

Code No: R1641031

R16

Set No. 1

IV B.Tech I Semester Supplementary Examinations, February - 2020

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 the levels of mechatronics system. [3]
b) What is a DIAC? Show the DIAC symbol. [3]
c) Mention the applications of pneumatic systems. [2]
d) What is programmable logic controller? [2]
e) Write a short note on interfacing motor drives. [2]
f) Differentiate first order and second order systems. [2]

PART-B (4x14 = 56 Marks)

2. a) What are the different sensors used for measurement of temperature? Explain the principle, working of each with neat diagrams. [7]
b) What is gauge factor? Describe the strain gauge with neat diagram? Mention the difficulties with strain gauges while measuring the force? How to overcome it? [7]
3. a) Describe the structure and operation of DIAC with suitable diagram? Mention the DIAC applications. [7]
b) What are the different modes of operation FET's? Explain them with suitable circuit diagrams? [7]
4. a) What are the components used in hydraulic actuating system? Explain. [7]
b) What are the elements in electrical actuating system? Explain the working principle of electrical actuating system. [7]
5. a) On what basis are microcontrollers classified. Explain. [7]
b) What do you mean by logic gates? Draw and explain AND, OR, EXOR and NOT gates. [7]
6. a) Discuss about the principle of Digital to Analog conversion process. [7]
b) Explain the single channel data acquisition system with the help of neat diagram. [7]
7. a) Give the design solution for the lift control system. [7]
b) What are the features of PLC? Explain with suitable examples. [7]