

BONAM VENKATA CHALAMAYYA INSTITUTE OF TECHNOLOGY & SCIENCE
(AUTONOMOUS)

III - B.Tech I-Semester Supplementary Examinations (BR23), Mar/Apr - 2026

Electronic Measurements and Instrumentation (ECE)

Time: 3 hours

Max. Marks: 70

Question Paper consists of Part-A and Part-B
Answer ALL the question in Part-A and Part-B

PART-A (10X2 = 20M)

	Marks	CO	BL
1. a) How PMMC meter can be used as Voltmeter and Ammeter	(2M)	CO1	L1
b) Define the term instruments and give the function of ohmmeter.	(2M)	CO1	L1
c) What is the function of electronic switch	(2M)	CO2	L2
d) Explain the functions of various controls on the front panel of a CRO.	(2M)	CO2	L2
e) Calculate the R4 if the bridge arms are connected with R1 = 2.2 K, R2 = 3.9 K, R3 = 10 K	(2M)	CO3	L5
f) Write the limitations of AC bridge	(2M)	CO3	L1
g) Describe about fixed AF oscillator and variable AF oscillator	(2M)	CO4	L3
h) Define sweep generator	(2M)	CO4	L1
i) Define a transducer and difference between active and passive transducers.	(2M)	CO5	L4
j) List the applications of LVDT	(2M)	CO5	L1

PART-B (5X10 = 50M)

2a. Explain the working of a basic DC Voltmeter. How can its range be extended?	10(M)	CO1	L2
(OR)			
3a. What are the numerous types of errors in measurement? Explain briefly	5(M)	CO1	L2
b. A PMMC instrument with a full-scale deflection of 100 μ A and internal resistance of 2000 Ω is available. It is to be converted into 0-5V, 0-10v, 0-25v and 0-50v multi range voltmeter using individual multiplier resistors for each range. Calculate the values of the individual resistors.	5(M)	CO1	L5
4a. Draw the block diagram of a general-purpose oscilloscope (CRO) and explain function of each block in detail.	10(M)	CO2	L2
(OR)			
5a. Draw the block diagram of Delay line circuit and explain its working	5(M)	CO2	L2
b. Compare Dual beam CRO and Dual Trace CRO with examples	5(M)	CO2	L4

- 6a. What is Bridge? Compare the AC and DC Bridges with examples. 5(M) CO3 L4
- b. Describe the operation of the Wheatstone bridge and derive the expression for DC resistance 5(M) CO3 L3
- (OR)
- 7a. A Maxwell's bridge is used to measure inductive impedance. The bridge constants at balance are $C1=0.01\mu\text{f}$; $R1=470\text{K}\Omega$; $R2=1\text{K}\Omega$ and $R3=20\text{K}\Omega$. Find the series equivalent of the unknown impedance 5(M) CO3 L5
- b. Derive the expression for current when the bridge is balanced. 5(M) CO3 L4
- 8a. Explain the operation of square and pulse wave generator with a neat diagram 10(M) CO4 L2
- (OR)
- 9a. Define signal generator. Explain the working of a standard sweep generator with diagram 10(M) CO4 L2
- 10a. Describe the operation of capacitive transducers. 5(M) CO5 L3
- b. Compare the active and passive transducers. 5(M) CO5 L4
- (OR)
- 11a. Define Sensor? Describe in detailed about Smart sensor 5(M) CO5 L4
- b. Explain the concept of compensating intelligent sensors 5(M) CO5 L2
