



Daffodil International University

Faculty of Science & Information Technology

Department of Computer Science & Engineering

Midterm Examination, Spring 2026

Course Code: CSE 325, Course Title: Instrumentation and Control

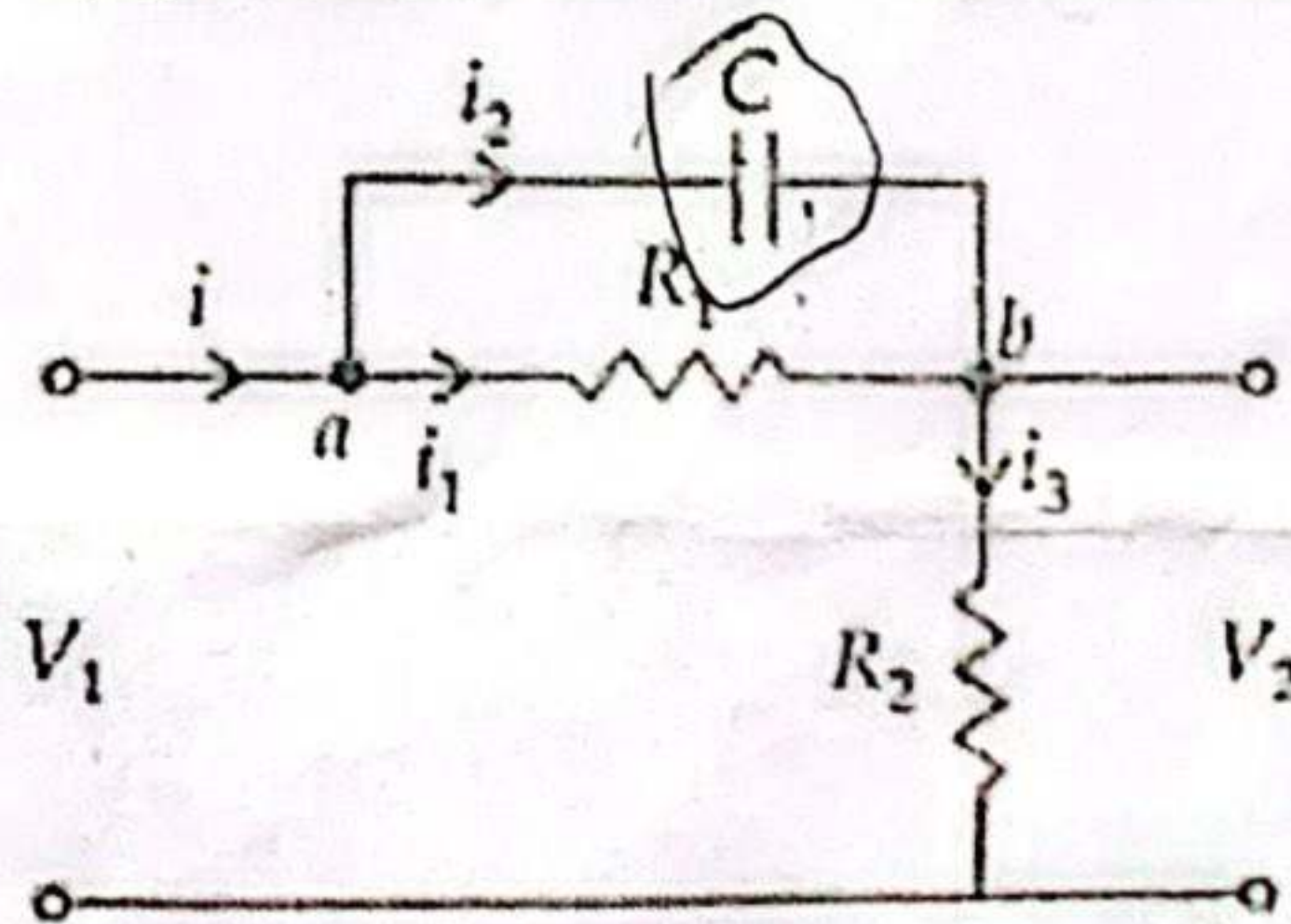
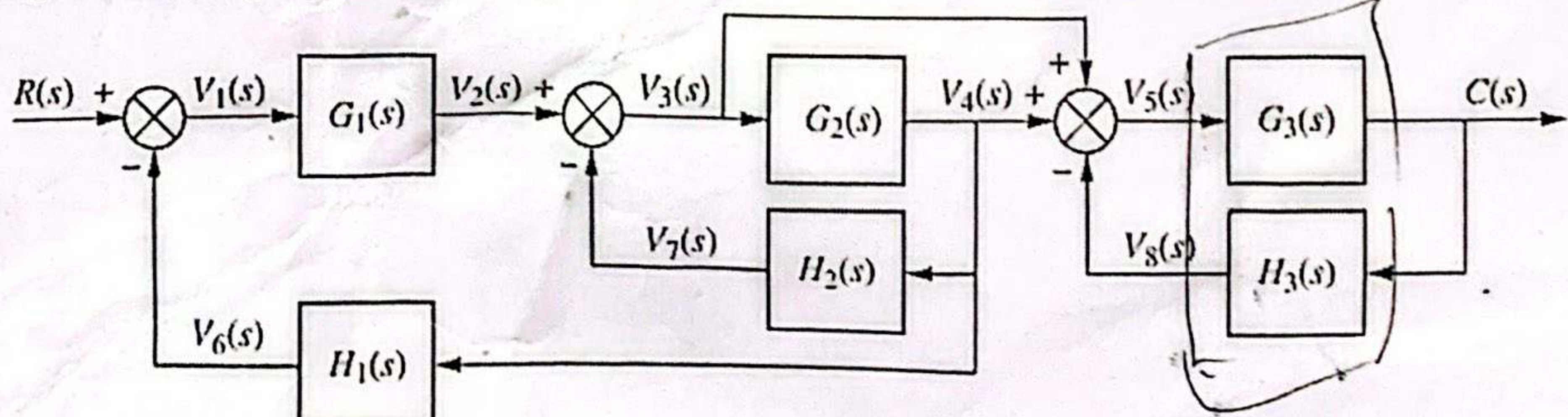
Level:4 Term:1 Batch:64

