National Institute of Technology, Tiruchirappalli – 15
Department of Computer Science & Engineering

Cycle Test - II
CSPE73 – Natural Language Processing (Elective)

Class / Semester : IV CSE / VII Time: 11.00 AM to 12.00 PM
Date : 16.10.2025 Marks : 20 Section : A

Answer all questions

1. Convert the following sentences into corresponding Named Entity tag sets.
[CO4] (5)

   a. John bought 5 books on AI from Pearson publishers in 2023.
   b. This tank contains 1000 Lts of Water.
   c. Ram sold 2 Houses to Sita in 2018.
   d. Robert will buy 5 Kgs of wheat today from the market.
   e. The Indian Airlines Flight to Delhi will start at 9 am from Chennai.

2. Consider the CNF grammar G defined for a language L. [CO2] (10)

$$S \rightarrow AB \mid BC$$
$$A \rightarrow BA \mid a$$
$$B \rightarrow CC \mid b$$
$$C \rightarrow AB \mid a$$

Check whether the string **baab** $\in$ L(G) or not using **CYK** parsing.

3. Consider the grammar G given below.

$$S \rightarrow NP\ VP \mid Wh\ NP\ VP \mid Wh\ NP\ Aux\ NP\ VP$$
$$S \rightarrow Aux\ NP\ VP \mid VP$$
$$NP \rightarrow Proper\text{-}Noun \mid Noun \mid Personal\ Pronoun \mid NP\ PP$$
$$NP \rightarrow Determiner\ Nominal \mid Possessive\ Pronoun\ Noun$$
$$NP \rightarrow Adjective\ Noun$$
$$Nominal \rightarrow Noun \mid Noun\ Nominal$$
$$Nominal \rightarrow Adjective\ Nominal$$
$$PP \rightarrow Preposition\ NP$$
$$VP \rightarrow Verb \mid Verb\ NP \mid Verb\ PP \mid Verb\ PP\ NP$$

By using the above grammar, perform Top-Down Parsing for the
following sentences and generate the corresponding parse trees. [CO2] (5)

   i. Does that bank offer loan?
   ii. Ram wear that green shirt.
   iii. Which dish do you order from that restaurant?