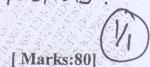
## T. E., Instrumentation, sem: I (choice Based)



[Time: Three Hours]

N.B: 1. Question.No.1 is compulsory.

- 2. Attempt any three questions from the remaining five questions
- 3. Draw neat diagrams wherever required
- 4. Assume suitable data if necessary.

1	b. c. d.	Attempt any four.  Explain Solid State Relay and Reed Relay.  Illustrate and explain Sequence valves.  What are the uses of Relief valve?  Explain current to pressure converter.  Give the applications, advantages and disadvantages of Needle valve.	20
2	a. b.	Explain Control valve terminologies. State need and specifications of Control Valve. Brief about special types of pneumatic valve; Pilot-operated valves and Non-return valves	10 10
3		What are the auxiliary process control components? State the need for safety valves in industry.  Draw and explain Hydraulic pumps: centrifugal pumps, gear pumps and lobe pumps.	10 10
4	a. b.	Draw and Explain Flow characteristics of the control valve (Inherent and Installed). Draw and brief about Air supply system and its components.	10 10
5		Explain desirable features of SMART transmitter.  Draw and explain Rotary switches, Selector switches and thumbwheel switches.	10 10
6	b, c.	Write a short note on:- Toggle switches Hydraulic actuators Two and Three wire transmitters. Pinch Valve	20