

Enroll No

Q.P. Code
UT 2941

**Unit Test -I / H (2025-26)**

T.Y. B.Tech.-Electrical Engineering

**Course Code: EE313**

**Course Name: Feedback Control System**

Day & Date: *Monday 11/08/2025*

Time: *2:30 To 3:30*

Max Marks- 25

**Instructions:** 1) All questions are compulsory.

2) Figures in rounded ( ) brackets within the question, indicate the scheme of marking for respective part of the question, whereas, figures in the first right column indicate total marks for that whole question.

3) CO is the index number of the Course Outcome statement.

4) The Bloom's taxonomy level (BL) for 1,2,3,4,5 and 6 is remember, understand, apply, analyze, evaluate and create respectively.

5) Assume suitable data if necessary.

6) Use of non-programmable calculators is allowed

		Marks	BT Level	COs
Q.1	A Name four applications of feedback control systems (2M), and explain any one (2M) of them with typical closed loop block diagram (1M).	05	3	CO1
	B Write significance (2M) of sensors and actuators in industrial control system. List four sensors (2M) and four actuators (2M).	06	2	CO1

**OR**

Compare (6M) open loop vs closed loop control systems with example.

Q.2	A Obtain the transfer function (2M) $\frac{Y(s)}{X(s)}$ for given differential equation and find (1M) the zeros and poles.	04	3	CO3
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$$\frac{d^2 y(t)}{dt^2} + 12 \frac{dy(t)}{dt} + 32y(t) = 32x(t)$$

Also, draw (1M) the pole-zero plot. Assume initial conditions to be zero.

B	Compute (7M) the transfer function, for network shown in Fig. 1,	07	3	CO1
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$$G(s) = \frac{V_o(s)}{V_i(s)}$$

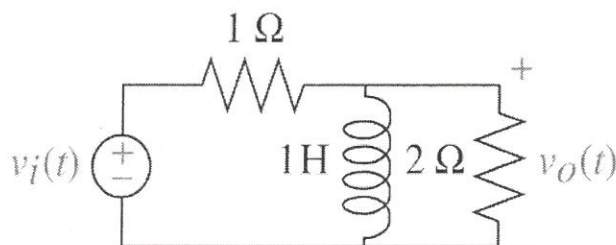


Fig. 1. Electric network for Q.2.B

**OR**



Reduce the system shown by block diagram in the Figure 2, to a single transfer function,

$$T(s) = \frac{C(s)}{R(s)}$$

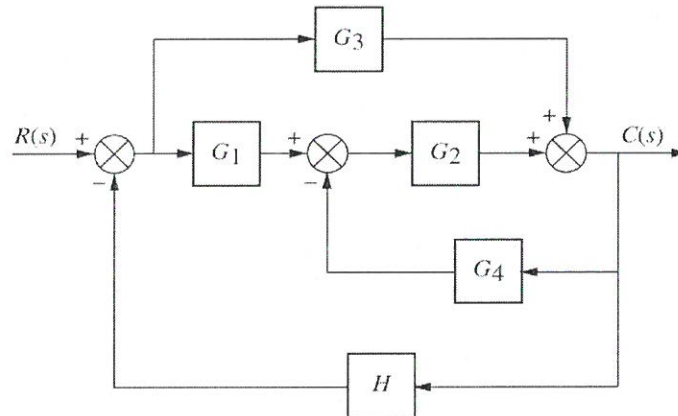


Fig. 2. System block diagram for Q.2.B

- C Write the analogy between electric series RLC circuit with rotational 03 3 CO1  
mechanical system.

