Reg. No.												

Question Paper Code	12086

B.E. / B.Tech. - DEGREE EXAMINATIONS, APRIL / MAY 2023

Third Semester

Electronics and Instrumentation Engineering

(Common to Instrumentation and Control Engineering)

20EIPC301 - ELECTRICAL AND ELECTRONIC MEASUREMENTS

(Regulations 2020)

Duration: 3 Hours | Max. Marks: 100

PART-A (10 × 2 = 20 Marks)

Answer ALL Questions

		Marks, K-Level, CO
1.	Name the types of instruments used for making voltmeter and ammeter.	2,K1,CO1
2.	What are the sources of errors in ac bridge measurements?	2,K1,CO1
3.	Write the special features to be incorporated for LPF wattmeter.	2,K1,CO2
4.	Name the constructional parts of induction type energy meter.	2,K2,CO2
5.	What is the standardization of potentiometer?	2,K2,CO3
6.	Define Instrument Transformer.	2,K1,CO3
7.	What are the applications of function generators?	2,K2,CO4
8.	State the advantages of digital voltmeters.	2,K1,CO4
9.	Write the characteristics of Data Logger.	2,K1,CO5
10.	What are the applications of storage oscilloscope?	2,K1,CO5

PART - B (5 × 13 = 65 Marks)

Answer ALL Questions

11.	a)	How the range of DC ammeter and DC voltmeter can be extended. Derive the expression to find the shunt resistance and multiplier resistance?	13,K2,CO1
		OR	
	b)	Explain how a Maxwell bridge can be used for measuring an unknown inductance.	13,K2,CO1
12.	a)	Explain the construction and theory of a single-phase induction type energy meter. Show that number of revolutions in time t is proportional to energy supplied.	13,K2,CO2
		OR	
	b)	With a neat diagram explain the construction and working of electrodynamometer type wattmeter.	13,K2,CO2

13. a) Explain the working principle of AC potentiometer. State the applications of AC potentiometer. *13,K2,CO3*

OR

b) Draw the equivalent circuit and phasor diagram of a current transformer. Derive the expression for ratio and phase angle errors. *13,K2,CO3*

14. a) Draw the circuit diagram and explain the working of a heterodyne type wave analyzer. *13,K2,CO4*

OR

b) Describe with diagram the operation of a digital LCR meter. *13,K2,CO4*

15. a) Draw the block diagram of a general purpose oscilloscope (CRO) and explain function of each block in detail. *13,K2,CO5*

OR

b) Explain the theory of LCD displays. Compare LCD displays with LED displays. *13,K2,C*

PART - C (1 × 15 = 15 Marks)

16. a) Explain with labeled sketches the working of function generator with the help of labeled block diagram. *15,K2,CO4*

OR

b) A moving coil instrument gives full scale deflection of 24 mA. When P.D. across it is 72 mV. Determine the value of: *15,K2,CO1*

(i) Series resistance for full scale deflection of 600 V.

(ii) Find the power consumption in meter.