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

Total No. of Questions : 18

B.Tech. (Automation & Robotics) (2012 & Onwards) (Sem.–4)

INDUSTRIAL AUTOMATION AND ROBOTICS

Subject Code : PE-408

M.Code : 63018

Time : 3 Hrs. Max. Marks : 60

INSTRUCTIONS 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

Answer briefly :

1. Why automation is necessary?
2. Describe time-displacement diagram of operation.
3. Describe the role of PLC in automation.
4. Explain role of controller in automation.
5. What is actuator? List the names of actuator.
6. Classify robots on the basis of path movement.
7. Differentiate between servo controlled valve and pilot operated valves.
8. What are microprocessors? Identify two commonly used microprocessors.
9. Compare transfer devices with feeders.
10. Distinguish between magnetic and vacuum grippers.

SECTION-B

11. Discuss the concept of low cost automation with the help of suitable example.

12. Discuss the circuit for memory function in fluidics?

13. Explain with neat sketch the construction and working of servo control valve.

14. Illustrate a robot gripper with cam operated fingers

15. Write the truth tables and the instruction sequence for following statements :

    a) The inverse of the outcome of OR ing A and B, is the same as when the inverse of A and B separately AND ed. i.e. A+B = A.B

    b) The inverse of the outcome of AND ing A and B is the same as when the inverse of A and B are separately OR ed. i.e. A.B = A+B.

SECTION-C

16. A large stamping press must have a part in place, the clamps engaged and the safety guard closed before the press can operate. The pneumatic circuit needed for this type of machine is designed to minimize potential safety hazards. Draw the suitable step position diagram and a pneumatic circuit diagram.

17. Explain the construction and working of vibratory bowl feeder with the help of neat sketch.

18. Discuss about the implementation issues of robots in an assembly environment.

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.