Reg. No.															

Question Paper Code	13676

B.E. / B.Tech. - DEGREE EXAMINATIONS, APRIL / MAY 2025

Third Semester

Electronics and Instrumentation Engineering

20EIPC301 - ELECTRICAL AND ELECTRONIC MEASUREMENTS

Regulations - 2020

Duration: 3 Hours | Max. Marks: 100

PART - A (MCQ) (10 × 1 = 10 Marks)

Answer ALL Questions

		Marks	K – Level	CO
1.	Which of the following is the most popular method for measuring low resistance? (a) Potentiometer method (b) ammeter-voltmeter method (c) Kelvin double bridge method (d) Ducter ohmmeter method.	1	K1	CO1
2.	What is the primary application of the Anderson bridge? (a)Measuring high resistance (b) Measuring low resistance (c) Measuring inductance (d) Measuring capacitance.	1	K1	CO1
3.	What is a common source of error in electrodynamometer measurements? (a) Thermal noise (b) Stray capacitance (c) Frequency variation (d) Temperature changes affecting coil resistances.	1	K1	CO2
4.	What is a primary advantage of using smart meters over traditional energy meters? (a)They require manual meter readings (b) They provide real time energy consumption data (c) They are less accurate in measuring energy usage (d) They are more expensive to install.	1	K1	CO2
5.	The resistances of potential transformer winding is minimized by using (a) Thick conductors and small length of turns (b) Thin conductors and small length of turns (c) Thin conductors and large length of turns (d) Thick conductors and large length of turns.	1	K1	CO3
6.	Which of the following applications is done by only A.C Potentiometer compared to DC potentiometer? (a) Measurement of current (b) Measurement of resistance (c) Measurement of voltage (d) Measurement of core loss.	1	K1	CO3
7.	Quantities are digitized using (a) D/A converter (b) Oscillator (c) Amplifier (d) A/D converter.	1	K1	CO4
8.	What is the primary function of a wave analyzer? (a) Measure the voltage of a signal (b) Measure the frequency of a signal (c) Analyze the harmonic components of a signal (d) Generate a sine wave.	1	K1	CO4
9.	What is a common application for a seven segment display? (a) Television (b) Calculators (c) Computer monitors (d) Mobile phones.	1	K1	CO5
10.	Which type of memory is generally used in data loggers for data storage? (a)RAM (b) ROM (c) Flash memory (d) Magnetic Disks.	1	K1	CO5

PART - B (12 × 2 = 24 Marks)

Answer ALL Questions

11.	Obtain the expression for unknown resistance in Wheatstone bridge.	2	K2	CO1
12.	What are the sources of errors in ac bridge measurements?	2	K1	CO1
13.	Why PMMC meters are not suitable for AC measurement?	2	K2	CO1
14.	Define Phantom loading.	2	K1	CO2

15.	Differentiate between current coil and pressure coil of electrodynamometer type wattmeter.		*2*	*K2*	*CO2*
16.	What are the advantages of smart energy meters?		*2*	*K2*	*CO2*
17.	Define the term standardization in potentiometer.		*2*	*K1*	*CO3*
18.	Indicate the functions of instrument transformers.		*2*	*K1*	*CO3*
19.	List the methods available for frequency measurements.		*2*	*K1*	*CO4*
20.	Define Q meters.		*2*	*K1*	*CO4*
21.	List out the advantages of LED.		*2*	*K2*	*CO5*
22.	Mention the functions of a data logger.		*2*	*K2*	*CO5*

PART - C (6 × 11 = 66 Marks)

Answer ALL Questions

23.	a)	Describe with neat diagram the construction and working of attraction and repulsion type Moving Iron Instruments.	*11*	*K2*	*CO1*
		OR			
	b)	Explain how a Maxwell bridge can be used for measuring an unknown inductance.	*11*	*K2*	*CO1*
24.	a)	Explain the construction and working of single phase induction type energy meter.	*11*	*K2*	*CO2*
		OR			
	b)	Discuss the Errors Caused and Remedies of Electrodynamometer type wattmeter.	*11*	*K2*	*CO2*
25.	a)	Draw the circuit diagram of Crompton's potentiometer and explain its working. Describe the steps used when measuring an unknown resistance.	*11*	*K2*	*CO3*
		OR			
	b)	Explain the working principle of Current transformer with neat diagram and draw the phasor diagram.	*11*	*K2*	*CO3*
26.	a)	Explain the working of successive approximation type DVM in detail.	*11*	*K2*	*CO4*
		OR			
	b)	Explain with neat diagram about Microprocessor based DMM with auto ranging and self diagnostic features.	*11*	*K2*	*CO4*
27.	a)	Explain about XY recorders with neat diagram.	*11*	*K2*	*CO5*
		OR			
	b)	Draw the block diagram of Cathode ray oscilloscope and explain function of each block in detail.	*11*	*K2*	*CO5*
28.	a) (i)	Explain the working of the function generator.	*6*	*K2*	*CO4*
	(ii)	Compare LCD display with LED displays.	*5*	*K2*	*CO5*
		OR			
	b) (i)	Explain the working principle of LCR meters.	*6*	*K2*	*CO4*
	(ii)	Explain about IOT Enabled recorders in detail.	*5*	*K2*	*CO5*