

BACHELOR OF TECHNOLOGY (C.B.C.S.) (2014 COURSE)

B.Tech.Sem - V ELECTRICAL : : SUMMER - 2022

SUBJECT : LINEAR CONTROL SYSTEMS

Day : Monday
Date : 30-05-2022

S-13315-2022

Time : 10:00 AM-01:00 PM
Max. Marks : 60

N.B.:

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Draw neat and labeled diagram **WHEREVER** necessary.
- 4) Assume suitable data if necessary.

-
- Q.1** a) Explain the classification of control system. [05]
b) Compare open loop and closed loop system. [05]

OR

- Q.1** a) Explain mathematical modeling of R-L series circuit. Derive its transfer function. [05]
b) State the rules for block diagram reduction. [05]

- Q.2** a) Explain with diagram standard test signals. [05]
b) Describe type and order of the control system. [05]

OR

- Q.2** Explain the following: [10]
a) Steady state error
b) Static error constants

- Q.3** a) Explain the concept of stability. [05]
b) Compare absolute v/s relative stability. [05]

OR

- Q.3** a) Explain Routh-Hurwitz criterion for determining stability. [05]
b) State the rules for construction of root locus. [05]

- Q.4** a) Explain the concept of PID controller and write relevant equations. [05]
b) State the rules for tuning of PID controller. [05]

OR

- Q.4** a) What is the need of compensation in control system? [05]
b) Explain the use of SISO design tool in MATLAB. [05]

- Q.5** a) Explain with diagram the response of first order and second order control system to sinusoidal input. [05]
b) Write short note on polar plot. [05]

OR

- Q.5** Write short note on : [10]
a) Nyquist plot
b) Bode Plot

- Q.6** a) Describe bode plot of lead compensating network. [05]
b) State design specifications in frequency domain. [05]

OR

- Q.6** a) Describe bode plot of lag compensating network. [05]
b) Explain design of lead compensators using bode plot. [05]

* * * *