**Q. P. Code: 22742**

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

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) Derivative controller 5M

c) Sequence valve 5M

d) Smart transmitter 5M

Q.2) a) What is the necessity of the positioner. Draw the diagram for any one valve positioner and give the details. 10M

b) Explain the control valve characteristics with diagram. A velocity control system has a range of 200 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

Q.3) a) Give the comparison details of electrical, pneumatic and hydraulic systems. 10M

b) Explain methods for local pressure control with diagram. 10M

Q.4) a) Give the classification of compressors. Explain any two rotary compressors with diagram. 10M

b) What is Transmitter? Give the classification details of transmitters. Draw and Explain a process loop with transmitter. 10M

Q.5) a) Explain flapper nozzle system. Explain any two applications of flapper nozzle system for industrial use. 10M

b) What is the necessity of controller tuning? Explain any two methods of controller tuning? 10M

Q.6) a) With neat block diagram, explain the working of multichannel data acquisition system. 10M

b) Write short note on 10M

i) Actuator selection parameters

ii) Double acting cylinder

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