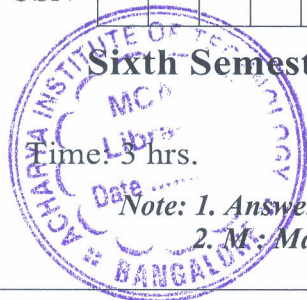


CBCS SCHEME

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BAI601



Sixth Semester B.E./B.Tech. Degree Examination, June/July 2025

Natural Language Processing

Time: 3 hrs.

Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.

2. M: Marks, L: Bloom's level, C: Course outcomes.

Module – 1			M	L	C
Q.1	a.	Illustrate with suitable examples the different levels in Natural Language Processing.	08	L2	CO1
	b.	Explain the challenges of Natural Language Processing.	06	L2	CO1
	c.	Briefly explain Karaka Theory	06	L2	CO1
OR					
Q.2	a.	Illustrate different forms of knowledge required in language processing.	06	L2	CO1
	b.	Write the applications of Natural Language Processing.	06	L2	CO1
	c.	List the problems associated with N-gram Model. Explain how these problems are handled.	08	L2	CO1
Module – 2					
Q.3	a.	Explain the working of Morphological Parsing.	06	L2	CO2
	b.	Write CYK Algorithm for context Free Grammar.	06	L3	CO2
	c.	For the given context Free Grammar (CFG) $S \rightarrow AB/BC$ $A \rightarrow BA/a$ $B \rightarrow CC/b$ $C \rightarrow AB/a$ Check whether the string (w) = 'ababa' is valid or not.	08	L3	CO2
OR					
Q.4	a.	Explain Top-down and Bottom-up Parsing with example.	08	L1	CO2
	b.	List out disadvantages of Context Free Grammar in Natural Language Grammar	04	L1	CO2
	c.	Illustrate spelling Error Detection and Correction in word level analysis.	08	L2	CO2

Module – 3

Q.5	a.	Explain working of Naïve Bayes Algorithm.	07	L2	CO3																																													
	b.	Suppose you have a dataset of 'Weather Conditions' and corresponding target variable 'Play' given below: <table border="1"><thead><tr><th>Sl.No.</th><th>Outlook</th><th>Play</th></tr></thead><tbody><tr><td>1</td><td>Rainy</td><td>Yes</td></tr><tr><td>2</td><td>Sunny</td><td>Yes</td></tr><tr><td>3</td><td>Overcast</td><td>Yes</td></tr><tr><td>4</td><td>Overcast</td><td>Yes</td></tr><tr><td>5</td><td>Sunny</td><td>No</td></tr><tr><td>6</td><td>Rainy</td><td>Yes</td></tr><tr><td>7</td><td>Sunny</td><td>Yes</td></tr><tr><td>8</td><td>Overcast</td><td>Yes</td></tr><tr><td>9</td><td>Rainy</td><td>No</td></tr><tr><td>10</td><td>Sunny</td><td>No</td></tr><tr><td>11</td><td>Sunny</td><td>Yes</td></tr><tr><td>12</td><td>Rainy</td><td>No</td></tr><tr><td>13</td><td>Overcast</td><td>Yes</td></tr><tr><td>14</td><td>Overcast</td><td>Yes</td></tr></tbody></table> Using above dataset, decide Whether you should play or not on a particular day with weather is 'Sunny' by applying Bayes Theorem.	Sl.No.	Outlook	Play	1	Rainy	Yes	2	Sunny	Yes	3	Overcast	Yes	4	Overcast	Yes	5	Sunny	No	6	Rainy	Yes	7	Sunny	Yes	8	Overcast	Yes	9	Rainy	No	10	Sunny	No	11	Sunny	Yes	12	Rainy	No	13	Overcast	Yes	14	Overcast	Yes	08	L3	CO3
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	c.	Write applications of Naïve Bayes classifier.	05	L2	CO3																																													

OR

Q.6	a.	Illustrate optimizing for sentiment analysis.	10	L2	CO3
	b.	How can you use Naïve Bayes for a variety of text classification tasks?	06	L1	CO3
	c.	Explain different types Language Model using Naïve Bayes.	04	L2	CO3

Module – 4

Q.7	a.	Explain design features of information retrieval system.	10	L2	CO4
	b.	Mention major issues in Information Retrieval.	05	L2	CO4
	c.	How stemming affects, the performance of IR Systems?	05	L1	CO4

OR

Q.8	a.	Explain wordnet and list the applications of wordnet.	08	L2	CO4
	b.	Illustrate the LSTM Model	08	L2	CO4
	c.	Explain the use of Fuzzy Model in Information Retrieval.	04	L2	CO4

Module – 5

Q.9	a.	Illustrate details of the Encoder – Decoder Model in Machine Translation (MT).	12	L2	CO5
	b.	Explain Lexical Divergences in MT.	08	L2	CO5

OR

Q.10	a.	Explain automatic evaluation in various forms. List out ethical issues raised in Machine Translation	12	L2	CO5
	b.	Explain the approaches for dealing with low-resource situations in MT.	08	L2	CO5