Time: 1:30 Hrs

Marks: 25

Answer ALL Questions

[The figures in the right margin indicate the full marks and corresponding course outcomes. All portions of each question must be answered sequentially.]

1.	a)	Differentiate between active sensors and passive sensors with suitable examples.	[1]	CO1
	b)	State meter loading effect.	[1]	
	c)	Define poles and zeros of a transfer function.	[1]	
	d)	Recall the reasons why RTDs are preferred over thermocouples for precision measurement.	[1]	
	e)	List two advantages of electronic instruments.	[1]	
2.	a)	Explain the construction and operating principle of a Current Transformer (CT). Analyze why the secondary winding of a Current Transformer (CT) should never be left open while the primary is energized.	[5]	CO2
	b)	Solve the circuit in Figure 2(b) to find out the transfer function, $V_2(s)/V_1(s)$.	[5]	
 Figure 2(b)				
3.	a)	Design the equivalent single transfer function of the control system shown in Figure 3(a) by systematically reducing the block diagram.	[5]	CO3
	 Figure 3 (a)			

- b) In the circuit shown in Figure 3(b), the voltage across the resistor of value $25\text{ k}\Omega$ is to be measured using a voltmeter of sensitivity $2\text{ k}\Omega/\text{V}$ and the range of the meter is $0\text{--}150\text{ V}$. Determine the reading of the voltmeter in each case and the percentage error in the measurement.

