ANSWER SHEET

Name Surname :
Education:

16/05/2025

EEE 352 Laboratory Quiz-3 Duration : 10 min.

1) What will be your gain value when gain coarse 100 and gain fine 0.7 respectively ? (25 p)

A) 10 B)20 C)30 D)50 E)70

2) How many time constant option does the Integrator contains ? Write the Integrator time constant values. (25 p)

There are 3 T_i (time constant) in Integrator.
1 s, 10 s, 100 ms

3) Write TRUE or FALSE? (50 p)

T ( )**Cut-off frequency :** is a boundary in a system's frequency response at which energy flowing through the system begins to be reduced (attenuated or reflected) rather than passing through.

F ( )**Bandwith :** The bandwidth of a closed-loop control system is defined as the frequency range where the magnitude of the closed loop gain does not drop below 3 dB

F ( )**Gain margin :** The gain margin is the number of dB that is above 0 dB at the phase crossover frequency (ø=-180º).

F ( )**Phase margin :** The phase margin is the number of degrees the phase of that is below -180º at the gain crossover frequency. (above)

T ( )**Off-set :** The steady-state or sustained deviation which is the difference between the set point and the "controlled variable"(system output) signals.

Bandwith : is the range of frequencies within which the system response remains within −3 dB of its maximum value. It does not drop more than 3 dB

Gain Margin : is how much gain can be increased before the system becomes unstable, measured below 0 dB at the phase crossover frequency.

Phase Margin : is the amount above −180° the phase is at the gain crossover frequency.

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EEE 352 Laboratory Quiz-2 Duration : 10 min.

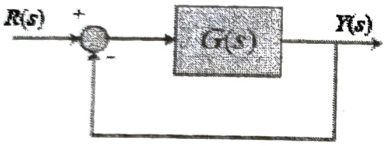
1) How can we do off-set calibration for the amplifiers in the control laboratory sets? Please explain in your words. (20 p)

1- Unplug Input and Output of Amplifier.
2- Set Gain coarse value to 100.
3- Connect voltage probe of DMM to Output of Amplifier
4- Measure Voltage and bring the ofset value to zero

2) Write the name of MATLAB command which gives the detailed info of the step-response output graph characteristics. (20 p)

stepinfo( ) ;

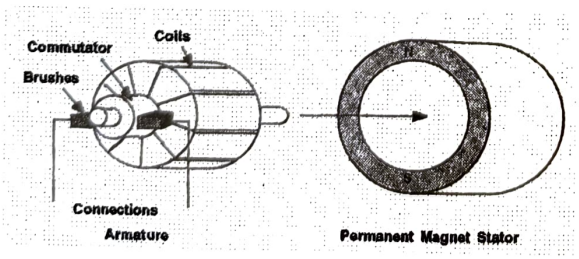
3)Write down MATLAB codes only to complete following tasks for the system given below (30 p)



$$G(s) = 100/(s+0.1)(s+5)$$

```
num = 100;
denum = conv([1 0.1], [1 5]);
G = tf(num, denum);
g1 = feedback(G, 1);
```

4) Draw the electrical circuit of given Permanent Magnet DC Motor below which is a part of our lab set. Also do not forget to write the resistor value in your circuit. **(No need to write values of capacitors and diode.)** (30 p)



— If you didn't write the valve of resistor which is 1Ω, 10 points will be cut.