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B.E. (Computer Engineering)
ARTIFICIAL INTELLIGENCE AND ROBOTICS
(2015 Pattern) (410242) (Semester - I) (End Semester)

Time : 2½ Hours]　　　　　　　　　　　　　　　　　　　　　　*[Max. Marks : 70*

Instructions to the candidates:
   1)   Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6, Q.7 or Q.8, 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)   With an example explain A star algorithm. State the properties of A star algorithm. **[6]**

　　b)   Compare and explain Depth First search and Breadth First search methods. **[6]**

OR

Q2) a)   Comment on Backtracking and look ahead strategies in constraint satisfaction problems. **[6]**

　　b)   Explain goal stack planning with an example of blocks world. **[6]**

Q3) a)   What are the drawbacks of propositional logic used in representation of facts? **[6]**

　　b)   Draw the architecture of an expert system. Explain each functional block in detail. **[6]**

OR

Q4) a)   Explain the process of resolution with proper example. **[6]**

　　b)   Describe PEAS for WUMPUS world problem. **[6]**

Q5) a)   What is Artificial Neural Network? Give two applications of artificial neural networks in detail. **[6]**

　　b)   Explain any two types of learning. **[6]**

　　c)   Comment on the hardware components of a mobile robot. **[6]**

OR

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Q6) a) Comment on the methodologies on which laser rangefinders are based. **[6]**

b) Explain machine translation using natural language processing (NLP).**[6]**

c) Comment on sonar sensing. **[6]**

Q7) a) Explain the architecture of information retrieval system. **[6]**

b) Compare the various weighting functions used in pose estimation. **[4]**

c) Comment on vertical decomposition in robotics. **[4]**

OR

Q8) a) Explain any two sensors used in robots. **[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) Explain localization and comment on any two types of localization. **[6]**

b) Comment on the fundamental problem in robotics. **[4]**

c) With the help of an architecture diagram explain feed forward artificial neural network. **[4]**

OR

Q10) a) Comment on how robots can be used for mining automation. **[6]**

b) Comment on issues regarding natural language processing in information retrieval. **[4]**

c) Explain use of robots in agriculture and forestry. **[4]**

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