QP Code: RA23BTECH152 | Reg. No | | | | | | | | | | | AY 23

Gandhi Institute of Engineering and Technology University, Odisha, Gunupur
(GIET University)

B. Tech (Sixth Semester - Regular) Examinations, April 2026

23BELPC36001 / 23BEEPC36001 – Electrical & Electronics Measurement

(EE / EEE)

Time: 3 hrs | Maximum: 60 Marks

Answer ALL questions

(The figures in the right hand margin indicate marks)

PART – A **(2 x 5 = 10 Marks)**

Q.1. Answer ***ALL*** questions	CO #	Blooms Level
a. Why are electrodynamometer instruments used as Wattmeters?	CO1	K1
b. Define significant figures in measurement systems?	CO2	K1
c. What type of inductance is measured by Maxwell's bridge?	CO3	K1
d. Explain the Seebeck effect in thermocouples.	CO4	K1
e. State any two advantages of digital voltmeters over analog voltmeters.	CO5	K1

PART – B **(10 x 5 = 50 Marks)**

Answer ***ALL*** the questions	Marks	CO #	Blooms Level
2. a. Describe the construction and working principle of an electrodynamometer wattmeter.	5	CO1	K2
b. In a Kelvin Double bridge, the arm resistances are given As follows: The standard resistance = 100 μΩ, inner ratio arm resistances: 102Ω, 200Ω respectively, outer ratio arm resistances: 105Ω and 230Ω respectively. The resistance of connecting lead from standard to unknown resistance is 720 μΩ. Calculate the unknown resistance.	5	CO1	K3
(OR)			
c. Explain the construction and working principle of single-phase induction type energy meter.	5	CO1	K2
d. In a Maxwell's Inductance-Capacitance bridge the arms containing only resistance value are given by 30 Ω and 50 Ω respectively. The arm containing RC parallel impedance has resistance = 20 Ω at capacitance of 0.3 μF. Find the impedance of the coil.	5	CO1	K3
3.a. Explain the construction, working, and applications of Kelvin's Double Bridge. Derive the balance equation.	5	CO2	K2
b. Explain the construction and working of Schearing Bridge. Derive the balance equation.	5	CO2	K2
(OR)			
c. Explain the working principle, construction, and applications of a strain gauge. Include how it converts mechanical strain into an electrical signal.	5	CO2	K2
d. Explain the working and applications of optical transducers. Include different types of optical sensing methods used in measurement systems.	5	CO2	K2
4.a. Explain the principle and working of a Megger used for insulation resistance measurement.	5	CO3	K2
b. Discuss the working principle and applications of a thermocouple with neat	5	CO3	K2

	diagram.			
	(OR)			
c.	How LVDT is used for the displacement measurement? Explain with a suitable diagram.	5	CO3	K2
d.	Explain the working principle of capacitive and piezoelectric transducers.	5	CO3	K2
5.a.	What is CRO? Explain the working principle of CRO with Suitable diagram	5	CO4	K2
b.	How the current transformer is used in power system? Explain the working of a CT with suitable diagram.	5	CO4	K2
	(OR)			
c.	How the Potential transformer is used in power system? Explain the working of a PT with suitable diagram.	5	CO4	K2
d.	Explain the principle of True RMS measurement system with appropriate diagram.	5	CO4	K2
6.a.	Explain D'Arsonval Galvanometer with the related torque equation.	5	CO5	K2
b.	Define Power Factor. Briefly explain the working principle of power factor meter.	5	CO3	K2
	(OR)			
c.	Explain the working principle and torque equation of Attraction type MI instrument.	5	CO5	K2
d.	Define frequency of an AC quantity? Explain the working principle of vibrating reed type frequency meter.	5	CO5	K2

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