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_Seventh__ SEMESTER **B.Tech [IT]**

CLASS TEST 3 *Nov-2020*

IT-425 NATURAL LANGUAGE PROCESSING

Time: 1:00 Hours ***Max. Marks : 20***

Note : Answer all questions in a precise manner.
Assume suitable missing data, if any.

Q.1 For the given grammar

S→NP VP	NP→Det Adj N	N→chair|man	Adj→old
PP→Prep NP	VP→V NP	Det→the|a	V→ate|sits
VP→V	NP→Det N	Prep→with|on	

a) Construct the Augmented Transition Network for the given grammar (5)
b) Write the augmented grammar with head variables (3)
c) Write the augmented grammar with case agreement (2)
d) Write the augmented grammar with subject-verb agreement (3)
[*Note: no continuity between parts a) b) c) d) – all 4 are individual questions*]

Q.2. Write the feature structures on both LHS and RHS for the production **S→NP VP** from the answer you got in **Q1(d).** See if unification of feature structures is possible in RHS. You should consider all the relevant lexicons in the grammar to consider if unification is possible. (5)

Q.3. Describe in a few lines how augmented grammar would help a modern NLP project. (2)

(8)

Q. 2 For the bottom-up parser, explain the shift and reduction operations using one example each. (4)

Q.3 Explain the feature computation using a fictional word embedding (with values of your choice) for a sample sentence **the small dog ate** and 1D CNN. Assume a 3-dimensional word embedding. (8)