Q.25 Draw and explain any three nonlinearity.

a) Dead zone

b) Saturation

c) Relay

d) Backlash

e) Friction

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3rd Sem / Instrumentation & Control

Subject : Control System Engineering

Time : 3 Hrs. M.M. : 60

SECTION-A

Note: Multiple choice questions. All questions are compulsory (6x1=6)

Q.1 Stability of system is determined from

a) zeros b) Poles

c) Gain d) none of above

Q.2 Breakaway point is determined by

a) dK/ds =0 b) ds/dK=0

c) dK*ds=0 d) none of above

Q.3 Traffic light is an example of

a) Open loop b) Close loop

c) Both (a) and (b) d) none of above

Q.4 The transfer function is defined as

a) C(s)*R(s) b) R(s)/ C(s)

c) C(s) / R(s) d) C(s) + R(s)

Q.5 Laplace transform of impulse signal is

a) 0 b) 1

c) s d) none of above

Q.6 Linear system follows_ theorem

a) Norton b) Thevenin

c) Superposition d) De Morgan

SECTION-B

Note: Objective/ Completion type questions. All questions are compulsory. (6x1=6)

Q.7 What is "s" is Laplace transform.

Q.8 Write two example of open loop control system

Q.9 Root locus is used to find open loop zeros. (T/F)

Q.10 Define Relay.

Q.11 Define summing point.

Q.12 Draw dead zone nonlinearity.

SECTION-C

Note: Short answer type questions. Attempt any eight questions out of ten questions. (8x4=32)

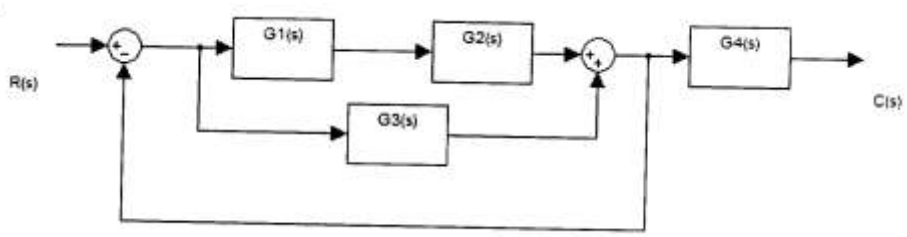
Q.13 Write the difference between open loop control system and close loop control system

Q.14 Explain basic component of control system with block diagram.

Q.15 Explain Rise time and Peak overshoot.

Q.16 Explain Mason gain formula

Q.17 Determine the transfer function of following system using block diagram reduction technique.



Q.18 Write short note on all test signal.

Q.19 What is the superposition theorem?

Q.20 Explain phase margin and gain margin in bode plot.

Q.21 Determine stability using routh array criterion of following system C.E.

$$s^4+6s^3+15s^2+18s+10=0$$

Q.22 Define limit cycle with diagram.

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x8=16)

Q.23 Derive transfer function of series R-L-C circuit.

Q.24 Explain the procedure to draw root locus in details.