

ज्ञान, विज्ञान आणि सुसंस्कार यांसाठी शिक्षण प्रसार - शिक्षणमहर्षी डॉ. बापूजी साळुंखे
Shri Swami Vivekanand Shikshan Sanstha, Kolhapur.

VIVEKANAND COLLEGE, KOLHAPUR

(An Empowered Autonomous Institute)

Affiliated to Shivaji University

NAAC Reaccredited "A+" CGPA 3.29 | College with Potential for excellence | ISO 9001:2015

Department of Computer Studies



NOTICE

Date-08/11/2025

This is to inform all the **MCA II Year** students that the **Unit Test – I** for the subject **“NLP”** will be conducted as per the details given below: Students are required to be present on time with proper preparation.

Date :14th November 2025

Day :Friday

Room No. : 512

Time : 11.00AM to 12.00PM


Mr. V.B. Pujari

HEAD
DEPARTMENT OF M. C. A.
VIVEKANAND COLLEGE, KOLHAPUR
(EMPOWERED AUTONOMOUS)



ज्ञान, विज्ञान आणि सुसंस्कार यांसाठी शिक्षण प्रसार - शिक्षणमहर्षी डॉ. बापूजी साकुंभे

Shri Swami Vivekanand Shikshan Sanstha, Kolhapur.

VIVEKANAND COLLEGE, KOLHAPUR

(An Empowered Autonomous Institute)

Affiliated to Shivaji University

NAAC Reaccredited "A+" CGPA 3.29 | College with Potential for excellence | ISO 9001:2015



Department of Computer Studies

Unit Test-I

Subject-NLP

Date-14/11/2025

ROLL NO.	NAME	SIGN
1	AGLAVE AARTI HARIDAS	<i>Agalave</i>
2	*AMANE SALONI SATISH	<i>Amone</i>
3	*APATE KOMAL ARVIND	<i>APate</i>
4	*BAVADEKAR MANASI PRAKASH	<i>Bavadekar</i>
5	*BHOI SHREYA SACHIN	<i>Bhoi</i>
6	BHOSALE KARTIK KUMAR	<i>AB</i>
7	*BHOSALE DEVIKA RAMCHANDRA	<i>Bhosale</i>
8	CHAVAN ABHISHEK RAJESH	<i>Chavan</i>
9	*CHAVAN PRANALI SUHAS	<i>Chavan</i>
10	*CHECHAR ADITI UTTAM	<i>Aditi</i>
11	*SHIVANI DATTATRAY CHOPADE	<i>Shivani</i>
12	CHOPADE JAMES PRAVIN	<i>Chopade</i>
13	*CHORMARE PRERANA SANJAY	<i>Pr</i>
14	*CHOUGALE NANDINI SHASHIKANT	<i>Chougale</i>
15	*JADHAV HARSHADA MOHAN	<i>AB</i>
16	JADHAV AKASH SURYAKANT	<i>AB</i>
17	*JADHAV RADHIKA NITIN	<i>Radhika</i>
18	*JADHAV NISHA GUNDOPANT	<i>AB</i>
19	KAKADE SIDDHESH VINIT	<i>AB</i>
20	*KALE SHRUTI SATISH	<i>Shruti</i>
21	*KAMAT SWATI SHRIKANT	<i>AB</i>
22	KAMBALE SHREYASH RAJENDRA	<i>Sak</i>
23	KAMBLE RUTVIK MURALIDHAR	<i>Ramuel</i>
24	KAMBLE VINAY KAKASO	<i>AB</i>
25	KHADRE JAY SANJAY	<i>Jay</i>
26	*KHAMBE VAISHNAVI MADHUKAR	<i>AB</i>
27	*KHOT SAKSHI DATTATRAY	<i>Sakshi</i>
28	*KOKATE SANDHYA ARUN	<i>Kokate</i>
29	KORADE SIDDHESH RAMAKANT	<i>Korade</i>

