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**Question Paper Code : 41419**

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2018  
Seventh Semester

Manufacturing Engineering  
ME 6702 – MECHATRONICS

(Common to Mechanical Engineering, Mechanical and Automation Engineering/  
Production Engineering)  
(Regulations 2013)

Time : Three Hours

Maximum : 100 Marks

Answer ALL questions.

PART – A

(10×2=20 Marks)

1. What are the key elements of a mechatronics system ?
2. Write an example for a transducer and state its transduction principle.
3. Define RAM and ROM.
4. What are the instructions of an 8085 instruction set for data transfer from memory to the microprocessor ?
5. What is the bit set reset mode of 8255 PPI ?
6. Distinguish between parallel data transfer and serial data transfer.
7. Draw the ladder diagram to represent a latch circuit.
8. What is the criteria need for the selection of a PLC ?
9. Compare Traditional design with Mechatronics design.
10. What are the sensors used in Engine Management System ?

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PART - B

(5×16=80 Marks)

11. a) Explain in detail about the Emerging areas of Mechatronics. (16)  
(OR)  
b) Explain Principal and working of following sensors :  
i) Potentiometer  
ii) Eddy Current Proximity Sensor. (8+8)
12. a) Explain the Internal Architecture of 8058 Microprocessor. (16)  
(OR)  
b) Discuss briefly about Pin Configuration of 8085 Microprocessor with neat sketch. (16)
13. a) Explain the architecture of an 8255 Programmable Peripheral interface. (16)  
(OR)  
b) Explain the seven segment LED interface with microprocessor. (16)
14. a) Explain the components of a PLC with a suitable block diagram. (16)  
(OR)  
b) Draw the ladder diagram and PLC program for the following logic gates.  
a) AND                      b) OR                      c) NAND  
d) NOR                      e) XOR                      f) XNOR (16)
15. a) List out the stages in design of Mechatronics system and explain in detail. (16)  
(OR)  
b) Discuss Mechatronic design of an Engine Management. (16)