of the following component is important for semantic analysis?   **1**
(a) Yacc   (b) Type checking   (c) Lex   (d) Symbol table

v. Which of the following includes major tasks of NLP?   **1**
(a) Automatic summarization   (b) Discourse analysis
(c) Machine translation   (d) All of these

vi. What is full form of NLU?   **1**
(a) Nature Language Understanding
(b) Natural Long Understanding
(c) Natural Language Understanding
(d) None of these

vii. What is the plural form of corpus?   **1**
(a) Corpora   (b) Corpuses   (c) Both (a) & (b)   (d) None of these

viii. What is Corpus? **1**
(a) Collection of natural language constructed with a specific purpose.
(b) Collection of the sounds
(c) Collection of how languages have changed over time
(d) None of these

ix. A classifier- **1**
(a) Inputs a vector of continuous values and outputs a single discrete value
(b) Inputs a vector of discrete values and outputs a single discrete value
(c) Both (a) & (b)
(d) None of these

x. Which of the following is an example of natural language processing? **1**
(a) Translating a document from English to Spanish
(b) Extracting insights from customer reviews
(c) Analyzing data in a spreadsheet
(d) Playing a game of chess

Q.2 i. Identify the morphological type (Noun phrase, Verb Phrase, Adjective Phrase) of following sentence segments: **2**
(a) important to Bill
(b) looked up the tree
ii. What is text pre-processing in NLP? **3**
iii. Explain lexicon, lexeme and the different types of relations that hold between lexemes. **5**

OR iv. With a neat diagram describe how a typical NLP system is organised. **5**

Q.3 i. Describe augmented grammar in syntactic analysis. **2**
ii. Explain Cocke–Kasami–Younger algorithm. What is the time complexity of the CYK algorithm for parsing a string of length N using a context-free grammar in Chomsky normal form? **8**

OR iii. Explain briefly basic concepts and issues in natural language semantics. **8**

Q.4 i. Describe open class words and closed class words with examples. **3**
ii. What is the difference between sapir-whorf hypothesis and linguistic relativity? **7**

OR iii. What are difference between assembling and navigating? **7**

Q.5 i. How does corpus creation help in NLP tasks? Explain. **4**
ii. Distinguish between semantics, pragmatics and discourse. **6**

OR iii. What is the difference between morphosyntactic annotation and part-of-speech tagging? **6**

Q.6 Attempt any two:
i. Can natural language processing predict a sequence of words? Explain. **5**
ii. What is the difference between generative and discriminative models (methods)? **5**
iii. What is the difference between binary classifier and multi class classifier? **5**

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Marking Scheme
Natural Language Processing (T) - OE00080 (T)

Q.1	i)	a) Handling Ambiguity of Sentences		1
	ii)	d) All of the mentioned		1
	iii)	d) All of the above		1
	iv)	b) Type Checking		1
	v)	d) All of the mentioned		1
	vi)	c) Natural Language Understanding		1
	vii)	c) Both		1
	viii)	a) Collection of natural language constructed with a specific purpose.		1
	ix)	c) Both A and B		1
	x)	b) Extracting insights from customer reviews		1

Q.2	i.	a. important to Bill	1 Mark	2
		b. looked up the tree	1 Mark	
	ii.	Text pre-processing in nlp	(As per explanation)	3
	iii.	Explain lexicon,	**1 mark**	5
		lexeme	**2 mark**	
		Different types ……. lexemes	**2 marks**	
OR	iv.	With a neat diagram describe	**2 marks**	5
		how a typical NLP system is organised	**3 marks**	

Q.3	i.	Augmented grammar in syntactic analysis	(As per explanation)	2
	ii.	Cocke–Kasami–Younger algorithm	**4 marks**	8
		Time complexity ……… normal form.	**4 marks**	
OR	iii.	Briefly basic concepts	**4 marks**	8
		issues in natural language semantics	**4 marks**	

Q.4	i.	Open class ………. with examples	(As per explanation)	3
	ii.	Difference ………. Relativity	**(1 mark*7)**	7
OR	iii.	Difference …….. navigating	**(1 mark*7)**	7

Q.5	i.	Corpus creation help in NLP tasks Explain	(As per explanation)	4
	ii.	**Semantics**	**2 Marks**	6
		Pragmatics	**2 Marks**	
		Discourse	**2 Marks**	
OR	iii.	Difference between …….. tagging	**(1 Mark*6)**	6

Q.6	i.	Natural language……… Explain	(As per explanation)	5
	ii.	Difference ………. models (methods)	(1 Mark*5)	5
	iii.	Difference ………….. class classifier	(1 Mark*5)	5

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