

Seat  
No.

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मठ - 088

**Mechatronics Systems**  
**(New) (1230)**

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. All questions are compulsory and solve **any two** bits out of a, b, c from each questions.
5. Draw neat figures wherever necessary.
6. Figures to the right indicate full marks.
7. Assume suitable data if necessary.

1. a) What is optical encoder ? What are their types explain with detailed sketches. 10  
b) Explain the principle of operation of inductive transducers. Explain LVDT in detail. 10  
c) Write short notes on. 10
  - i) Hall effect transducer.
  - ii) Flow transducer.
2. a) What do you mean by data acquisition system ? Explain generalised data acquisition system. 10  
b) Write short note on. 10
  - i) 555 Timer
  - ii) Digital to Analog Converter.
- c) Write short note on. 10
  - i) Clipping and clamping circuits.
  - ii) X-Y recorders.
3. a) State the principle of operation of induction motor, synchronous motor and stepper motor. 10

- b) Explain fluid power actuator & their types in details. 10
- c) Write short note on 10  
i) Magnetic Bearing.  
ii) Geneva wheel.
4. a) Explain microprocessor & microcontroller in detail. 10
- b) Explain programmable logic controllers. With the help of basic blocks. State the special features advantages and uses of PLC'S. 10
- c) Write short note on. 10  
i) PID controller.  
ii) Closed loop control system.
5. a) Explain different parts of robot & Difference between robot & automated guided vehicle. 10
- b) Explain the various ergonomic problem in new technology. 10
- c) Write short note on. 10  
i) Servo Actuator.  
ii) LON based DCS network.

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