

BACHELOR OF VOCATION
Mechanical Manufacturing
Subject: Basics of Mechatronics
Subject Code: MTE-601
Semester: Third
January 2021
Theory (External): 35 Marks
Time: 03 Hours

Instructions to the Students

1. This Question paper consists of two Sections. All sections are compulsory.
2. Section A comprises 10 questions of objective type in nature. All questions are compulsory. Each question carries 1 mark.
3. Section B comprises 8 essay type questions out of which students need to do any 5. Each question carries 5 marks.
4. Read the questions carefully and write the answers in the answer sheets provided.
5. Do not write anything on the question paper.
6. Wherever necessary, the diagram drawn should be neat and properly labelled

Roll Number

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SECTION -A (SHORT/OBJECTIVE, TYPE QUESTIONS)
(10x1=10 Marks)

- A. What is meant by system in Mechatronic?
- B. Obtain the basic function of control system?
- C. What is hysteresis?
- D. Name few materials used in binding of strain gauge?
- E. What is the working principle of Eddy current sensor?
- F. Why a LATCH circuit are used in PLC?
- G. How will you process the input and out of PLC?
- H. Define delay time?
- I. List any four properties of servo motors?
- J. What is the difference between traditional and Mechatronic approach?

SECTION – B (ESSAY TYPE QUESTIONS)

(5×5 = 25 Marks)

1. (a) Explain the static and dynamic characteristic of a sensor?
(b) Define the all dynamic characteristics of sensors?
2. Explain the design stages involved in Mechatronic system development in detail.
3. Explain in detail construction and working details of LVDT. Also draw the characteristics of output voltage for different core position of LVDT.
4. (a) What are the factor to be consider for selecting PLC?
(b) Explain the basics of ladder programming used in PLC.
5. Draw the architecture of PLC and explain in detail the major blocks and their functions.
6. Write short notes on following.
 - a) Need of Mechatronic.
 - b) Types of Stepper Motor.
7. Describe the working of an AC servo motor. With proper control circuit explain the speed control of an AC servo motor.
8. (a) Explain the working principle of Pneumatic diaphragm actuator.
(b) Explain the term hydraulic resistance and hydraulic capacitance.

*****END OF PAPER*****