

BACHELOR OF TECHNOLOGY (C.B.C.S.) (2020 COURSE)
B.Tech.Sem - III E&C E&C :SUMMER- 2022
SUBJECT : ITC-I: PROCESS & CONTROL SYSTEM

Day : Friday
Date : 3/6/2022

S-24596-2022

Time : 02:30 PM-05:30 PM
Max. Marks : 60

N.B.:

- 1) All questions are **COMPULSORY**.
 - 2) Figures to the right indicate **FULL** marks.
 - 3) Draw diagrams **WHEREVER** necessary.
 - 4) Assume suitable data if necessary.
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Q.1 Compare: i) Open Loop and Closed Loop Control System [10]
ii) Linear and Non-Linear Control System

OR

Q.1 Write various rules of block diagram reduction techniques. [10]

Q.2 Draw and explain Transient Response specifications of second order system. [10]

OR

Q.2 a) What is the necessity of standard test signals? Also list types of standard test input signals. [05]

b) Derive expression for steady state error for the unit step input signal. [05]

Q.3 State and explain Routh's stability criterion. Also comment on stability of a system having characteristic equation as: [10]
 $s^4 + 2s^3 + 3s^2 + 4s + 5 = 0$

OR

Q.3 Explain rules for construction of Root Locus. [10]

Q.4 Describe : i) Gain margin ii) Phase margin iii) Gain cross over frequency [10]
iv) Phase cross over frequency

OR

Q.4 Describe: i) Rules of drawing Bode magnitude plot with simple pole & zero. [10]
ii) Frequency Domain Specifications.

Q.5 Compare following transducer: [10]

- i) Active and passive transducer
- ii) Analog and digital transducer
- iii) Primary and secondary transducer

OR

Q.5 What is transducer? Explain working principle, construction, advantages and disadvantages of thermistor. [10]

Q.6 Write note on : [10]

- i) PI and PD control action
- ii) PID controller

OR

Q.6 a) Explain the advantages of P-I controller over simple P and I actions. [05]

b) Recommend a suitable controller configuration for a particular process. [05]

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