

Q.P. Code :08431

[Time: 3 Hours]

[ Marks:80]

Please check whether you have got the right question paper.

- N.B:
1. Question no. 1 is compulsory.
  2. Attempt any three questions from the remaining five questions.
  3. Assume suitable data whenever necessary.
  4. Figure to the right indicate full marks.

**Q.1** Explain in brief

- a) Integral controller 05
- b) Temperature transmitter 05
- c) Telemetry 05
- d) I-P converter 05

- Q.2**
- a) What are the different types of control valve actuators? Explain the working of any two actuators in detail. 10
  - b) What are the different types of hydraulic pumps? Explain with neat sketch 10

- Q.3**
- a) Explain loading of valves in pump application with diagram. 10
  - b) Explain control valve characteristics. An equal percentage valve has maximum flow of  $50\text{cm}^3/\text{s}$  and a minimum of  $2\text{cm}^3/\text{s}$ . If the full travel is 3cm; find the flow at a 1 cm opening. 10

- Q.4**
- a) Explain in details construction and working of time delay valve. 10
  - b) What are the different applications of a flapper nozzle system? With neat diagram explain the flapper nozzle system and its characteristics. 10

- Q.5**
- a) Explain the need of controller tuning. What are the different methods of controller tuning? 10
  - b) Explain compressed air receiver unit. What are the different control strategies for air receiver unit? 10

- Q.6**
- a) Compare conventional and smart transmitters. Explain the working of DP transmitter. 10
  - b) Write short note on: 10
    - i. Data logger
    - ii. Pressure regulation valve.