Roll No. ☐☐☐☐☐☐☐☐☐☐☐☐   **Total No. of Pages : 02**

Total No. of Questions : 09

B.Tech.(Automation & Robotics) (2011 & Onwards)   (Sem.–4)
INDUSTRIAL AUTOMATION AND ROBOTICS
Subject Code : PE-408
Paper ID : [A1225]

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

Q1. Answer briefly :

a) Define robotics.

b) What is pressure regulating valve?

c) What is a range sensor?

d) Give the symbol of 4/2 paddle operated spring return DC valve.

e) What do you mean by actuator?

f) Define teach pendent.

g) Differentiate between a relay and a transistor.

h) What is a proximity sensor?

i) Define fluid power.

j) Differentiate between hydraulics and pneumatics.

SECTION-B

Q2.   Write explanatory note on robot application.

Q3.   What do you mean by Automating Industry?

Q4.   Draw a pneumatic circuit to operate double acting cylinder?

Q5.   Differentiate between Boolean and conventional algebra. In a two input, one output digital system, the output is off when both the inputs are on, whereas the output is on for all other cases. Write the truth table and derive the Boolean expression for the system.

Q6.   Discuss the concept of low cost automation with suitable examples.

SECTION-C

Q7.   Explain the construction, working and performance characteristics of fluidic elements.

Q8.   How transfer devices are classified? Describe the construction, working principle and important of application of any two transfer devices.

Q9.   How is machine vision implemented in robots? Discuss the advantages and constraints of machine vision integration in robotics.