

## Chapter1

### Introduction to digital control

- Q1. Explain about configuration of basic digital control system?
- Q2. What is discrete transfer function?
- Q3. Explain discrete model sampled data system using Z transform?
- Q4. Describe transform function model?
- Q5. Explain about signal analysis and dynamic response?
- Q6. What is zero order hold equivalent?
- Q7. What is first order hold equivalent?
- Q8. What is Z- Plane?
- Q9. What is S- Plane?
- Q10. What is W-Plane?
- Q11. Write about A to D converter?
- Q12. Draw a diagram and explain about D to A converter?
- Q13. Explain Z-Domain description of sampled continuous time system?

## Chapter2

### Controller design using transform technique

- Q1. Write note root analysis?
- Q2. Explain about controller design technique?
- Q3. Explain about root locus and analysis?
- Q4. Explain about frequency domain?
- Q5. Explain about compensator design?
- Q6. What are the two condition of root locus?
- Q7. What are the applications for root locus?
- Q8. How many branches does the root locus have?
- Q9. What is the main objectives of root locus technique?
- Q10. What are the specification used in frequency domain analysis? Explain in detail?

Chapter3

State space theory

- Q1. Explain about control system analysis using state variable method?
- Q2. Explain about vector and vector matrices?
- Q3. Explain about state variable representation?
- Q4. Write note on conversion of state variable to transfer function and take place?
- Q5. Explain about solution of homogeneous state equations?
- Q6. What are the advantages of state space approach?
- Q7. What is the purpose of state space approach?
- Q8. What are the disadvantages of state space analysis?
- Q9. What is the use of state space analysis?
- Q10. Why is the State space better than transfer function?

Chapter 4

State space design

Q1. Explain the following terms

- I. controllability
- II. Observability

Q2. What is the concept of control law design?

Q3. Define the following terms

- I. State
- II. State variable
- III. State vector
- IV. State space
- V. State trajectory

Q4. What is model matrix? State its importance?

Q5. Explain time domain models for discrete time system?

Q6. Explain about basic discrete time signals?

Q7. What is controllability? Derive the expression for controllability matrix?

Q8. Explain about observer design?

Q9. Explain deadbeat controller design?

Q10. Explain about delayed system?

Q11. Explain about controller design for delayed system?

## Chapter5

Stability analysis and jury stability criteria

- Q1. Explain about stability analysis?
- Q2. Write a note on jury stability criteria?
- Q3. Write a note on Lyapunov stability analysis to linear system and discrete system?
- Q4. Write a note on stability improvement by state feedback?
- Q5. What is stability in the sense of Lyapunov?
- Q6. How is Lyapunov function determined?
- Q7. How do you determine if a system is Lyapunov stable?
- Q8. What is jury stability test?
- Q9. What are the condition heritability?

Chapter6

Observer Design

- Q1. What is the need of observer design?
- Q2. What is the goal of observer design?
- Q3. Which are the limitations of deadbeat controller?
- Q4. How do you make a deadbeat controller?
- Q5. What is dead beat response?
- Q6. How can time delay be control?
- Q7. What is time delay method?
- Q8. What is the effect of PD controller on the system performance?
- Q9. What is the effect of PI controller and PD controller on the system performance?