

Question Bank (G scheme)

Name of subject: CONTROL SYSTEM

Subject code : 17538

Unit Test: II

Semester : V

Course : IS/IE

CHAPTER 4: FREQUENCY RESPONSE (10 MARKS)

3 Marks:

- 1) State two advantages and disadvantages of frequency response analysis.
- 2) Define: i) Peak Response ii) Phase margin iii) Gain margin iv) Cut-off rate.
- 3) State any three advantages of Bode plot.

4 Marks:

- 4) Draw Bode plot for $10/s$.
- 5) Define the following frequency response specifications:
 - i) Response peak ii) Band width iii) Cut-off frequency iv) Resonant frequency.
- 6) Draw the Bode plot for the system having open loop transfer function as $G(s)H(s)=20/s(1+2s)$.
- 7) Draw the Bode plot for the system having open loop transfer function as $G(s)H(s)=20s/(1+0.1s)$.
- 8) Explain the procedure to draw Bode plot.

CHAPTER 5 : PROCESS CONTROL AND CONTROL ACTIONS (16 MARKS)

3 Marks:

- 9) Define the following terms:-
 - i) Proportional band ii) offset iii) Control action
- 10) Compare P, I & D control action on the basis of
 - i) nature of output ii) response of error iii) equation
- 11) Give the advantages & disadvantages of electronic controllers.
- 12) List two applications and advantages of ON- OFF controller.
- 13) Draw a neat circuit diagram of electronic PD controller circuit using opamps. State its output equation.

4 Marks:

- 14) Draw the electronic P-I controller diagram. Write its output equation.
- 15) Explain the PID control action.
- 16) List two applications & two drawbacks of PI controller.
- 17) Compare P control action with PI control action.
- 18) State the principle of derivative control action. Write its standard equation and draw its output response.
- 19) Describe the action of proportional controller with offset.
- 20) With neat diagram, describe on-off controller
- 21) Explain neutral zone with neat diagram.
- 22) Why derivative control mode is never used alone? Draw circuit diagram to implement PD control action.

CHAPTER 6 : SERVO SYSTEM (18 MARKS)

3 Marks:

- 23) List different servocomponents.
- 24) What is synchro? State any two applications of synchro.
- 25) Compare dc servo motor & ac servo motor.
- 26) List the types of stepper motor and state any two applications of stepper motor.

4 Marks:

- 27) Explain with neat diagram: Rotary encoder.
- 28) Define 'Electrical zero position of synchro' & give its applications.
- 29) State how ac servo motor differs from a normal 2- phase induction motor. Draw its torque – speed characteristics.
- 30) Draw neat diagram of AC position control system & state the function of each component.
- 31) Draw & explain the potentiometer as error detector.
- 32) Explain the working of variable reluctance stepper motor.
- 33) Differentiate between armature controlled & field controlled dc servo motor.
- 34) Compare stepper motor and servomotor. (4 points)