[5]

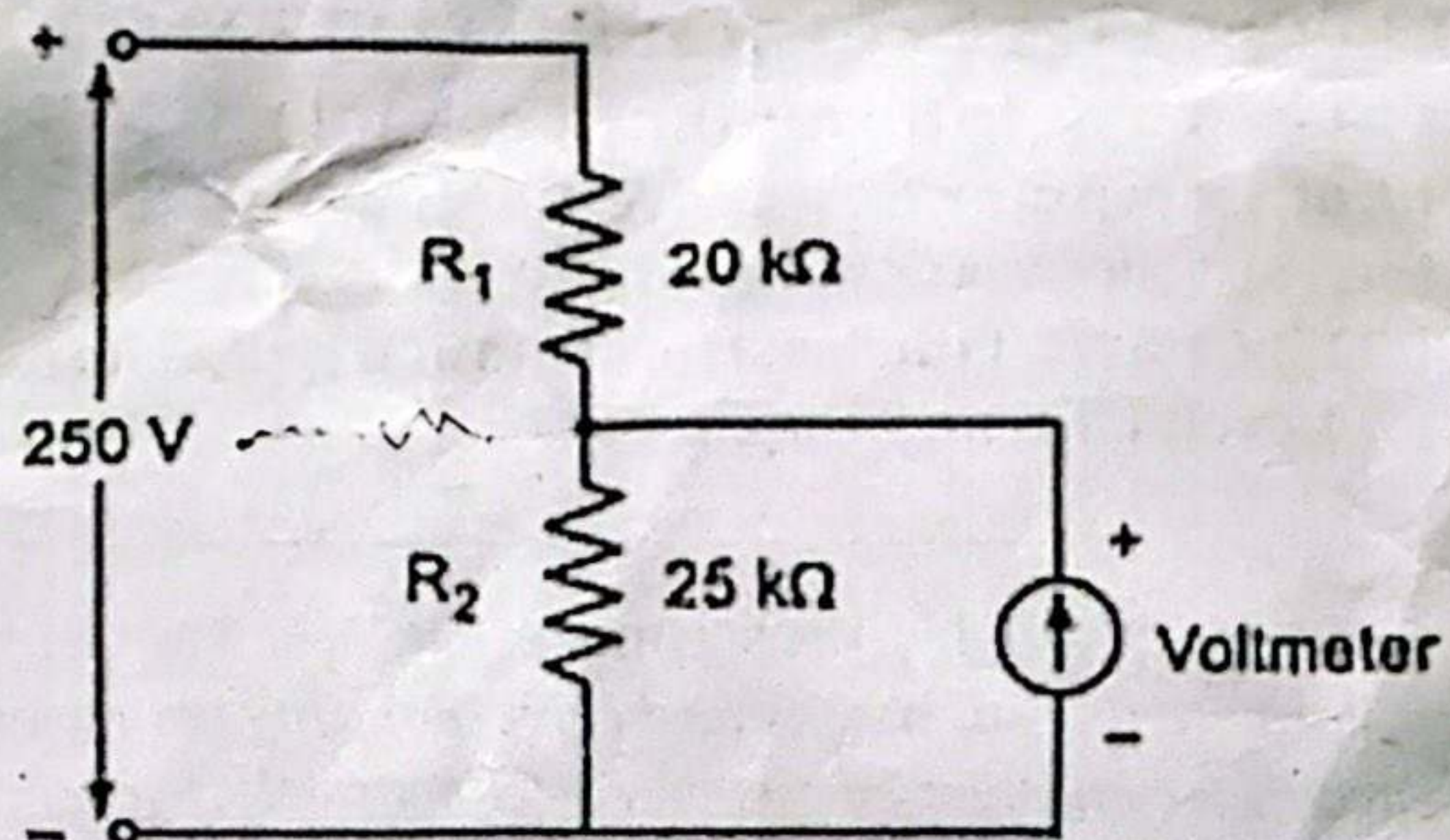


Figure 3(b)