(Time: 3 Hours) **Total Marks: 80**

Note: 1) Question No.1 is compulsory.
2) Attempt any three questions from remaining five questions.
3) Assume suitable data if necessary.
4) Figures to the right indicate full marks.

Q.1) Explain in brief

a) Data logger 5M

b) Proportional controller 5M

c) Pneumatic logic gates 5M

d) DP transmitter 5M

Q.2) a) Give the classification of compressors. Explain any two rotary compressors with diagram. 10M

b) Explain flapper nozzle system. Explain any two applications of flapper nozzle system for industrial use. 10M

Q.3) a) What are the different types of contol valve actuators? Explain the working of an elecro-mechanical actuator. 10M

b) What are the different types of hydraulic pumps? Explain with neat sketch. 10M

Q.4) a) What is the necessity of controller tuning? Explain different methods of controller tuning with required sketches. 10M

b) Explain the detail construction cylinder with its dynamics. 10M

Q.5) a) Draw the diagram of telemetry and explain the working in detail. 10M

b) Explain compressed air receiver unit. What are the different control strategies for air receiver unit? 10M

Q.6) a) Compare electronic versus pneumatic transmitters. Explain the 2 wire and 3 wire transmitter. 10M

b) Explain the terms rangeability and control valve sizing. A velocity control system has a range of 200 mm/s to 480 mm/s. If the set point is 327 mm/s and the measured value is 294 mm/s, calculate the error as % of span. 10M

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