30	*KOTAMIRE POURNIMA UJWAL	<u>Pournima</u>
31	KUMBHAR SOURABH RAJESH	<u>S.R.</u>
32	*KUMBHAR POOJA MARUTI	<u>AB</u>
33	*LOKHANDE ASHLESHA ANANDA	<u>AB</u>
34	LOTAKHE OM RAHUL	<u>Om</u>
35	*MAGDUM JYOTI KUMAR	<u>AB</u>
36	MAHADIK SANGRAMSINH TATYASAHEB	<u>AB</u>
37	*MARALKAR PRATIKSHA VITTHAL	<u>Pratiksha</u>
38	NADAWADE PRASANNAJEET BHAGAVAN	<u>P.B.</u>
39	NIGADE SNEHAL RAMCHANDRA	<u>AB</u>
40	*NILKANTH NIKITA NAMDEV	<u>AB</u>
41	PATEL MUHAFIJ GOUSMAHAMAD	<u>M.</u>
42	PATHAN AAKIBMATIN FIROZKHAN	<u>A.I.</u>
43	*PATIL SHIVALI SANDIP	<u>Shivali</u>
44	*PATIL SHRAVANI MALGOUNDA	<u>Shravan</u>
45	*PATIL SHREYA SHAMRAO	<u>Shreya</u>
46	*PATIL VAISHNAVI VISHWAS	<u>Patil</u>
47	*PATIL VAISHNAVI BALIRAM	<u>B.S.</u>
48	*PATIL ROHINI DATTATRAY	<u>Patil</u>
49	PRASAD VIVEK KALPNATH	<u>Prasad</u>
50	*SANGAR SHITAL RAVINDRA	<u>Sangar</u>
51	*SHAIKH SUMAIYA AMAN	<u>S.A.</u>
52	SHELAKHE PARTH PRABHAKAR	<u>Shelake</u>
53	*SHINDE ARATI ARUN	<u>Shinde</u>
54	SHIVASHARAN ADITYA RAMESH	<u>S.R.</u>
55	*THOMBARE SHRUTI VILAS	<u>Thombare</u>
56	*TUPE SHREYA MOHAN	<u>Tupe</u>
57	*VADD SHWETA YASHVANT	<u>Vadd</u>
58	*VARNE SAKSHI SUNIL	<u>Varne</u>
59	*WAINGADE SAMRUDDHI SANJAY	<u>Waingade</u>
60	YADAV AISHWARYA SANJAY	<u>Yadav</u>
61	*KHADE SHARVARI EKNATH	<u>AB</u>

Pulise
FACULTY SIGN



ज्ञान, विज्ञान आणि सुसंस्कार यांसाठी शिक्षण प्रसार - शिक्षणमहर्षी डॉ. बापूजी साळुंखे

Shri Swami Vivekanand Shikshan Sanstha, Kolhapur.

VIVEKANAND COLLEGE, KOLHAPUR

(An Empowered Autonomous Institute)

Affiliated to Shivaji University

NAAC Reaccredited "A+" CGPA 3.29 | College with Potential for excellence | ISO 9001:2015



