Reg. No. : ☐☐☐☐☐☐☐☐☐☐☐☐

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 ?

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)**