BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: BTECH. **SEMESTER : III**
BRANCH: EEE **SESSION : MO/2024**

SUBJECT: EE201 ELECTRICAL MEASUREMENT AND INSTRUMENTATION

TIME: 3 Hours **FULL MARKS: 50**

INSTRUCTIONS:
1. The question paper contains 5 questions each of 10 marks and total 50 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
***4*. Before attempting the question paper, be sure that you have got the correct question paper.**
5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.

			CO	BL
Q.1(a)	Differentiate between the terms 'Scale Range' and 'Scale Span' giving suitable examples. What are the basic blocks of a Generalized Measurement System. Draw the various blocks and explain their functions.	[5]	1	2
Q.1(b)	What are gross errors. How can gross errors be avoided. The limiting errors for a four dial resistance box are: Units: ± 0.2%, Tens: ± 0.1%, Hundreds: ± 0.05%, Thousands: ± 0.02%. If the resistance value is set at 3425 Ω, calculate the limiting error in the resistance value.	[5]	1	5
Q.2(a)	Why is damping torque required in an analog indicating instrument. Describe any one method of producing damping torque with a diagram. Describe the constructional details and working of a repulsion type moving iron instrument.	[5]	2	2
Q.2(b)	Describe the constructional details and working of a single phase electrodynamometer type of power factor meter for measurement of power factor.	[5]	2	2
Q.3(a)	Draw the diagram of a basic slide wire potentiometer. Explain the procedure for standardization of the potentiometer. Describe the working of a low voltage Schering bridge. Derive the equations for capacitance and dissipation factor.	[5]	3	6
Q.3(b)	Draw the circuit of a Kelvin's Double Bridge used for measurement of low resistances. Derive the condition for balance.	[5]	3	2
Q.4(a)	What is the function of a time base generator in a CRO. Explain with a diagram. Explain the theory and working of an LED.	[5]	4	2
Q.4(b)	Explain with suitable circuit diagram the working of an XY recorder. Write two of its applications.	[5]	4	2
Q.5(a)	Explain the different principles of working of capacitive transducers. Derive the expression where required.	[5]	5	2
Q.5(b)	What are active and passive transducers. Give examples. Explain the principle of working and constructional details of a photo-voltaic cell.	[5]	5	6

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