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Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

Eighth Semester B.Tech Degree (S, FE) Examination June 2023 (2015 Scheme)

Course Code: EE404

Course Name: INDUSTRIAL INSTRUMENTATION AND AUTOMATION

Max. Marks: 100 Duration: 3 Hours

PART A

Answer all questions, each carries 5 marks. Marks

1		List any five factors influencing choice of transducers.	(5)
2		Explain the concept of Nano instrumentation.	(5)
3		How can you realize a resistor using switched capacitor circuits? Explain with suitable diagram.	(5)
4		Explain MEMS accelerometer.	(5)
5		Explain the characteristic features of shape memory alloy.	(5)
6		Which are the various types of automation used in industrial process?	(5)
7		Explain distributed control system.	(5)
8		What are the main components of SCADA?	(5)

PART B

Answer any two full questions, each carries 10 marks.

9	a)	Draw the block diagram representation of a process control system and explain the function of each block.	(6)
	b)	Draw and explain second order sensor time response.	(4)
10	a)	List any three advantages and disadvantages each of Capacitive Differential Pressure Transducer.	(6)
	b)	With the help of a diagram explain the working of an eddy current sensor.	(4)
11	a)	Explain the factors that govern the input characteristics of a transducer.	(5)
	b)	With neat diagram explain the working of a LVDT transducer.	(5)

PART C

Answer any two full questions, each carries 10 marks.

12	a)	With the circuit diagram of a charge amplifier explain how it enables measurement of electrical charge.	(6)
	b)	Give the methods to minimize noise problems in instrumentation.	(4)

13	a)	Explain Bulk micromachining fabrication of MEMS.	(5)
	b)	Explain the concept of graphical programming in virtual instruments.	(5)
14	a)	Explain the principle of operation of phase sensitive detector.	(5)
	b)	Compare dry and wet etching process.	(5)

PART D

Answer any two full questions, each carries 10 marks.

15	a)	Describe various electrical actuators used in Automation.	(6)
	b)	Give the classification of control valves.	(4)
16	a)	Draw the PLC ladder diagrams to realize two input AND, OR and XOR gates.	(5)
	b)	Explain different types of Timers used in PLC.	(5)
17	a)	With the help of a block diagram explain the working of an automated system.	(5)
	b)	Compare PLC and PC.	(5)

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