Reg. No. : | | | | | | | | | | |

Question Paper Code: U3405

B.E./B.Tech. DEGREE EXAMINATION, NOV 2023

Third Semester

Electrical and Electronics Engineering

21UEE405-ELECTRICAL MEASUREMENT AND INSTRUMENTATION

(Regulations 2021)

Duration: Three hours Maximum: 100 Marks

Answer All Questions

PART A - (10 x 2 = 20 Marks)

1.	Outline the block diagram of functional elements of measurement system	CO1 -U
2.	Compare Resolution and precision	CO1 -U
3.	A 500V voltmeter is specified to be accurate within 1.5% at full scale. Calculate the limiting error when the instrument is used to measure a voltage of 200V.	CO2 -App
4.	Illustrate the reason for using MI instruments on both A.C and D.C	CO2- U
5.	A Wheatstone bridge consists of the following parameters. R1=12KΩ, R2 = 16KΩ and R3 = 42KΩ. Find the unknown resistance R4.	CO3 -App
6	Obtain the balanced equation of Kelvin double bridge with a neat sketch.	C03- U
7	Compare LED and LCD.	CO4 -U
8	Enumerate the merits and demerits of pulse width modulation recording.	CO4-U
9	An LVDT produces an rms output voltage of 2.6 V for displacement of 0.4μm. Calculate the sensitivity of LVDT.	CO5-App
10	Explain active Transducer?	CO5- U

PART – B (5 x 16= 80Marks)

11.	(a)	If a set of six observations are as follows: 1.5V, 3V, 1V, 5V, 2V, 4V. Calculate the arithmetic mean, average deviation, standard deviation	CO2- App	(16)

Or

	(b)	If the rms value of reading in volts are observed in a digital CRO, were 3.5, 3.452, 3.620, 3.523 Calculate i) Arithmetic mean ii) Deviation iii) Average deviation iv) Standard deviation	CO2- App	(16)
12.	(a)	Explain the construction and working of moving coil instruments and derive the equation for deflection.	CO1- U	(16)
		Or		
	(b)	Explain the construction and working of Moving iron instruments and derive the equation for deflection.	CO1- U	(16)
13.	(a)	Illustrate the construction and working of laboratory type DC potentiometer.	CO1- U	(16)
		Or		
	(b)	Explain the circuit of Maxwell bridge used for measurement of inductance and also derive the condition for balance	CO1- U	(16)
14.	(a)	Explain the internal structure of CRT and describe the principle of electrostatic focusing.	CO1- U	(16)
		Or		
	(b)	Explain the in detail about X-Y Recorder with a neat sketch.	CO1- U	(16)
15.	(a)	Express the performance parameters of Digital to Analog Converter. Also Explain R-2R ladder in DAC.	CO1- U	(16)
		Or		
	(b)	Explain the construction and working of LVDT with a neat sketch.	CO1- U	(16)