

CENTRAL INSTITUTE OF TECHNOLOGY KOKRAJHAR  
(Deemed to be University)  
KOKRAJHAR :: BTR :: ASSAM :: 783370

MID - SEMESTER EXAMINATION  
UG

Session: January-June, 2023 Semester: VI

Time: 2Hrs. Full Marks: 50

Course Code: UCSE602

Course Title: Software Engineering

ANSWER ANY Five. QUESTIONS

1.
  - a. Why do you need to study Software Engineering? 3
  - b. What is a software development life cycle model? 3
  - c. Why is it important to adhere to a life cycle model of software development? 4
2.
  - a. What is an exploratory style of program development? Why exploratory style of program development is not suitable for software development? 2+3
  - b. Briefly discuss about the different phases of waterfall model of software development with the help of a diagram. 5
3.
  - a. Discuss life cycle activities of prototyping model and its advantages. 5
  - b. Why "Spiral model is known as Meta Model"? Justify. 3
  - c. How data flow oriented is different from control flow oriented design flow? 2
4.
  - a. If you need to design a data entry system for office staff who have never used computer before, which life cycle model would you propose and why? 4
  - b. Define the terms abstraction and decomposition in terms of Software Engineering principle. 4
  - c. What do you mean by outsourced project development? 2
5.
  - a. If you are a software project manager then what would be your job responsibilities for managing software projects. Briefly explain 5
  - b. Software Engineering is a science or an art? Justify your answer. 5
6. What is the importance of Software Requirements Specification (SRS) document? What are main activities of this document? Describe the function of the activities. 2+2+6=10
7. Write short notes on (any two) 2\*5
  - a. Project planning
  - b. COCOMO model
  - c. Software crisis
  - d. Delphi Estimation
  - e. Evolutionary model

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**MID – SEMESTER EXAMINATION**  
**UG/DIPLOMA**

Session: January-June, 2023 Semester: 6<sup>th</sup> Time: 2Hrs. Full Marks: 50  
Course Code: UHSS 601 Course Title: Professional Communication

**ANSWER ALL THE QUESTIONS:**

- ✓ 1. Write a note on the various purposes for which a business letter is written. (10)
- ✓ 2. Briefly explain the importance of Soft Skills in Professional Domain. (8)
- ✓ 3. Write the key points to be noted for a presentation. (7)
4. Give five differences between horizontal communication and diagonal communication. (5)
5. Identify five disadvantages of vertical communication. (5)
6. "Focusing on nonverbal communication in the workplace builds strong teams that learn to understand each other beyond verbal messaging." Give five examples of nonverbal communication that can help to boost productivity and enhance engagement with team members at work place. (5)
- ✓ 7. What is a press release? What essential elements should the first paragraph of your press release include? (5+5=10)

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Sanjani Das.

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MID – SEMESTER EXAMINATION  
UG

Session: Janu-June, 2023 Semester: VI Time: 2Hrs. Full Marks: 50  
Course Code: UCSE601 Course Title: Compiler Design

Answer any five questions

1. (a) Show the different phases of compiler in a block diagram.  
(b) Define the terms Token, Pattern, Lexeme.

4 + 6

2. (a) What is the task of Lexical analyser? How an automata is used in lexical phase?  
(b) Write a DFA or NFA or regular expression to recognise an integer (note that, integer may contains signs i.e. 123 or +123 or -123)

2 + 2 + 6

3. Define lexical error and syntax error. Explain each case with suitable examples.

5 + 5

4. (a) What is ambiguous grammar? What is the problem of ambiguity?  
(b) Explain the dangling *if-else* with example?

2 + 2 + 6

5. (a) Define left recursion and left factoring. How left recursion and left factoring make problems in parsing?  
(b) Remove the left recursion from the following grammar if exists.  
 $S \rightarrow Aa|B, A \rightarrow Bd|Sc|e, B \rightarrow d$

3 + 2 + 5

6. Create the LL(1) parsing table of the following grammar:  
 $E \rightarrow E + T|T, T \rightarrow T * F|F, F \rightarrow (E)|id$

10

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**MID – SEMESTER EXAMINATION**  
**UG / DIPLOMA**

Session: Jan-May, 2023

Semester: 6th

Time: 2Hrs. Full Marks: 50

Course Code: UCSE603

Course Title: Machine Learning

**ANSWER ALL QUESTIONS**

Q1. Consider the following data of an Airport and use Naive Bayes classifier to detect whether the flight on a given day when

Cloud= Yes, Fog = Yes, Rain = Yes, Windy = No will be delayed or not.

Cloud	Fog	Rain	Windy	Delay
Yes	Yes	Yes	Yes	Yes
No	Yes	No	No	Yes
Yes	Yes	No	Yes	Yes
No	No	No	Yes	No
No	No	Yes	Yes	No
Yes	No	No	No	No
Yes	Yes	No	No	Yes

(15)

Q2. Consider the following data where x1 and x2 are two inputs and y is the output -

x1	x2	class
2	2	-1(negative)
-2	2	-1(negative)
-2	2	+1(positive)

Design a SVM. Identify your classifier (write the equation) as well as your support vectors.

(15)



Q3. Consider the following data (P, Q are inputs and R, M are the outputs) and design a suitable ANN for it. Clearly mention your weights and show that your weights are suitable for classification.

P	Q	R	M
0	0	1	0
0	1	0	0
1	0	0	1
1	1	1	1

(20)



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MID – SEMESTER EXAMINATION  
UG

Session: Jan-Jun, 2023

Semester: VI

Time: 2Hrs.

