Roll No. | | | | | | | | | | | | | Total No. of Pages : 02

Total No. of Questions : 09

B.Tech.(ME) (2012 Onwards) (Sem.–5)

INDUSTRIAL AUTOMATION AND ROBOTICS

Subject Code : BTME-504

M.Code : 70605

Time : 3 Hrs. Max. Marks : 60

INSTRUCTION TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.**
3. **SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.**

SECTION-A

1. Answer briefly :

a. Classify robots based on their geometry.

b. List basic types of hydraulic control circuits.

c. Draw standard graphical symbol for a 4 way pilot operated spring centered hydraulic directional control valve.

d. Classify feeders.

e. Sketch double acting cushioned hydraulic cylinder and label the components.

f. By means of a sketch, explain the construction of a polar type of robot.

g. Write the truth table for OR gate and draw the symbol for representing OR gate.

h. Mention two significant differences between a microprocessor and a programmable logic controller.

i. Sketch bleed-of circuit.

j. Draw standard graphical symbol for a 4 way pilot operated spring centered hydraulic directional control valve.

SECTION-B

2. a. What is meant by conda effect?

   b. Sketch any fluidic device and explain its operation. State its applications.

3. Draw the cross section of any position control spool valve and poppet valve. Also explain their working.

4. What are programmable logic controllers? Discuss the applications for which these are used. Discuss three significant advantages and disadvantages.

5. How is robotic vision sensed? What are the component systems used in most common vision based applications?

6. Discuss the socio economic impacts of automation.

SECTION-C

7. Discuss step wise procedure for design of pneumatic logic circuit for given sequence of operation. Illustrate the procedure by taking any simple example.

8. a. Explain a fluidic NOR gate using a neat sketch.

   b. Classify robots based on their geometry. Explain in detail the industrial applications of robots.

9. Discuss VAL programming of robot for trajectory control operation.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.