

Code No: R1641031

R16

Set No. 1

IV B.Tech I Semester Supplementary Examinations, July/Aug - 2021

**MECHATRONICS
(Mechanical Engineering)**

Time: 3 hours

Max. Marks: 70

Question paper consists of Part-A and Part-B

Answer ALL sub questions from Part-A

Answer any FOUR questions from Part-B

PART-A (14 Marks)

1. a) What is a transducer? Write its applications. [2]
- b) Mention any two characteristics of LEDs. [2]
- c) Explain the principle of electrical actuating system. [3]
- d) Mention any two differences between programmable logic controller and computer. [2]
- e) Determine the output of the DAC for an input of 10011001. [3]
- f) What is system response? [2]

PART-B (4x14 = 56 Marks)

2. a) How the sensors are classified in view of their applications in manufacturing? Explain. [7]
- b) In what way mechatronics design process is superior than conventional design? Justify your answer. [7]
3. a) Describe the construction and operation of TRIAC with suitable diagram. Mention the applications of TRIAC. [7]
- b) Explain about operational amplifiers and noise reduction. [7]
4. a) Describe the working of electro-hydraulic servo system with neat diagram. [7]
- b) Specify the different control valves used in pneumatic actuating system. Explain their working with neat diagrams. [7]
5. a) Discuss the microprocessor as a programmable device. [7]
- b) Distinguish between combinational and sequential logic circuits. [7]
6. a) Explain the working principle of Analog to Digital convertor. [7]
- b) Explain data flow in DSFs. Represent the data flow using a block diagram. [7]
7. a) Give architecture of PLC and explain its functions. [7]
- b) Explain the physical reason behind generation of time delay? Why time delay is not so prevalent in electrical systems? Justify. [7]