Full Marks: 50

Course Code: UCSE613

Course Title: Natural Language Processing

*Question 1 is compulsory answer any 3 from the rest!*

1 Objective Type Questions (MCQ)

1 x 20

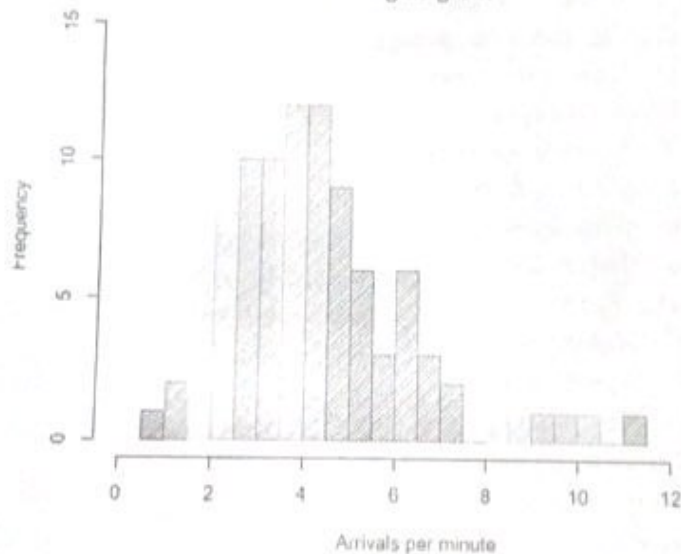
- i. Which one is not an application of natural language processing  
☒ A. Question Answering  
B. Information Retrieval  
C. Dialogue System  
☐ D. None of the above
- ii. To remove ambiguity in sentences which one of the following nlp technique can be used  
A. Part of Speech Tagging  
B. Name Entity Recognition  
☒ C. Word Sense Disambiguation  
D. None of the above
- iii. N-gram is a type of  
A. Machine Translation  
B. Word Sense Disambiguation  
☒ C. Language Modelling  
D. Parts of Speech tagging
- iv. Segmenting text in tokens or words is known as  
A. Segmentation  
☒ B. Tokenization  
C. Preprocessing  
D. None of the above
- v. Large Language Models such as ChatGPT or LLaMA are not capable to  
A. Generate Responses of a prompt  
B. Translation between English to Hindi  
☒ C. Generate an image  
D. Solving simple math equations
- vi. Which one is a requirement for a Statistical or Neural Network based NLP task for better result  
A. Large Network Architecture  
B. Computer Science Degree  
☒ C. Linguistic Domain Knowledge

- vii. Factors changing NLP landscape
- A. Increases in computing power
  - B. The rise of the web, then the social web
  - C. Advances in machine learning
  - ☒ D. All of the above

- viii. A discrete combinatorial systems human use for most communication is known as
- A. Sounds
  - B. Words
  - C. Phonemes
  - ☒ D. Language

- ix. Mental grammars are generative grammar stored in the brain that allows a speaker to produce language that other speakers can understand. Which part of the NLP can be compare with something similar to mental grammar
- ☒ A. Natural Language Generation
  - ☒ B. Natural Language Understanding
  - C. Language Acquisition
  - D. None of the above

- x. What is the name of the following daigram



- ☒ A. Bar chart
- ☒ B. Histogram
- C. Pie chart
- D. Scatter plot

- xi. A probability means
- ☒ A. Number of favorable events / total number of events
  - B. Total number of events / Number of favorable events
  - ☒ C. A statistical analysis
  - D. None of the above



- xii. What type of activation function gives the value in the range 0 to 1
- ☒ A. Sigmoid
  - B. ReLU
  - C. Tanh
  - D. None of the above
- xiii. Weights and Biases are updated throughout the learning process in ANN. The statement is
- ☒ A. True B. False
- xiv. Recurrent Neural Network is useful for
- ☒ A. Text data
  - B. Image data
  - C. Video data
  - D. None of the above
- xv. Encoder and Decoder architecture is found in
- A. Statistical Machine Translation
  - ☒ B. Neural Machine Translation
  - C. Language Modelling
  - D. None of the above
- xvi. Word with multiple meaning is an NLP issue of
- A. Position
  - ☒ B. Ambiguity
  - C. Direct
  - D. None
- xvii. A Parts of Speech tagger or parser on Wall Street Data may not work well on Social Media Data because of
- A. Ambiguity
  - B. Sparsity
  - ☒ C. Variation
  - D. None of the above
- xviii. Which of the following is the reason an NLP is hard?
- A. Ambiguity in language
  - B. Sparsity in language
  - ☒ C. Variation in language
  - D. All of the above
- xix. Parallel text corpora is required in
- A. Language Modelling
  - ☒ B. Machine Translation
  - C. Sentiment Analysis
  - ☒ D. None of the above
- xx. Email Spam detection is a type
- A. Clustering
  - ☒ B. Classification
  - C. Generative

- D. None of the above

2 Short answer questions

2 x 5 = 10

- i. What is NLP?
- ii. Write any four applications of NLP.
- iii. What are the four different core technologies of NLP?
- iv. What is a Language Model?
- v. What is a syntax tree?

- 3
- a. Explain 1-Gram and 2-Gram language model using an example
  - b. For the following sample text

2 x 5 = 10

"the earth moves round the sun. the sun rises in the east"

- i. Find 1-Gram probability of the words "the, earth, sun"
- ii. Find 2-Gram probability of the "the, earth", "the, people"

4 Write short notes on any two

5 + 5 = 10

- a. Neural Machine Translation
- b. Words Sense Disambiguation
- c. Parts of Speech Tagging
- d. Recurrent Neural Network

- 5
- a. What is a Machine Translation?
  - b. Explain different types of Machine Translation?
  - c. How does the quality of a Machine Translation be measured?

2 + 6 + 2 = 10