Q.26 Explain mason gain formula.

Q.27 Explain rise time and steady state error.

Q.28 Draw only time responce of 2^{nd} 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 1^{st} 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* 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)*R(s) b) R(s)/C(s)

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

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.