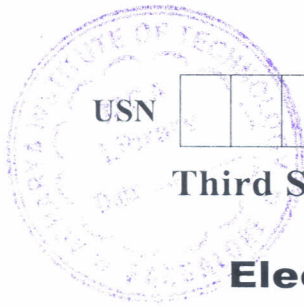


# CBCS SCHEME



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BEE306B

## Third Semester B.E./B.Tech. Degree Supplementary Examination, June/July 2024

### Electrical Measurements and Instrumentation

Time: 3 hrs.

Max. Marks: 100

*Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.  
2. M : Marks , L: Bloom's level , C: Course outcomes.*

Module – 1			M	L	C
Q.1	a.	With block diagram, explain elements of generalized measurement system.	10	L2	CO1
	b.	Explain mechanical, electrical and electronic instruments.	10	L2	CO1
<b>OR</b>					
Q.2	a.	Explain the functions and applications of measurement systems.	10	L2	CO1
	b.	With block diagram, explain generalized input-output configuration of measurement systems.	10	L2	CO1
<b>Module – 2</b>					
Q.3	a.	List the limitations of Wheatstone bridge and explain how low resistance is measured by Kelvin's double bridge.	10	L2	CO2
	b.	Discuss the fall of potential method of measurement of earth resistance.	04	L2	CO2
	c.	A Maxwell's capacitance bridge shown in Fig.Q3(c) is used to measure an unknown inductance in comparison with capacitance. The various values at balance $K_2 = 400 \Omega$ , $R_3 = 600 \Omega$ , $R_4 = 1000 \Omega$ , $C_4 = 0.5 \mu\text{F}$ . Calculate the values of storage (Q) factor of coil if frequency is 1000 Hz.	06	L3	CO2
<p style="text-align: center;">Fig.Q3(c)</p>					
<b>OR</b>					
Q.4	a.	Describe the working of De Sauty's bridge. Derive the equation for capacitance and dissipation factor. Draw the phasor diagram of the bridge under balance conditions.	12	L3	CO2
	b.	With neat circuit diagram, explain the operation of Schering bridge.	08	L2	CO2
<b>Module – 3</b>					
Q.5	a.	Explain construction of instrument transformer.	08	L2	CO3
	b.	Explain the characteristics of current transformer.	04	L2	CO3
	c.	Explain the measurement of flux density using search coil.	08	L2	CO3

OR

Q.6	a.	Explain the construction and working of potential transformer.	08	L2	CO3
	b.	Write a note on turns compensation used in instrument transformers.	04	L2	CO3
	c.	What is potential transformer? Explain difference between current transformer and potential transformer.	08	L2	CO3

Module – 4

Q.7	a.	With block diagram, explain the working of true R.M.S. responding voltmeter.	08	L2	CO4
	b.	List the advantages of electronic voltmeter over conventional energy meter.	06	L2	CO4
	c.	With neat block diagram, explain the working of successive approximation DVM.	06	L2	CO1

OR

Q.8	a.	With neat block diagram, explain the principle of working of electronic energy meter.	08	L2	CO4
	b.	With neat sketch, explain the working of the Q-meter.	06	L2	CO4
	c.	List the performance characteristics of a digital voltmeter.	06	L2	CO4

Module – 5

Q.9	a.	Write a short note on Nixie tube.	06	L2	CO4
	b.	Explain LED and LCD displays.	08	L2	CO4
	c.	Write a short note on liquid vapor and visual displays.	06	L2	CO4

OR

Q.10	a.	Write a short note on strip chart recorder.	08	L2	CO4
	b.	With a neat sketch, explain Bridge type recorders.	06	L2	CO4
	c.	Write a short note on Null balance recorder.	06	L2	CO4

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