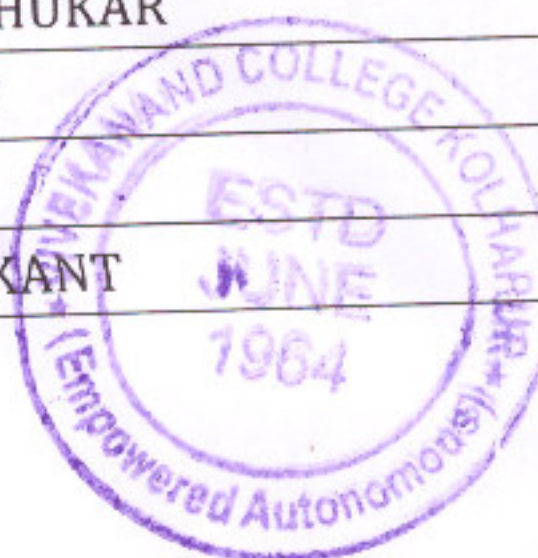
Department of Computer Studies

Unit Test-I

Subject-Natural Language Processing

Date-14/11/2025

ROLL NO.	NAME	MARKS
1	AGLAVE AARTI HARIDAS	14
2	*AMANE SALONI SATISH	13
3	*APATE KOMAL ARVIND	15
4	*BAVADEKAR MANASI PRAKASH	13
5	*BHOI SHREYA SACHIN	14
6	BHOSALE KARTIK KUMAR	AB
7	*BHOSALE DEVIKA RAMCHANDRA	16
8	CHAVAN ABHISHEK RAJESH	13
9	*CHAVAN PRANALI SUHAS	13
10	*CHECHAR ADITI UTTAM	15
11	*SHIVANI DATTATRAY CHOPADE	16
12	CHOPADE JAMES PRAVIN	15
13	*CHORMARE PRERANA SANJAY	13
14	*CHOUGALE NANDINI SHASHIKANT	15
15	*JADHAV HARSHADA MOHAN	AB
16	JADHAV AKASH SURYAKANT	AB
17	*JADHAV RADHIKA NITIN	18
18	*JADHAV NISHA GUNDOPANT	AB
19	KAKADE SIDDHESH VINIT	AB
20	*KALE SHRUTI SATISH	16
21	*KAMAT SWATI SHRIKANT	AB
22	KAMBALE SHREYASH RAJENDRA	13
23	KAMBLE RUTVIK MURALIDHAR	13
24	KAMBLE VINAY KAKASO	AB
25	KHADRE JAY SANJAY	12
26	*KHAMBE VAISHNAVI MADHUKAR	AB
27	*KHOT SAKSHI DATTATRAY	14
28	*KOKATE SANDHYA ARUN	13
29	KORADE SIDDHESH RAMAKANT	14



30	*KOTAMIRE POURNIMA UJWAL	14
31	KUMBHAR SOURABH RAJESH	15
32	*KUMBHAR POOJA MARUTI	AB
33	*LOKHANDE ASHLESHA ANANDA	AB
34	LOTAKHE OM RAHUL	16
35	*MAGDUM JYOTI KUMAR	AB
36	MAHADIK SANGRAMSINH TATYASAHEB	AB
37	*MARALKAR PRATIKSHA VITTHAL	15
38	NADAWADE PRASANNAJEET BHAGAVAN	14
39	NIGADE SNEHAL RAMCHANDRA	AB
40	*NILKANTH NIKITA NAMDEV	AB
41	PATEL MUHAFIJ GOUSMAHAMAD	16
42	PATHAN AAKIBMATIN FIROZKHAN	16
43	*PATIL SHIVALI SANDIP	15
44	*PATIL SHRAVANI MALGOUNDA	14
45	*PATIL SHREYA SHAMRAO	14
46	*PATIL VAISHNAVI VISHWAS	13
47	*PATIL VAISHNAVI BALIRAM	AB
48	*PATIL ROHINI DATTATRAY	13
49	PRASAD VIVEK KALPNATH	14
50	*SANGAR SHITAL RAVINDRA	15
51	*SHAIKH SUMAIYA AMAN	16
52	SHELAKHE PARTH PRABHAKAR	11
53	*SHINDE ARATI ARUN	14
54	SHIVASHARAN ADITYA RAMESH	13
55	*THOMBARE SHRUTI VILAS	14
56	*TUPE SHREYA MOHAN	14
57	*VADD SHWETA YASHVANT	13
58	*VARNE SAKSHI SUNIL	12
59	*WAINGADE SAMRUDDHI SANJAY	14
60	YADAV AISHWARYA SANJAY	13
61	*KHADE SHARVARI EKNATH	AB



(Hire Poonam S.)
FACULTY SIGN

Voyei

HEAD
DEPARTMENT OF M. C. A.
VIVEKANAND COLLEGE, KOLHAPUR
(EMPOWERED AUTONOMOUS)

Natural Language Processing

Q1. Define NLP? Different stages of NLP?

Natural Language Processing (NLP) is a branch of Artificial Intelligence (AI) that focuses on making computers understand, interpret and generate human language. It helps machines to read, hear and respond to people in Natural Languages like English, Hindi, Marathi, etc.

For eg.,

Talking to Alexa or Siri,

- Translating languages on Google Translate.
- searching something on Google.
- detecting spam emails.

stages of NLP

To understand and process human language, NLP follows five main steps

1) Lexical Analysis

- Breaking the text into words.

This is the first step where the sentence is divided into words or Tokens.

- Also checks the basic structure of each word such as identifying suffixes, prefixes and root words.

Example,

sentence - "He's reading a book."

Lexical Analysis breaks it into → "He", "is",

"reading", "a", "book"

2. Syntactic Analysis

- This step checks if the sentence is grammatically correct.
- It builds a structure tree showing how the words are related.

✓ correct Example
 "The boy plays football" → Accepted

✗ Wrong Example

"Football plays boy." → Rejected (Wrong Grammar)

3. Semantic Analysis

- Understanding the meaning
- In this step the system tries to understand the meaning of the sentence
- It links words with their real meaning.

Example ,

"He went to the bank."

