

## Question Bank

## **Process Control**

**DEPARTMENT OF**  
**ELECTRONICS AND INSTRUMENTATION**  
**ENGINEERING**

Dr.Mahalingam College of Engineering and Technology, Pollachi-3  
Department of Electronics and Instrumentation Engineering  
Question Bank  
Subject Name: 16EIT62 - Process Control  
Semester: VI Semester

Two Mark Questions:

Unit – I:

1. List the objectives of Process control
2. Define Manipulated variable and Controlled Variable
3. Why do we need mathematical modelling of process?
4. Distinguish between continuous and batch process
5. Compare servo and regulatory operation
6. Give the dynamics of first order level and flow process
7. What is self-regulation?
8. Compare interacting and non-interacting systems
9. Derive the transfer function of first order level process
10. Mention the name of various modelling approaches used in process control

Unit – II:

1. Define controller tuning.
2. List the types of tuning methods
3. What is Process Reaction Curve?
4. Define one-quarter decay ration
5. Compare ISE, IAE and ITAE
6. Give PID controller settings of damped oscillation method
7. Compare simple performance and integral performance criteria
8. Give the steps involved in open loop tuning method
9. Give the formulae for the PID controller using Z-N method
10. Define ITAE.

Unit – III:

1. Compare Proportional, Integral and derivative control actions
2. Define on/off controller
3. Define error and offset
4. Define Proportional Band and Reset time
5. Define integral windup.
6. Why derivative controller alone is not recommended for noisy process?
7. Draw the electronic PI controller
8. Why electronic controller is preferred than pneumatic controller for a process?
9. Draw the Pneumatic PID controller

Unit – IV:

1. What is the purpose of the actuators
2. Mention the types of control valves used in industries
3. Compare linear valve and equal percentage valve
4. Why equal percentage valve is mostly preferred than other type of valves?
5. Define control valve sizing
6. Define control valve sensitivity
7. Define Rangeability
8. Define cavitation and Flashing
9. Mention the type of materials used valve body and Plug

10. Mention the applications of control valves

Unit – V:

1. Compare feedback and feedforward control scheme
2. What is auctioneering control scheme?
3. Mention the purpose of HSS and LSS switches in selective control scheme
4. Define ratio control scheme
5. Why adaptive controller is preferred than ordinary control scheme?
6. Define inferential control scheme.
7. Mention the advantages of cascade scheme
8. Draw the cascade control scheme with CSTR process
9. Draw the feedforward control scheme with Evaporation process
10. Mention the name of the control schemes used in distillation process control

PART - B

Unit – I:

1. Explain briefly about the interacting and non-interacting system.
2. Explain briefly about the batch and continuous process with an example
3. Describe the dynamics involved in second order process
4. Problems in interacting and non-interacting system(Refer class notes)
5. Derive the transfer function of first order level, pressure and flow process

Unit – III:

1. Explain briefly about the continuous and discontinuous controller modes
2. Explain the design steps involved in design of electronic PID controller
3. Explain briefly about the operation of pneumatic PID controller and mention its applications
4. Problems in PID controller design(Refer class notes)
5. Problems in PID controller design(Refer class notes)

Unit – II:

1. Describe briefly about the simple performance and integral performance criterion
2. Explain in detail about the open loop tuning method and give its PID controller settings
3. Explain in detail about the Z-N tuning method procedure and give its PID controller settings
4. Problems in Tuning (Refer class notes)
5. Problems

Unit – V:

1. Explain in detail about the cascade control scheme with an example
2. Explain in detail about the selective control scheme with an example
3. Explain in detail about the adaptive control scheme with an example
4. Explain in detail about i. Inferential control scheme  
ii. Ratio control scheme
5. Describe various control scheme used in CSTR process
6. Describe various control scheme used in Distillation process

Unit – IV:

1. Explain in detail about the characteristics of control valves
2. Explain the operation of I/P converter and Actuators
3. Explain in detail about the cavitation and Flashing. Mention its elimination methods
4. Describe briefly about the parameters involved in control valve selection

5. Explain the following

- i. Control valve sizing
- ii. Materials used in Valve body and Trim y