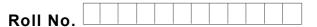
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Total No. of Pages : 02

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B.Tech. (AE) (Sem.-7) AUTOMATION AND MECHATRONICS Subject Code : BTAE/DE-713 M.Code : 71823

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

1. Answer briefly :

- a) Enumerate the applications of automation in the contemporary manufacturing scenario.
- b) What do you understand by pressure regulating valve?
- c) Enumerate the socio economic considerations of industrial automation.
- d) What do you understand by end effector?
- e) Explain the function of limit switch.
- f) How do sensors work in robots?
- g) What are the different types of PLC?
- h) What is cylinder sequencing?
- i) What do you understand by data acquisition?
- j) How robots are classified based on path control?



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SECTION-B

- 2. What is an actuator in hydraulic system? How does a hydraulic rotary actuator work?
- 3. What are the main components of a PLC? Explain the features of PLC and also explain the PLC block diagram.
- 4. Explain different types of sensors used in industrial robots.
- 5. What is mechatronics? Explain the basic elements of a mechatronic system.
- 6. Discuss various types of electrical actuation systems.

SECTION-C

- 7. a) Explain the applications of personal computers in various control and automation functions.
 - b) What is a stepper motor used for? Explain the working principle of stepper motor giving the circuit of stepped motor.
- 8. a) What is difference between ADC and DAC? Why ADC and DAC are required in robots?
 - b) Describe the general form of a basic closed-loop system. Explain the different elements of closed loop systems.
- 9. a) Explain the industrial applications of robots for assembly and spray painting operations.
 - b) Explain the stages involved in the design process for any system. Further differentiate between Traditional and mechatronics designs.

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.