→ Does bank mean a riverbank or a money bank?
 This step uses meaning and context to figure that out.

4. Discourse Integration

- Understanding across sentences.
- A single sentence may depend on previous or next sentences
- This stage helps to understand the flow of conversation or text.

Example

"She dropped the glass. It broke."

→ "It" refers to the glass.

The system connects both sentences.

5. Pragmatic Analysis (Understanding Actual intent)

→ This is the final step, where the system figures out the real meaning based on situation or context.

- Sometimes the real meaning is not direct, and needs to be interpreted.

Example,

"You left the door open." - "bhai"

→ The actual meaning might be "Please close the door."

Lexical Analysis



Syntactic Analysis



Semantic Analysis



Discourse Analysis



Pragmatic Analysis

Figure, General Five Steps of NLP

Q3. Write Note on Lexical Ambiguity

Lexical ambiguity means a single word having more than one meaning. When a word can be understood in different ways depending on the context, it creates ambiguity. In Language Processing, linguistics and communication, lexical ambiguity is an important concept because it can change the meaning of a sentence and sometimes cause confusion.

Types of Lexical Ambiguity

1. Polysemy.

One word with related meaning.

Ex., "Head" → Part of body / Head of department

2. Homonymy

Same spelling and Pronunciation, but meaning are unrelated.

Ex., "Bat" → an animal / a cricket bat.

3. Homophones:

Words that sound the same but have different meanings.

Ex., "sea" and "see"

4. Homographs

Words that are spelled the same but may have different meanings or pronunciations.

Ex., "lead" (to guide) and "lead" (a metal)

- Why Lexical Ambiguity occurs
 - Natural language evolves over time.
 - Words are used in different contexts.
 - Same word is borrowed from different languages, cultural and regional usage differences.

Effects of Lexical Ambiguity

- It can create confusion in communication.
- It makes sentence interpretation difficult in NLP.
- In literature, it is sometimes used to create humour, wordplay or double meaning.

Role of context

Context plays the most important role in resolving lexical ambiguity.

3

For eg.,

- "He sat on the bank" (River bank)
- "He went to the bank to withdraw money" (financial bank)

Q2. Applications of NLP

1) Text Summarization

NLP can read a long paragraph or article and generate a short summary without losing important information.

used for:

- News Apps

- Research Paper Summaries

- E-learning Platforms

2) Grammar and spell checkers

NLP helps in checking grammar and spelling mistakes and suggest corrections.

Ex., Microsoft Word's Grammar Tool

Grammarly App

Google Docs "Smart Compose" suggestions.

3) Autocorrect And Autocomplete

NLP helps in predicting the next word or fixing spelling mistakes while typing.

Ex., Smartphone keyboard Predictions

Google Search Suggestions

Gmail Smart Compose

4) Question Answering systems (Q&A)

These systems understand a question and give the exact answer, not just a related pages like Google

Eg., CHATGPT is an example of Q&A system using NLP

4) Speech Recognition -

This allows computers to convert spoken language into text. NLP works together with sound processing for this.

Ex., voice typing on phone.

Transcribing meeting

5) Sentiment Analysis (Emotion Detection)

NLP is used to detect the mood or opinion behind a sentence - whether it is positive, negative or neutral.

Ex.,

Companies analyzing customer reviews.

Social media monitoring (e.g., checking reaction to a product.)

Q4. Difference between Stemming and Lemmatization

Point Stemming Lemmatization

Meaning Removes suffixes / Prefixes to get root word. Converts word to its proper dictionary base word.

Output May not be a real word Always gives real word (lemma)

Method Uses simple rules and chopping Uses grammar, vocabulary and part of speech

Speed Fast Slower

Accuracy Less Accurate More Accurate

Context Doesn't Understand word meaning Understands word meaning and context.

Example "Studies" → studiX (not a real word) "Studies" → study (real word)

Tool Porter stemmer, Snowball WordNet lemmatizer, Spacy

Use case Quick tasks, search engines Advanced NLP tasks like chatbots, question answering

Part of speech Not required Required (e.g., Noun, verb)

Name : Pournima. U. Kotamire

Roll No : 30

Subject : NLP

Date : 14/11/2025

Q.1

→

NLP is a Natural Language processing that focuses on Artificial Intelligence and computer science that focuses on enabling computer to understand interpret, generate or interact with human language in a way that is both meaningful and useful

It bridges the gap betⁿ human communication (natural language like : Hindi, Marathi, English) and machine understanding allowing system to process and analyze large amount natural language data.

