

Total No. of Questions : 10]

SEAT No. :

P3533

[Total No. of Pages : 2

[4959] - 1204

B.E. (Instrumentation & Control)
PROCESS INSTRUMENTATION-II
(2012 Pattern) (Semester-II)

Time : 2:30 Hours]

[Max. Marks : 70

Instructions to the candidates:

- 1) *Answer Q1 or Q2, Q3 or Q4, Q5 or Q6, Q7 or Q8, Q9 or Q10.*
- 2) *Neat diagrams must be drawn wherever necessary.*
- 3) *Figures to the right side indicate full marks.*
- 4) *Assume Suitable data if necessary.*
- 5) *Use of calculator is allowed.*

Q1) a) With suitable example, develop a mathematical model of stirred tank heater. **[8]**

b) Draw the block schematic showing sensor gain, process gain, valve gain and controller gain for a heat exchanger. **[2]**

OR

Q2) a) Explain Feed Forward control of Heat Exchanger with dynamic compensation. **[6]**

b) Explain Shrink and Swell effect in case of boiler drum. **[4]**

Q3) a) With a neat sketch, explain burner management system used in boilers. **[5]**

b) Explain air-fuel ratio control system used in boilers. **[5]**

OR

Q4) a) Explain three element drum level control in boilers. **[6]**

b) Explain dynamic behavior of second order system. **[4]**

P.T.O.

- Q5)** a) Explain recipe management of batch reactors. [10]
b) Explain typical cascade control system used in continuous reactors.[8]

OR

- Q6)** a) Explain End point control in batch reactors. Enlist parameters for indication of end of reaction. [10]
b) Explain sequencing logic control used in batch stirred tank reactors.[8]

- Q7)** a) How reflux is important in continuous fractionation. With neat sketch explain composition control of distillate stream in distillation operation.[8]
b) State objectives of distillation column control. Why it is difficult to control? State any two reasons. [8]

OR

- Q8)** a) Explain mathematically steady state material and energy balance equations for distillation column. [8]
b) Explain in brief control strategy for distillation column temperature control. [8]

- Q9)** a) Discuss on pressure and flow controls used in compressors considering the protection of the equipment. [8]
b) Explain use of anti-surge control system used in compressors. [8]

OR

- Q10)** a) What is surge in compressor? Draw Instrumentation diagram for ON-OFF control for reciprocating compressor. [8]
b) Draw two control strategies for controlling flow from gear pump. [8]

