

QP Code **15421**

(3 Hours)

[Total Marks : 100]

- N.B.:** (1) Question No. 1 is **compulsory**.
 (2) Attempt any **four** questions out of remaining **six** questions.
 (3) Assume **suitable** data wherever **necessary**.

1. (a) Explain Heuristic function with example. 5
 (b) Explain Robot workspace. 5
 (c) Describe unsupervised learning with suitable example. 5
 (d) List and define kinetic parameters. 5
2. (a) Describe the following sensors – 10
 (i) Sonar
 (ii) Infrared
 (b) Explain A* algorithm with example. 10
3. (a) Obtain Inverse kinematic solution for 4-axis SCARA robot. 10
 (b) Compare different uniformed search strategies. 10
4. (a) Describe Hill climbing algorithm. What are it's limitations. 10
 (b) Explain various methods of knowledge representation with example. 10
5. (a) Define partial order planner. Explain STRIPS representation of planning problem. 10
 (b) Give steps in designing the reactive behavioral system. 10
6. (a) What are PEAS descriptors ? Give PEAS discriptors for 10
 (i) Part-picking Robot
 (ii) WUMPUS world.
 (b) Explain supervised, unsupervised and reinforcement learning with example. 10
7. Write short note on following (any four) :- 20
 (a) PROLOG
 (b) Belief network
 (c) Forward and inverse kinematics
 (d) Crypt Arithmetic
 (e) GPS
 (f) Uniform and Inform search.