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P.E.S. College of Engineering, Mandya - 571 401
(An Autonomous Institution affiliated to VTU, Belagavi)
Third Semester, B.E. - Electronics and Communication Engineering
Semester End Examination; Dec. - 2019
Electronic Instrumentation

Time: 3 hrs

Max. Marks: 100

Note: i) PART - A is compulsory. **Two** marks for each question.ii) PART - B: Answer any **Two** sub questions (from a, b, c) for Maximum of **18 marks** from each unit.

Q. No.	Questions	Marks
I : PART - A		10
I a.	Define the term instrumentation errors.	2
b.	List the limitations of Wheatstone's bridge.	2
c.	What are the advantages of thermistor?	2
d.	Compare the difference between Instrumentation amplifiers and ordinary Op-Amp.	2
e.	State the advantages of dual trace over dual beam CRO.	2
II : PART - B		90
UNIT - I		18
1 a.	Define the following terms as applied an electronic instrument:	9
	i) Accruing and Precision ii) Resolution iii) Significant figure	
b.	Explain then working principle of a dual slope type DVM.	9
c.	i) Calculate the value of the multiplier resistance on the 50 V range of a DC voltmeter that uses a 200 μ A meter movement with an internal resistance of 100 Ω .	4
	ii) Explain the working of a true RMS voltmeter with the help of a suitable block diagram.	5
UNIT - II		18
2 a.	Derive the balance equation of Kelvin's bridge and discuss its operation.	9
b.	Derive the equation to measure and inductive impedance of a Maxwell's bridge and also find the series equivalent of the unknown impedance If the bridge constants at balance are $C_1 = 0.01 \mu\text{F}$, $R_1 = 470 \text{ k}\Omega$, $R_2 = 5.1 \text{ k}\Omega$, $R_3 = 100 \text{ k}\Omega$.	9
c.	Write a note on Wagner's earth (ground) connection.	9
UNIT - III		18
3 a.	Explain the resistance thermometer and their advantages.	9
b.	Explain the working of LVDT with the help of neat sketch and characteristics.	9
c.	Derive the $K = 1+2\mu$ for gauge factor.	9

Contd...2

UNIT - IV**18**

- 4 a. Explain the working of RF heterodyne wave analyzer. 9
- b. Describe the operations of differential instrumentation amplifier using transducer bridge. 9
- c. Explain the working of RF spectrum analyzer. 9

UNIT - V**18**

- 5 a. Sketch and explain the block diagram of delayed time base oscilloscope and the system wave forms. 9
- b. Explain with block diagram of system waveforms for the sweep frequency generator. 9
- c. Explain with a block diagram the frequency synthesizer using a PLL system. Also draw the PLL system waveforms. 9

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