

Code No: **R1641031**

R16

Set No. 1

IV B.Tech I Semester Regular/Supplementary Examinations, Jan/Feb - 2022

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) Mention any three advantages and disadvantages of mechatronics systems. [3]
b) What is TRIAC? Mention the symbol of TRIAC. [3]
c) Write the applications of hydraulic systems. [2]
d) What is a process controller? [2]
e) State the important features of data acquisition system. [2]
f) What is linear system? [2]

PART-B (4x14 = 56 Marks)

2. a) Explain the working principle of proximity sensor. [7]
b) What are the different types of microprocessor-based controllers? Explain working of any one with neat diagram. [7]
3. a) What are the different types of FETs? Explain them with their specification. [7]
b) What are the different types of filters? Derive the gain of each filter. [7]
4. a) Describe the working of electro-pneumatic servo system with neat diagram. [7]
b) With a neat sketch explain the working of hydraulic actuating system. [7]
5. a) What is a PLC? Show and explain the simplified PLC block diagram. [7]
b) Discuss about micro processors and micro controllers. [7]
6. a) How will you interface motor drive with digital signal processing? Explain. [7]
b) Draw neat block diagram of a generalized data acquisition system. Explain. [7]
7. a) Discuss the future trends of mechatronic systems. [7]
b) Draw a timer circuit for PLC ladder programming and explain sequence of operation. [7]

