BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: MCA **SEMESTER : III**
BRANCH: MCA **SESSION : MO/2022**

SUBJECT: CA545 NATURAL LANGUAGE PROCESSING

TIME: 3:00 Hours **FULL MARKS: 50**

INSTRUCTIONS:
1. The question paper contains 5 questions each of 10 marks and total 50 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

Q.1(a)	Define Ambiguity in natural languages. Also give its types.	CO3,BL2	[2]
Q.1(b)	Explain the phases of NLP with example describing each phase.	CO1,BL1	[3]
Q.1(c)	Explain Noisy channel model. Elaborate your answer to explain spelling detection by the model. Let the misspelled word t =helro and candidate word c = hello, explain how will you find the likelihood probability P[t|c]?	CO3,BL4	[5]
Q.2(a)	Write the applications of NLP. Name any one application which you use in daily life.	CO1,BL2	[2]
Q.2(b)	How can we evaluate a language model? Explain with example.	CO5,BL1	[3]
Q.2(c)	What is smoothing? explain two different types of smoothing process. Read the given training corpus: "Peter is a very nice fellow. Mary and Peter are good friends. Peter has a pet dog. Mary is a good neighbor. I have a pet dog too. Mary has a pet cat. Good friends are always there for you. " Answer the following questions: Use Bigram model to predict the words He has a pet ----------(predict the word) it is a------- good----- Mike has a----------(use trigram to predict the word)	CO4,BL5	[5]
Q.3(a)	Briefly explain POS tagging.	CO3,BL1	[2]
Q.3(b)	Compare rule-based tagging with transformation-based tagging.	CO3,BL4	[3]
Q.3(c)	Explain HMM tagging. Explain its working with an example.	CO2,BL3	[5]
Q.4(a)	Write the definition of Context Free Grammar.	CO3,BL1	[2]
Q.4(b)	Define parsing. Compare Top-down and Bottom-up Parsing	CO3,BL4	[3]
Q.4(c)	Define probabilistic CFG. Explain probabilistic CKY parsing with example.	CO2,BL2	[5]
Q.5(a)	Define word embedding. Give example.	CO1,BL1	[2]
Q.5(b)	Write two applications of Tf-idf. Find Tf-idf weight for the following documents: D1: best friend D2: best sister D3: best sister friend	CO4,BL3	[3]
Q.5(c)	Explain semantic frames and semantic roles with example. Demonstrate the working of Skip-gram model and CBOW model.	CO3,BL2	[5]

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