19LINC-401

COMPUTATIONAL LINGUISTICS

MODEL QUESTIONS

By

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SYLLABUS

19LINC401: Computational Linguistics

Unit–I: Computational Phonetics and Phonemics

Introduction to computer: Types of Computer, generations of computer – Anatomy of computer. Articulatory phonetics vs. Acoustic phonetics: Prosodic features, speech signal processing, parameters and features of speech - Finite state implementation of phonological rules - Introduction to speech synthesis – text-to-speech system, speech recognition – speech-to-text system.

Unit–II: Computational Morphology and Syntax

Introduction to Morphology – morpheme: free Vs bound, Morphological Processing – Inflectional, Derivational and Compositional morphology – word structure, Morphological analysis – different approaches. Representation of morphological information: Finite –State Morphological parsing, Morphotactics, Natural Language Processing, Parsing – definition, Classification of parsing – Top-down vs. Bottom-up Parsing; Features and Augmented Grammars, Parsing with Features; Augmented Transition Networks; Generalized Feature systems and Unification Grammars- morphological recognizers, analyzers.

Introduction to Generalized Phrase Structure Grammar (GPSG), Definite Clause Grammar(DCG), Lexical Functional Grammar (LFG),Head-driven Phrase Structure Grammar(HPSG) and Tree Adjoining Grammar (TAG). Feature systems and Augmented Transition Networks.

Unit–III: Semantics and Knowledge Representation

Reference and compositionality, Functions and Predicate-Argument Structure; Meanings of referring expressions; Verifiability; Unambiguous Representations; Canonical Form; Inference and Variables; Expressiveness; Meaning Structure of Language; First Order Predicate Calculus; Elements of FOPC; the Semantics of FOPC; Variables and Quantifiers; Inferences.

Unit–IV: Computational Lexicography

Introduction to lexicography – Dictionary information – stages of dictionary preparation: data collection, entry selection, entry construction and entry arrangement. Role of computers in each stage, computer based dictionary making - Machine Readable Dictionary (MRD), Lexical resources, Role of language corpus in Lexicography, Electronic Dictionary (ED); Advantages of ED over conventional dictionary.

Unit–V: Application of Computational Linguistics

Machine Translation (MT) –different approaches; direct, interlingual, interlingual transfer – problems in lexical transfer – Computer Aided Learning / Teaching– role of computational linguistics in language teaching; Building Search Engines and Information retrieval system – Corpus Linguistics-Types of corpus Linguistics-role of corpus linguistics in teaching.

Text Books

1. Allen, J, Natural Language Understanding. The Benjamin Company. 1995
2. Kenning, M.J. et al,, , 1983, An Introduction to Computer Assisted Language Teaching. Oxford University Press.
3. Lewis. D , 1992, Computers and Translation,in Computers and Written Texts (ed) Christopher S. Butler. Blackwell: Oxford.
4. O'Shaughnessy Douglas. , 2001, Speech Communications Human and Machine. University Press (India) Limited: Hyderabad.
5. Sinclair, J.M. (ed),. , 1987, Looking UP: An Account of Cobuild Project in Lexical Computing. Collins: London.

Supplementry Reading

1. Hunston suson, Corpora in applied linguistics, Cambridge University press. 2009.
2. Subramanian N, Introduction to Computers – Fundamentals of Computer Science (Volume 1). Tata McGraw – Hill Publishing Company Limited: New Delhi. 1986.
3. Niladri sekhar Dash, Corpus Linguistics Indroduction Person Longman. 2008.
4. Ganesan, M, Lexical Transfer in Machine Translation: Some Problems and Remedies in on Translation (ed) M. Valarmathi. IITS: Chennai. 1999.
5. Yegnanarayana, B. et al, Tutorial on Speech Technology. IIT: Madras. 1992.

