**University of Mumbai**

**Examination June 2021**

**Examinations Commencing from 1st June 2021**

Program: Computer Engineering

Curriculum Scheme: Rev2016

Examination: BE Semester VIII

Course Code: DLO8012 and Course Name: Natural Language Processing

Time: 2 hour Max. Marks: 80

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| **Q1.** | **Choose the correct option for following questions. All the Questions are compulsory and carry equal marks** |
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| 1. | Natural language processing is a sub-domain of, |
| Option A: | Networking |
| Option B: | Artificial Intelligence |
| Option C: | Algorithms |
| Option D: | Databases |
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| 2. | Which of this is not an application of NLP? |
| Option A: | Speech Understanding |
| Option B: | Chatbot |
| Option C: | Scanned Image Classification |
| Option D: | News Clustering |
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| 3. | This kind of ambiguity occurs when a sentence is parsed in different ways. |
| Option A: | Lexical Ambiguity |
| Option B: | Syntactic Ambiguity |
| Option C: | Semantic Ambiguity |
| Option D: | Pragmatic Ambiguity |
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| 4. | “Appoint🡪Appointee” is an example of ------------- morphology. |
| Option A: | Derivational |
| Option B: | Inflectional |
| Option C: | Compounding |
| Option D: | Cliticization |
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| 5. | The stemming algorithm is used to, |
| Option A: | Form complex words from base form |
| Option B: | Generats the parse tree of a sentence |
| Option C: | Check meaning of a word in dictionary |
| Option D: | Reduce inflected form of a word to a single base form |
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| 6. | P(dog | the big) is an example of ------ model |
| Option A: | Unigram |
| Option B: | Bigram |
| Option C: | Trigram |
| Option D: | Quadrigram |
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| 7. | Which of this is not true about Morphology? |
| Option A: | Provides systematic rules for forming new words in a language |
| Option B: | Provide rules for forming sentences in a language |
| Option C: | Can be used to verify if a word is legitimate in a language |
| Option D: | Group words into classes |
|  |  |
| 8. | CFG captures ------------------------ |
| Option A: | Constituency and ordering |
| Option B: | word meaning |
| Option C: | relation between words |
| Option D: | sentence meaning |
|  |  |
| 9. | Which of the following is a Rule based POS tagger? |
| Option A: | HMM Tagger |
| Option B: | Ngram Tagger |
| Option C: | ENGTWOL Tagger |
| Option D: | Brill Tagger |
|  |  |
| 10. | Syntax analysis concerns with: |
| Option A: | the way words are built up from smaller meaning bearing units |
| Option B: | what words mean and how these meanings combine in sentences to form sentence meanings |
| Option C: | how the immediately preceding sentences affect the interpretation of the next sentence |
| Option D: | how words are put together to form correct sentences and what structural role each word has |
|  |  |
| 11. | Which of the following is not a sequence labeling technique? |
| Option A: | Maximum Entropy |
| Option B: | Context Free Grammar |
| Option C: | Conditional Random Fields |
| Option D: | Hidden Markov Model |
|  |  |
| 12. | Which of the following is an example of “hyponym-hypernym” semantic relationship? |
| Option A: | Car-Vehicle |
| Option B: | Car-Wheel |
| Option C: | Wheel-Car |
| Option D: | Car-Ford |
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| 13. | The root form of a word in Wordnet dictionary is called |
| Option A: | Stem |
| Option B: | Sense |
| Option C: | Gloss |
| Option D: | Lemma |
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| 14. | Roughly, Semantic analysis is------------ |
| Option A: | Language Understanding |
| Option B: | Language Generation |
| Option C: | Language Preprocessing |
| Option D: | Language Translation |
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| 15. | “All boys love cricket ”. How is this sentence represented in First Order Logic form? |
| Option A: | ∃x boys(x)🡪love(x,cricket) |
| Option B: | ∀x boys(x)🡪love(x,cricket) |
| Option C: | ∃x,y love(x) ∧ cricket(y) |
| Option D: | ∀x boys(x) ∧ love(x,cricket) |
|  |  |
| 16. | Pragmatic refers to |
| Option A: | Literal meaning |
| Option B: | Intended meaning |
| Option C: | Structural meaning |
| Option D: | Wordnet dictionary meaning |
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| 17. | “John bought an Acura Integra today, but the engine seemed noisy.”  Which of the following is an Inferrable referent? |
| Option A: | John |
| Option B: | Acura |
| Option C: | engine |
| Option D: | noisy |
|  |  |
| 18. | Shivaji🡪 शिवाजी  Is an example of: |
| Option A: | Translation |
| Option B: | Transfer |
| Option C: | Transliteration |
| Option D: | Generation |
|  |  |
| 19. | In which of the summarization technique, summary contains the sentences from the given document only? |
| Option A: | Extractive Summarization |
| Option B: | Abstractive summarization |
| Option C: | Mixed Summarization |
| Option D: | Copied summarization |
|  |  |
| 20. | Which of this is not a reference resolution algorithm? |
| Option A: | Hobb’s Algorithm |
| Option B: | Lappin and Leass’s Algorithm |
| Option C: | Centering Algorithm |
| Option D: | Lesk’s Algorithm |

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| **Q2** |  |
| A | **Solve any Two 5 marks each** |
| i. | Discuss various challenges in processing natural language. |
| ii. | What is the role of FSA in Morphological analysis? |
| iii. | What is WordNet? How is “sense” defined in WordNet? Explain with example. |
| B | **Solve any One 10 marks each** |
| i. | What do you mean by stemming? Explain Porter’s stemming algorithm in detail. |
| ii. | How HMM is used for POS tagging? Explain in detail. |

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| **Q3** |  |
| A | **Solve any Two 5 marks each** |
| i. | Explain use of CFG in Natural Language Processing with suitable example. |
| ii. | Consider a suitable training data and show the Bigram probability calculation for the same*.* |
| iii. | Compare Information Retrieval with Information Extraction system. |
| B | **Solve any One 10 marks each** |
| i. | What is Word Sense Disambiguation? Illustrate with example how Dictionary-based approach identifies correct sense of an ambiguous word. |
| ii. | Discuss in detail any application considering any Indian regional language of your choice. |