

Seat  
No.

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मधुर - 031

## Mechatronics (1070)

P. Pages : 2

Time : Three Hours

Max. Marks : 100

Instructions to Candidates :

1. Do not write anything on question paper except Seat No.
2. Answersheet should be written with blue ink only. Graph or diagram should be drawn with the same pen being used for writing paper or black HB pencil.
3. Students should note, no supplement will be provided.
4. Attempt **any two** questions from each unit.
5. Neat diagram must be drawn wherever necessary.
6. Assume suitable data, if necessary.
7. Figures to the right indicates full marks.
8. Use of non-programmable calculator is allowed.

### UNIT - I

1. a) Explain the principle of operation of LVDT, What do you mean by electrical zero position ? 10  
b) What is a thermistor ? Write down the relationship between resistance & temperature for the thermistors. Draw the temperature resistance curve. 10  
c) With the help of schematic illustration explain the piezo-electric accelerometer. 10

### UNIT - II

2. a) Draw & explain the schematic diagram of charge amplifier with piezo-electric transducer. 10  
b) What is mean by impedance matching ? Explain how impedance matching is important in application. Where it is desired to transmit maximum power to a load from source. 10  
c) Which circuit is extensively used in analog-to-digital conversion ? Explain it with the help of circuit diagram. 10

**UNIT - III**

3. a) Explain in brief the solenoids & relays. 10
- b) Draw and explain the block diagram of pneumatic system components. 10
- c) What is mean by mechanism ? Explain slide bearing mechanism in brief. 10

**UNIT - IV**

4. a) Explain the scanning procedure of PLC. 10
- b) Draw & explain ladder diagram to implement OR - AND logic function. 10
- c) Explain the connecting sensors with PLC, at sourcing (PNP) sensor output connected to sinking PLC input. 10

**UNIT - V**

5. a) Explain the interfacing TTL to different combinations of digital ICs. 10
- b) Explain the CMOS integrated circuits. 10
- c) Write notes on totempole & open collector IC output configuration. 10

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