UNITWISE MODEL QUESTIONS- Computational Linguistics

ANNAMALAI UNIVERSITY
CAS IN LINGUISTICS

Programme: M.A. Linguistics Year II - Semester IV
Course Code and Name: LINC- 401 : Computational Linguistics
Time: 3 Hrs **Maximum Marks: 100**

Part – A **(10 x 2 = 20)**
(Answer ALL of the questions)

Unit - I

1. Define Computer
2. Define Speech Signal Processing
3. Define Text to speech
4. The first generation computers, used the following
   a) Microprocessors b) Integrated circuits
   c) Vacuum tubes d) Artificial Intelligence
5. The brain of a computer is…….
   a) Keyboard b) CPU c) Mouse d) Printer
6. Prosody plays a crucial role in
   a) Written discourse b) Speech to text
   c) Spoken dialogue d) Semantic analysis
7. The spectral analysis and a frequency analysis of signal is a study on
   a) Articulatory phonetics b) Phonemic analysis
   c) Acoustic phonetic d) Auditory phonetics
8. Match the items in list-1 with the list-2 add select correct code from those given below

List-1	List-2
a. Pitch	i) Sounds in transmission
a. Articulatory Phonetics	ii) JAVA, Python, C++, etc.,
b. programming languages	iii) Production of sounds
b. Acoustic Phonetics	iv) Suprasegmental features

9. What is articulatory Phonetics?
10. What is acoustic Phonetics?

Part-B **(8 x 5 = 40)**
(Answer ALL of the Questions)

11. Types of computers with illustrate
12. Compare between articulatory phonetics and acoustic phonetics.
13. Prepare the computational tools for Text – to- Speech system
14. Parameters and features of speech
15. Categarize the Speech Synthesis
16. Speech Recognition
17. Explain the Phonological rules
18. Distinguish the Speech Signal Processing

Part-C **(3x10=30)**
(Answer ANY THREE of the questions)

19. Discuss the Prosodic features
20. Justify the parameters and features of speech
21. Summarize the Computer Anatomy
22. Discuss the Generation of Computer
23. Summarize the Speech Signal Processing

Part-D **(1x10=10)**
(Answer any ONE of the questions)

24. Design the phonological rules.
25. Elaborate the Text- to -speech system and Speech- to- text system

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Part – A **(10 x 2 = 20)**
(Answer ALL of the questions)

Unit –II

1. Define Morpheme
2. The sentence structure of Tamil is well explained using
   a) Word order b) Preposition
   c) Case grammar d) Generative grammar
3. Concatenative Morphology is _____-
   a) Prefixes and Suffixes b) ontology c) Syntactic analyzer d) Parser
4. What is free morpheme?
5. Define Bound Morpheme
6. FST stands for
   a) Finite state transducer b) Fast stands transaction
   c) Finite status transaction d) First state transducer
7. Classify the different types of parsing
8. Explain the Morphotactics
9. Explain the bottom up parsing
10. What is Tree Adjoining Grammar?

Part-B **(8 x 5 = 40)**
(Answer ALL of the Questions)

11. Distinguish between the Inflectional Morphology and Derivational Morphology
12. Types of morphemes with examples
13. Develop the Morphological Parsing
14. Types of Morphology with examples.
15. Explain Augmented Transition Networks
16. Describe the Morphological Analyzer
17. Categorize the Lexical Functional Grammar.
18. Categorise Head-driven Phrase Structure Grammar(HPSG)

Part-C **(3 x 10= 30)**
(Answer ANY THREE of the questions)

19. Justify the Morphological processing
20. Describe the Compositional Morphology
21. Differentiate between the top down parsing and bottom up parsing
22. Discuss the Morphological Analyzer
23. Contrast the free morpheme and bound morpheme

Part-D **(1x10=10)**
(Answer any ONE of the questions)

24. Modify the Types of parsing.
25. Summarize the Phrase Structure Grammar (GPSG)

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Part – A **(10 x 2 = 20)**
(Answer ALL of the questions)

Unit –III

1. Define Canonical form
2. Knowledge representation is an application domain in
   a) Semantics b) Natural language processing
   c) pragmatic analysis d) WSD
3. The set of different classes of objects in a representation is called
   a) Word sense disambiguation b) ontology c) Syntactic analyzer d) Parser
4. Define Inferences
5. What is semantic knowledge?
6. Define Expressiveness
7. Describe the Semantic Knowledge of Computational Linguistics
8. Elucidate First Order Predicate Calculus
9. What is compositionality?
10. Explain Verifiability

