

Total No. of Questions : 8]

SEAT No. :

P134

[Total No. of Pages : 2

[5871]-642

B.E. (Electronics)

PROCESS INSTRUMENTATION

(2015 Pattern) (Semester - II)

Time : 2½ Hours]

[Max. Marks : 70

Instructions to the candidates :

- 1) Solve Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8.
- 2) Neat diagrams must be drawn wherever necessary.
- 3) Assume suitable data if necessary.
- 4) Use of non-programmable scientific calculator is allowed.

- Q1)** a) Define linear processes & non-linear processes. Explain linear process in detail. [6]
- b) Sketch circuit diagram for OP-AMP implementation of P+I and PID controller. [6]
- c) Compare P, P+I and PID controller modes. [8]

OR

- Q2)** a) Define dead time. Explain the concept of dead time with suitable example. [6]
- b) Explain Ziegler Nichol's method of process loop tuning. [6]
- c) Explain the concept of relay based tuning. State the advantages of relay based tuning. [8]

- Q3)** a) Explain ratio control scheme to maximize boiler combustion efficiency and minimize fuel use. [8]
- b) Explain cascade control scheme with the help of suitable example. [8]

OR

- Q4)** a) Explain with neat block diagram adaptive control system. [8]
- b) Explain selective control scheme to protect a process equipment. [8]

P.T.O.

- Q5) a)** Explain block diagram analysis of multivariable systems. **[9]**
b) Explain interaction between control loops in a typical multivariable system. **[8]**

OR

- Q6) a)** What is a batch process? Explain batch process control with respect to a batch mixing tank. **[9]**
b) Write short note on Relative Gain Analysis. **[8]**

- Q7) a)** Explain the hierarchy of control structure. **[9]**
b) Explain how plant performance is monitored in a typical process industry. **[8]**

OR

- Q8) a)** Explain safety layers employed to ensure safety in chemical process plants. **[9]**
b) Explain steps involved in defining the problem in process control design. **[8]**

