

Total No. of Questions : 10]

SEAT No. :

P3332

[Total No. of Pages :2

[5461] - 592

B.E. (Computer Engineering)

ARTIFICIAL INTELLIGENCE AND ROBOTICS

(2015 Pattern) (Semester - I) (410242) (End Sem.)

Time : 2½ Hours]

[Max. Marks :70

Instructions to the candidates:

- 1) Answer Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8, and Q9 or Q10.
- 2) Neat diagrams must be drawn wherever necessary.
- 3) Figures to the right side indicate full marks.
- 4) Assume suitable data if necessary.
- 5) Justify your answer with an example wherever necessary.

- Q1) a)** Explain iterative deepening depth first search (DFID) and justify its parameters based on time complexity, space complexity. [6]
- b) Differentiate between uninformed and informed search methods. [6]

OR

- Q2) a)** Apply crypt-arithmetic to solve the problem and represent the state search space to solve. TWO + TWO = FOUR. [6]
- b) Explain Hill climbing algorithm. Explain Local maxima, Global Maxima and Plateau for an example. [6]

- Q3) a)** Represent the following sentences into formulas in predicate logic, [6]
- i) John likes all kinds of food.
 - ii) Apples are food.
 - iii) Chicken are food.
 - iv) Anything anyone eats and isn't killed by is food.
 - v) Bill eats peanuts and is still alive.
 - vi) Sue eats everything Bill eats.
- b) Explain the components of a planning system for a simple Blocks World example. [6]

OR

P.T.O.

- Q4)** a) Explain forward chaining and backward chaining for a simple example. [6]
b) Explain different Facets of Knowledge with examples. [6]

- Q5)** a) Explain in detail all the phases of Natural Language Processing (NLP). [6]
b) Explain supervised and unsupervised learning with an example. [6]
c) Write a short note on Radar. [6]

OR

- Q6)** a) Explain the Bug2 algorithm for path planning for a point robot. [6]
b) Explain the architecture of Artificial Neural Network. [6]
c) Explain simultaneous localization and mapping (SLAM) for a point robot. [6]

- Q7)** a) Explain the architecture of information retrieval system. [6]
b) Compare the various weighting functions used in pose estimation. [4]
c) Explain the inertial sensors - accelerometers and gyroscopes. [4]

OR

- Q8)** a) Comment on the fundamental problems in Robotics. [6]
b) Explain the applications of Natural Language Processing. [4]
c) Comment on how robotics can be used to design intelligent vehicles. [4]

- Q9)** a) Comment on the importance of mapping and the layers of map data. [6]
b) Explain horizontal decomposition used in the design of many autonomous robot systems. [4]
c) With the help of an architecture diagram explain multilayer feed forward artificial neural network. [4]

OR

- Q10)** a) Comment on any two robots used in practice. [6]
b) Comment on problem regarding natural language processing (NLP) in information retrieval (IR). [4]
c) Explain in brief infrared sensors. [4]

