

- Q.26 Explain mason gain formula.
- Q.27 Explain rise time and steady state error.
- Q.28 Draw only time response of 2nd order under damped system subjected to unit step signal.
- Q.29 Write short note on all test signal.
- Q.30 Write five application of servomotor.
- Q.31 Write examples of both open loop and close loop control system.
- Q.32 Explain synchro as error detector with diagram.
- Q.33 Determine stability using routh array criterion of following system C.E.

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

- Q.34 Explain gain crossover frequency and phase crossover frequency.
- Q.35 What is angle criterion in root locus.

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x10=20)

- Q.36 Derive response of 1st order system subjected to impulse signal.
- Q.37 Describe construction working principle and application of stepper motor.
- Q.38 Explain the procedure to draw root locus.

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3rd Sem / Branch : Instrumentation and control / EI

Subject:- Basic of Control System / Const. Sys.

Time : 3Hrs.

M.M. : 100

SECTION-A

Note: Multiple choice questions. All questions are compulsory (10x1=10)

- Q.1 For stable system.
a) $GM > 0$ & $PM < 0$ b) $GM > 0$ & $PM > 0$
c) $GM < 0$ & $PM < 0$ d) $GM < 0$ & $PM > 0$.
- Q.2 Breakaway point is determined by.
a) $dk/ds = 0$ b) $ds/dk = 0$
c) $dk \cdot ds = 0$ d) None of above
- Q.3 Washing machine is an example of.
a) Open loop b) Close loop
c) Both (a) and (b) d) None of above
- Q.4 The controller in manual control is.
a) Machine b) Human
c) Both (a) and (b) d) None
- Q.5 The transfer function is defined as.
a) $C(s) \cdot R(s)$ b) $R(s)/C(s)$
c) $C(s)/R(s)$ d) $C(s) + R(s)$

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- Q.6 For non-oscillatory response in 2nd order system , acceptable value of damping ratio.
 a) 1 b) 0
 c) 0.5 to 0.8 d) >1
- Q.7 At pole frequency, the transfer becomes.
 a) 0 b) ∞
 c) 1 d) None of above
- Q.8 Which of the following is not test signal.
 a) Impulse b) Unit step
 c) Exponential d) ramp
- Q.9 Synchro is used to measure.
 a) Temperature b) Error
 c) Pressure d) flow
- Q.10 Tachometer is used in control loop as.
 a) Controller b) Feedback
 c) Actuator d) Plant

SECTION-B

Note: Objective type questions. All questions are compulsory. (10x1=10)

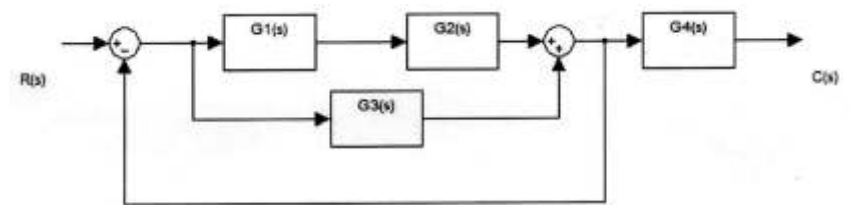
- Q.11 Define automatic control system.
- Q.12 Servomechanism is example of ___ loop control system.
- Q.13 Give two example of closed loop control system. (C.L.C.S)
- Q.14 Define peak overshoot.

- Q.15 Linear system follows only superposition theorem. (T/F)
- Q.16 Define zeros of transfer function .
- Q.17 What is laplace transform of ramp signal?
- Q.18 synchro is an electromagnetic device. (T/F)
- Q.19 Tachometer is used to measure temperature of body. (T/F)
- Q.20 Define phase margin.

SECTION-C

Note: Short answer type questions. Attempt any twelve questions out of fifteen questions. (12x5=60)

- Q.21 Write the difference between liner system and nonlinear system.
- Q.22 Explain basic component of control system with block diagram.
- Q.23 Derive transfer function of series R-L-C circuit.
- Q.24 Explain take off point and summing point.
- Q.25 Determine the transfer function of following system Using block diagram reduction technique.



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