

Total No. of Questions : 10]

SEAT No. :

**P3423**

[Total No. of Pages : 2

**[5670]-699**

**B.E. (Computer Engineering)**

**ARTIFICIAL INTELLIGENCE AND ROBOTICS**

**(2015 Course) (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 Q.9 or Q.10.
- 2) Neat diagrams must be drawn wherever necessary.
- 3) Figures to the right indicate full marks.
- 4) Assume suitable data, if necessary.
- 5) Justify your answer with an example wherever necessary.

- Q1)** a) Illustrate the tabu search and beam search with proper example. [8]  
b) What is state space search? Write an algorithms for Generate and test search method and explain it with suitable example. [6]

OR

- Q2)** a) Define planning. Explain goal stack planning with example. [8]  
b) What are the components of rule based expert system. [6]

- Q3)** a) Write the short note on first order logic and second order logic. [8]  
b) Explain the knowledge base system? What are the facets of knowledge? [6]

OR

- Q4)** a) What is the difference between blind search and heuristic search? Explain with suitable example. [8]  
b) Explain the iterative deepening A\* algorithm. [6]

- Q5)** a) What are the different states of natural language processing? Explain working of each stage. [8]  
b) Explain the following : [6]
  - Supervised learning.
  - Unsupervised learning.
  - Reinforcement learning.

OR

**P.T.O.**

- Q6)** a) What is ANN? Explain feed forward and feedback ANN. [8]  
b) Explain any two NLP applications. [6]

- Q7)** a) Define the robotics and its applications. What are the hardware requirements in mobile robot? [8]  
b) Explain the path planning and map representation in mobile robot. [6]

OR

- Q8)** a) How the horizontal and vertical decomposition is done in robot control system? [8]  
b) Explain the use of following sensors : [6]  
• Contact sensor.  
• Biological sensor.  
• Sonar and Radar.

- Q9)** a) What is mobile robot localization? Why it is important? How the landmark is measured in robot localization? [8]  
b) Explain the following terms. [6]  
• Sensorial map.  
• Topological map.

OR

- Q10)** a) Explain the robotics in following fields [8]  
• Delivery robot.  
• Mining Automation.  
• Domestic robot.  
• Agriculture.  
b) How robotics can be used to design intelligent vehicles and autonomous aircraft? [6]

