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Question Paper Code : X10711

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2020
AND APRIL/MAY 2021
Sixth/Seventh Semester
Mechanical Engineering
ME 8791 – MECHATRONICS

(Common to Production Engineering, Mechanical and Automation Engineering,
Manufacturing Engineering and Mechanical Engineering (Sandwich)
(Regulations 2017)

Time : Three Hours

Maximum : 100 Marks

Answer ALL questions.

PART – A

(10×2=20 Marks)

1. Define measurement system.
2. Classify the types of potentiometer.
3. Describe the features of 8085.
4. Differentiate machine language and assembly language program.
5. What is the typical use of PPI ?
6. Describe the need of interfacing.
7. Tell the use of JUMP control in PLCs.
8. Draw a ladder diagram for NAND operation.
9. What is the use of PLC in automatic car park system ?
10. Write down the applications of stepper motors.

PART – B

(5×13=65 Marks)

11. a) Describe the concept of LVDT and capacitance sensor. (13)
(OR)
b) Formulate the factors to be considered for the selection of sensor. (13)
12. a) Explain about architecture of 8085 microprocessor. (13)
(OR)
b) Illustrate various addressing modes of 8051 microcontroller. (13)

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13. a) Explain the architecture of a 8255 Programmable Peripheral Interface. **(13)**
(OR)
b) Explain the concept of interfacing with stepper motor. **(13)**
14. a) Explain the architecture of PLC with neat sketch. **(13)**
(OR)
b) Explain the ladder diagram for various logic functions. **(13)**
15. a) List out the specifications of stepper motor and write the advantages and disadvantages. **(13)**
(OR)
b) Relate the difference between Traditional and Mechatronics approach with suitable example. **(13)**

PART – C

(1×15=15 Marks)

16. a) Design a PLC circuit that can be used to start a motor and then after a delay of 100s start a pump when the motor is switched off there should a delay of 10s before the pump is switched off. **(15)**
(OR)
b) Explain the concept of Car engine management system by mechatronics approach. **(15)**
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