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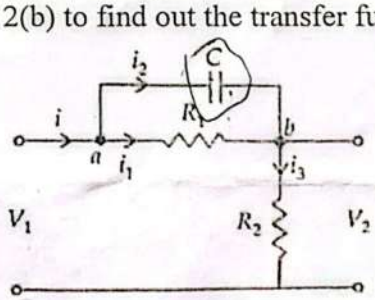
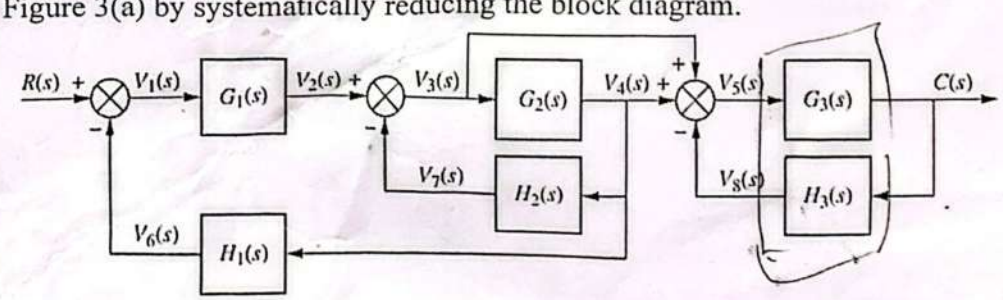
Daffodil International University

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]	
	b)	Solve the circuit in Figure 2(b) to find out the transfer function, $V_2(s)/V_1(s)$.  Figure 2(b)	[5]	**CO2**
3.	*a)*	Design the equivalent single transfer function of the control system shown in Figure 3(a) by systematically reducing the block diagram.  Figure 3 (a)	[5]	**CO3**

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	b)	In the circuit shown in Figure 3(b), the voltage across the resistor of value 25 kΩ is to be measured using a voltmeter of sensitivity 2 kΩ/V and the range of the meter is 0-150 V. Determine the reading of the voltmeter in each case and the percentage error in the measurement.	[5]	

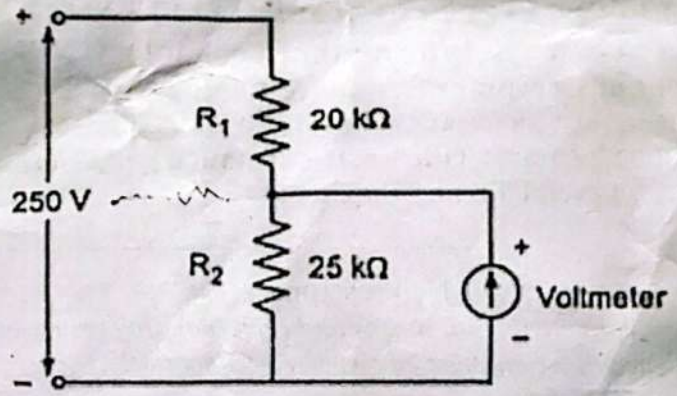


Figure 3(b)