Part-B **(8 x 5 = 40)**

(Answer ALL of the Questions)

11. Explain the Verifiability
12. Contrast the Variables and Quantifiers
13. Explain the problems of lexical transfer
14. Contrast the Reference and compositionality
15. Categorise the First Order Predicate Calculus
16. Contrast the Variables and Quantifiers
17. Explain the Expressiveness
18. Discuss the Computational Semantics

Part-C **(3 x 10= 30)**
(Answer ANY THREE of the questions)

19. Describe the Unambiguous Representations
20. Justify the Unambiguous Representation
21. Justify the Morphological recognizers.
22. Summarize the Expressive meaning
23. Explain the Functions and Predicate-Argument Structure

Part-D **(1x10=10)**
(Answer any ONE of the questions)

24. Modify the Semantic Knowledge for Computational Linguistics
25. Design the Functions and Predicate-Argument Structure

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Time: 3 Hrs **Maximum Marks: 100**

Part – A **(10 x 2 = 20)**

(Answer ALL of the questions)

Unit –IV

1. Define Lexicography
2. Define Lexical resources
3. Match the items in list-1 with the list-2 add select correct code from those given below

List-1	**List-2**
a. Machine Readable dictionary	i) Artificial intelligence
b. Lexicography	ii) Computational linguistics
c. Natural language processing	iii) Computational Lexicography
d. Algorithms and data structure	iv) Making Dictionary

4. Explain entry selection
5. Elucidate the Electronic Dictionary
6. What is Machine Readable Dictionary?
7. Classify the Data collection
8. How collect the data for making dictionary?
9. What is the stage of dictionary preparation?
10. Explain the advantages of ED?

Part-B **(8 x 5 = 40)**

(Answer ALL of the Questions)

11. Contrast between the data entry and data collection
12. Categorize the Dictionary Information
13. Explain the problems of lexical Resources
14. Describe the Electronic Dictionary (ED)
15. The Role of Computers in each stages
16. Explain the Advantages of ED over conventional dictionary

Part-C **(3 x 10= 30)**

(Answer ANY THREE of the questions)

19. Discuss the Natural Language Processing
20. Justify the advantages of Electronic Dictionary
21. Summarize the Lexicography
22. Describe the role of Corpus Linguistics in Lexicography
23. Explain the entry construction and entry arrangement

Part-D **(1x10=10)**

(Answer any ONE of the questions)

24. Modify the Machine Readable Dictionary (MRD)
25. Design the stages for preparation of Dictionary

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Part – A **(10 x 2 = 20)**
(Answer ALL of the questions)

Unit –V

1. Define Building Search Engines
2. Classify the different approaches in machine translation
3. What is Corpus Linguistics?
4. Natural language processing is the study or analysis on
   a) A logical form of a language c) Programming language
   b) Artificial intelligence d) A human language
5. Algorithms and data structure is used as a tool on
   a) Natural language understanding b) Natural language processing
   c) Computational linguistics d) Artificial intelligence
6. Corpus Linguistics is ----------
   a) Parsing b) Collection of Large texts
   c) Computational linguistics d) making Dictionary
7. Classify the different approaches in machine translation
8. Elucidate interlingual translation
9. Elucidate the Information retrieval system
10. What is MRD?

Part-B **(8 x 5 = 40)**
(Answer ALL of the Questions)

11. Prepare the Corpus tools for Language teaching and learning
12. Contrast the Direct translation and indirect translation
13. Explain the different Approaches of Machine Translation
14. Explain the Corpus Linguistics
15. Contrast between the interlingual and intralingual translation
16. Categorize the Dictionary Information
17. Explain the problems of lexical transfer
18. Describe the Building Search Engines and Information retrieval system

Part-C **(3 x 10= 30)**
(Answer ANY THREE of the questions)

19. Discuss the role computational linguistics in language teaching and learning
20. Summarize the Machine Translation
21. Discuss the Natural Language Processing
22. Describe the role of Corpus Linguistics in teaching
23. Develop the computational tools for language teaching and learning

Part-D **(1x10=10)**
(Answer any ONE of the questions)

24. Modify the Types of Corpus
25. Design the Computer Aided Language Teaching and Learning