Example - When you talk to Alexa or Siri, they use NLP to understand your words.

-i- Stages in NLP

Lexical Analysis

Syntactic Analysis

Semantic Analysis

Discourse Integration

Pragmatic Analysis

1] Lexical Analysis

- It is the first stage in NLP. It is also known as morphological analysis.
- It consists of identifying and analyzing the structure of words.
- Lexicon of a language means the collection of phrases and words in a language.
- Lexical analysis is dividing the whole chunk of text into words, sentences and paragraphs.

2] Syntactic Analysis

- Syntactic Analysis consists of analysis of words in the sentence for grammar and ordering words in a way that shows the relationship among them.
- For example, the sentence "The school goes to boy" is rejected by English Syntactic Analyzer.

3] Semantic Analysis

- Semantic Analysis is a structure created by the syntactic analyzer which assigns meanings.
- It makes sure the words and phrases make sense together based on their actual meanings.
- For example, a sentence like - "Colorless green idea" would be rejected because it doesn't make sense - something can't be both colourless and green.

4] Discourse Integration

- The meaning of any sentence depends upon the meaning of the sentence just before it.
- It also helps understand next sentence.
- For Example - 'He wanted that' doesn't make full sense unless we know what was said earlier so we understand this sentence better when we read - what came before it.
- In short: sentences are connected and their meaning depends on each other.

5] Pragmatic Analysis

- Pragmatic Analysis is about understanding the real meaning of what someone says in a given situation.
- It focuses on how language is used in real life not just the words but what the speaker really means.
- For eg. If someone says 'close the window?' they may not be asking a question - they might actually be requesting you to close it.

Q2

→ 1] Machine translation

- machine translation is basically used to convert text or speech from one natural language to another natural language.
- Example Google Translator.

2] Information Retrieval

- It refers to the human Computer Interaction (HCI)
- When a person type a question or topic the computer looks through many document or websites & finds the most relevant ones.
- Example : When you search something on Google the search engine finds & shows you the best matching result.

3] Text categorization

- Text categorization (also known as text classification or topic spotting) is the task of automatically sorting a set document into categories.

4] Spam Detection

- To detect unwanted e-mails getting to a users inbox. Spam detection is used.

5] chatbot

- chatbot is one of the most important application of NLP
- It is used by many companies to provide the customers chat services

6] Information Extraction

- This means finding important details in text that is not organized properly
- Then we change that messay or lossely arrange text into a organized format. like a table in a database.

Q.3



Ambiguity can occur at all NLP levels. It is a property of linguistic expressions. If an expression (word / phrase / sentence) has more than one meaning we can refer it as ambiguous.

Types of Ambiguities

1. Lexical Ambiguity

Lexical Ambiguity happens when a single word has more than one meaning or can belong different parts of speech.

For example the word "Silver" can be

- Adjective - she made a silver speech
- Noun - she bagged two silver medals
- Verb - His worries had silvered his hair

To solve this, Part-of-Speech (POS) tagging is used.

It assigns each word in a sentence to its correct category (noun, verb, adjective, etc).

-i- Lexical Semantic Ambiguity

It occurs when a word has multiple meanings depending on the context

Example

- Tank - The tank was full of water.
I saw a military tank.
- Bank - I deposited money in the bank
He sat on the river bank.
- Bat - I saw a bat
(Flying animal or cricket bat?)
- To resolve this, Word sense Disambiguation (WSD) techniques are used to find the correct meaning of word based on its context.

2. Syntactic Ambiguity

- It happens when a sentence can have more than one structure or meaning because of how words are arranged.

Example - I saw the boy with a dog?

- Did I see a boy who has a dog?
- or did I use a dog to see the boy?
- This type of ambiguity is also called structural Ambiguity and it has two types.

① Scope Ambiguity

② Attachment Ambiguity.

Q.4

→

Stemming	Lemmatization.
1. Groups similar words based on base / root	uses dictionary / word Net to find correct base word
2. Less accurate	More accurate.
3. Good When meaning is not important (e.g Spam detection)	Better when meaning is important (e.g Q. & A)
4. Works on single words without checking sentence meaning	Looks at whole sentence to find the right word meaning
5. Can produce incorrect or non-existent words	Always gives proper dictionary word.
6. studies becomes studi (not a valid word)	studies become study (correct & valid word)