

Roll No.....

Total No. of Printed Pages: 1

Total No. of Questions: [09]

B. Tech. (ME) (Semester – 5th)
INSTRUMENTAL AUTOMATION & ROBOTICS
Subject Code: BTME504
Paper ID: [5112305]

Time: 03 Hours

Maximum Marks: 60

Instruction for candidates:

1. Section A is compulsory. It consists of 10 parts of two marks each.
2. Section B consist of 5 questions of 5 marks each. The student has to attempt any 4 questions out of it.
3. Section C consist of 3 questions of 10 marks each. The student has to attempt any 2 questions.

Section – A

(2 marks each)

Q1. Attempt the following:

- a) Define automation.
- b) Explain AND function.
- c) Draw the non-return type control valve.
- d) Draw the truth table for OR gate.
- e) Define fluidics.
- f) Explain the pilot operation.
- g) List the properties of hydraulic fluids.
- h) Explain the role of tactile sensor.
- i) Explain the working of rail type orientation device.
- j) What is robotic vision system?

Section – B

(5 marks each)

- Q2. Draw a neat sketch of hydraulic system and explain its components.
- Q3. Explain the importance of automation in industry.
- Q4. Explain the working of 5/2 solenoid operated pneumatic DCV.
- Q5. Explain the open loop and closed loop circuit with example.
- Q6. Explain the concept of flow and directional control valve

Section – C

(10 marks each)

- Q7. Explain in detail the architecture & components of PLC.
- Q8. Discuss the function of robots in industry. Also discuss the application of robotics in emerging industries.
- Q9. How transfer devices are classified? Describe the construction and working principle and importance of applications of any two transfer devices.