B.TECH. SEM -VII (COMPUTER) 2014 COURSE (CBCS) :
SUMMER - 2018
SUBJECT: ELECTIVE – III ARTIFICIAL INTELLIGENCE AND ROBOTICS

Day: **Friday** | Time: **02.30 PM TO 05.30 PM**
Date: **25/05/2018** | **S-2018-2487** | Max Marks. 60

N.B. :

1) All questions are **COMPULSORY**.
2) Figures to the right indicate **FULL** marks.
3) Assume suitable data, if necessary.
4) Draw neat Diagram **WHEREVER** necessary.

Q.1 Explain Memory Bounded Heuristic Search methods **(10)**

OR

Q.1 Give the initial state, goal state, successor function and cost function for the following and solve the problem using Hill Climbing algorithm : **(10)**

"You are given 3 jugs measuring 12 liters, 8 liters, 3 liters and water tap. You can fill the jugs or empty them from one to another or on the ground. The goal is to measure exactly 1 liter of water."

Q.2 How can knowledge expressed in Predicate Logic be converted from clause form? Convert the following statement to clause form. **(10)**

a) Every child loves candy.
b) Anyone who loves candy is not a nutrition fanatic.
c) Anyone who eats any pumpkin is nutrition fanatic.
d) Anyone who buys any pumpkin either carves it or eats it.
e) John buys pumpkin.

OR

Q.2 What is Uncertainty? Explain Bayesian Network with example. **(10)**

Q.3 Explain how Planning Problem is expressed in STRIPS. (use Air Cargo transport problem as an example) **(10)**

OR

Q.3 Explain Planning with State Space Search using suitable example. **(10)**

Q.4 What is Supervised Learning and Unsupervised Learning? Explain each by giving examples. **(10)**

OR

Q.4 Explain Decision Tree algorithm with an example. **(10)**

Q.5 Define Robotics and explain various types of joints used in robot with neat sketches. **(10)**

OR

Q.5 What are the different types of Robot Drive System? Explain with advantages and disadvantages. **(10)**

Q.6 Obtain Inverse Kinematic solution for 4-axis SCARA robot. **(10)**

OR

Q.6 Explain the Lagrangian mechanics for finding dynamic equations of a Robot. **(10)**

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