Reg. No. : ☐☐☐☐☐☐☐☐☐☐☐☐☐

Question Paper Code : 70910

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2023

Sixth/Seventh Semester

Mechanical Engineering

ME 8791 – MECHATRONICS

(Common to Manufacturing Engineering / Mechanical Engineering (Sandwich)/
Mechanical and Automation Engineering / Production Engineering)

(Regulations 2017)

Time : Three hours   Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Interpret the need for mechatronics.

2. Give the differences between sensors and transducers.

3. List the types of addressing modes.

4. Write short note on 8051 microcontroller.

5. Give the working of DAC.

6. State the typical use of PPI.

7. Mention the types of programming language for PLC.

8. Interpret sinking and sourcing.

9. Define magnetic flux.

10. State the principle of servomotor.

PART B — (5 × 13 = 65 marks)

11. (a) Write short notes on (i) Hall effect sensor (ii) Strain Gauge.

Or

    (b) Illustrate the static and dynamic characteristics of sensor.

12. (a) Explain the architecture of 8085 microprocessor.

Or

(b) Difference between microcontroller and microprocessor.

13. (a) Explain the traffic control interface.

Or

(b) Discuss the architecture of 8255.

14. (a) Explain the selection criteria for PLC with example.

Or

(b) Explain the internal architecture of PLC with neat diagram.

15. (a) Describe the stages of mechatronics design process.

Or

(b) Explain the construction and working principle of stepper motor.

PART C — (1 × 15 = 15 marks)

16. (a) Describe the working of PLC based automatic car park barrier system with block diagram and ladder logic.

Or

(b) Write an assembly language program using 8051 microcontroller to control a stepper motor.

———————