

17EC32

Visvesvaraya Technological University, Belagavi

MODEL QUESTION PAPER

3<sup>rd</sup> Semester, B.E (CBCS) EC/TC

Course: 17EC32- Electronic Instrumentation, *Set No. 2*

Time: 3 Hours

Max. Marks: 100

Note: (i) Answer Five full questions selecting any one full question from each Module.  
(ii) Question on a topic of a Module may appear in either its 1<sup>st</sup> or 2<sup>nd</sup> question.

Module-1			
1	(a)	List and explain the types of measurement errors.	8
	(b)	What is loading effect? Find the voltage reading and % error of each reading obtained with a voltmeter on (i) 5V range (ii) 10V range , if the instrument has a $20K\Omega/V$ sensitivity and is connected across $R_b=5K\Omega$ , $R_a=45K\Omega$ and applied voltage $V=50V$ .	8
	(c)	Explain Multi-range Ammeters with a neat diagram.	4
OR			
2	(a)	Explain (i) Accuracy (ii) Precision (iii) Significant Figures with example.	6
	(b)	Calculate the value of multiplier resistance for the multiple range dc voltmeter circuit having $I_m=50\mu A$ , $R_m=1K\Omega$ , $V_1=3V$ , $V_2=10V$ and $V_3=30V$ .	4
	(c)	What is Thermocouple? Explain different types of Thermocouples.	10
Module-2			
3	(a)	Explain in detail the Dual Slope Integrating type DVM with neat diagrams.	10
	(b)	Explain in detail the Digital Frequency Meter with neat diagrams.	10
OR			
4	(a)	Explain in detail the Successive Approximation ADC with neat diagrams.	10
	(b)	Explain in detail the Digital Measurement of time with neat diagrams.	10
Module-3			
5	(a)	Explain in detail all the features of CRT.	7
	(b)	Explain in detail the operation of Function Generator with a neat diagram.	7
	(c)	Explain in detail the operation of a Time Base Generator with a neat diagram.	6
OR			
6	(a)	Explain in detail the block diagram of CRO with a neat diagram.	8
	(b)	Explain in detail the operation of AF sine and square wave generator with a neat diagram.	6
	(c)	Explain the measurement of frequency by Lissajous method with a neat diagram.	6
Module-4			
7	(a)	Explain in detail the Impedance measurement using Q meter with neat diagrams.	8
	(b)	Explain in detail the Unbalanced Wheatstone's Bridge with a neat diagram.	8
	(c)	Explain in detail the Stroboscope with a neat diagram.	4

		<b>OR</b>	
8	(a)	Explain in detail the Wien's Bridge with a neat diagram.	8
	(b)	Explain in detail the Phase meter with neat diagrams.	8
	(c)	The first measurement is at $f_1=1\text{MHz}$ and $C_1=500\text{PF}$ . The second measurement is at $f_2=2\text{MHz}$ and $C_2=110\text{PF}$ . Find the distributed capacitance. Also calculate the value of L.	4
		<b>Module-5</b>	
9	(a)	Explain the parameters and advantages of a Transducers.	10
	(b)	Explain in detail the Bonded Resistance Wire Strain Gauges with a neat diagram. And derive expression for the Gauge factor $K=1+2\mu$ .	10
		<b>OR</b>	
10	(a)	Explain in detail the Resistance Thermometer with neat diagrams and list the advantages of Resistance Thermometer.	10
	(b)	Explain in detail the Piezoelectric transducers.	6
	(c)	List the advantages of LVDT.	4

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