



Duration: 3hrs

[Max Marks:80]

- N.B. : (1) Question No 1 is Compulsory.
(2) Attempt any three questions out of the remaining five.
(3) All questions carry equal marks.
(4) Assume suitable data, if required and state it clearly.

- 1 Attempt any FOUR [20]
a Explain how criminals plan the attack
b Explain various security challenges posed by mobile devices
c Explain need of Cyber law in India
d Explain E-contracts and its different types.
e What are Botnets? How it is exploit by attacker to cause cyber-attack?
- 2 a Explain the classification of cybercrimes with examples. [10]
b Explain Phishing and Identity theft in detail. [10]
- 3 a Explain different buffer overflow attacks also explain how to mitigate buffer overflow attack [10]
b Explain electronic banking in India and what are laws related to electronic banking in India [10]
- 4 a What do you understand by DOS and DDOS attack? Explain in detail. [10]
b Write a note on Intellectual Property Aspects in cyber law. [10]
- 5 a Explain SQL injection attack. State different countermeasure to prevent the attack. [10]
b Explain the objectives and features of IT Act 2000 [10]
- 6 a Explain the term evidence and different types of evidences [10]
b Write key IT requirements for SOX and HIPAA. [10]

BEC (COMP.) / Sem-VII / R-19 / C scheme / NLP

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- 1 Attempt any FOUR [20]
- Compare Derivational & Inflectional morphology
 - What is the output of Morphological Analysis for Regular Verb, Irregular verb, Singular noun, Plural noun.
 - What are the limitations of Hidden Markov Model (HMM) and MaxEnt Model for POS Tagging.
 - Explain pre-processing steps generally used in NLP.
 - Explain following Syntactic and Semantic Constraints on Co reference
 - Number Agreement
 - Person & Case Agreement
- 2 a Explain concepts of Bi-gram and n-gram with formula. [10]
- For following corpus, apply Bi-gram model
- Training Corpus:
- <s> I am Sam </s> <s> Sam I am </s> <s> Sam I like </s>
 <s> Sam I do like </s> <s> do I like Sam </s>
- What is the most probable next word predicted by the model for the following word sequences?
 - <s> Sam ...
 - <s> Sam I do ...
 - <s> Sam I am Sam ...
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 - Which of the following sentences is better, i.e., gets a higher probability with this model?
 - <s> Sam I do I like </s>
 - <s> Sam I am </s>
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- b Explain different stages of NLP. Also explain generic NLP system. [10]

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- 3 a i) Why there is need of word sense disambiguation [10]
 ii) Explain Naive Bayes Supervised algorithm for Word sense Disambiguation
 b Explain Shift Reduce Parser in NLP with example [10]

- 4 a [10]

<S>	Martin	Justin	can	watch	Will	<E>
<S>	Spot	will	watch	Martin	<E>	
<S>	Will	Justin	spot	Martin	<E>	
<S>	Martin	will	pat	Spot	<E>	

For given above corpus, S indicates start of the statement and E indicates end of the statement

N: Noun [Martin, Justin, Will, Spot, Pat]

M: Modal verb [can, will]

V: Verb [watch, spot, pat]

Create Transition Matrix & Emission Probability Matrix

Statement is "**Justin will spot Will**"

Apply Hidden Markov Model and do POS tagging for given statements

- b How Anaphora Resolution is performed with Hobbs and Centering Algorithm [10]
- 5 a For a given grammar using CYK or CKY algorithm parse the statement [10]
 "The man read this book" Rules:

S → NP VP	Det → that this a the
S → Aux NP VP	Noun → book flight meal man
S → VP	Verb → book include read
NP → Det NOM	Aux → does
NOM → Noun	
NOM → Noun NOM	
VP → Verb	
VP → Verb NP	

- b Explain the significance of regular expression in NLP. [10]
- 6 Write Short Note [20]
 a Explain Semi-supervised method (Yarowsky) Unsupervised (Hyperlex) [10]
 b Explain Question Answering System with Algorithmic approach [10]



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