



**Process Instrumentation  
(New) (1300)**

**P. Pages : 2**

**Time : Three Hours**

**Max. Marks : 100**

Instructions to Candidates :

1. Do not write anything on question paper except Seat No.
2. Answer sheet 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 carries equal marks.
5. Assume suitable Data, if required.
6. Use of Non - Programmable Calculator is Allowed.

**UNIT - I**

1. Solve **any two**. **20**
- a) Draw the Process Control Block Diagram & Discuss about each block in detail ?
  - b) With the help of neat circuit diagram, Explain voltage - to current converter ?
  - c) Explain with the help of neat diagram, the direct pneumatic actuator for converting pressure signals into mechanical shaft motion ?

**UNIT - II**

2. Solve **any two** **20**
- a) Enlist & Explain different types of control valves ?
  - b) For controller explain
    - i) Process equation
    - ii) Process load
    - iii) Process Lag
    - iv) Self regulation
  - c) Enlist the discontinuous controller modes & explain any one type in detail ?

**UNIT - III**

3. Solve **any two**. **20**
- a) Draw and Explain the working principle, equation and waveforms for proportional integral [P - I] mode of controller ?
  - b) Draw and explain the electronic PD control ?
  - c) Draw and explain the pneumatic PID control with its transfer function & Block diagram ?

**UNIT - IV**

4. Solve **any two** **20**
- a) With the help of block diagram, explain working of cascade control scheme ?
  - b) Illustrate the selective control scheme for distillation column along with a diagram ?
  - c) With the help of an example explain working of ratio control ?

**UNIT - V**

5. Solve **any two** **20**
- a) Describe in detail, the block diagram of SCADA system ?
  - b) Write a short note on Data acquisition system ?
  - c) Compare the unit level & plant level control system in detail ?

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