

B.Tech. SEM -VII (Computer) 2014 Course (CBCS) : WINTER - 2018
SUBJECT- ELECTIVE III: ARTIFICIAL INTELLIGENCE & ROBOTICS

Day: Monday
Date: 03/12/2018

W-2018-2542

Time: 02.30 PM TO 05.30 PM
Max Marks: 60

N.B.:

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Assume suitable data if necessary.

Q.1 What is state space search? Before we can solve a problem using state space search, we must define an appropriate state Space. For each of the following problems, find a State Space representation. **(10)**

- i) Tic-tac-toe
- ii) Water jug problem

OR

How to evaluate the performance of an algorithm? How does uniform cost search use algorithm's performance? **(10)**

Q.2 How can knowledge expressed in predicate logic. Convert the following statements to clause form. **(10)**

- a. Every child likes candy.
- b. Anyone who likes 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

Explain how Conceptual Dependency (CD) can be used to represent knowledge. Use it to represent the following statements. **(10)**

- i) John is a good Programmer
- ii) Joe gave John a book.

Q.3 Explain how Planning problem is expressed in STRIPS. **(10)**

OR

List and explain all the Components of Planning System. **(10)**

Q.4 Explain Supervised Learning and Unsupervised Learning? Give example of each. **(10)**

OR

Discuss the application of decision tree for a "Restaurant". **(10)**

Q.5 Discuss various position sensors used in Robots. **(10)**

OR

Define Robotics and explain various types of Joints used in Robot with neat sketches. **(10)**

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

OR

Derive Forward & Inverse Kinematics equations of manipulator for a particular position. **(10)**

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