BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(MID SEMESTER EXAMINATION MO/2024)

CLASS: BTech **SEMESTER : III**
BRANCH: EEE **SESSION : MO/2024**

SUBJECT: EE201 ELECTRICAL MEASUREMENT AND INSTRUMENTATION

TIME: 02 Hours **FULL MARKS: 25**

INSTRUCTIONS:
1. The question paper contains 5 questions each of 5 marks and total 25 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
***4*. Tables/Data handbook/Graph paper etc., if applicable, will be supplied to the candidates**

			CO	BL
Q.1(a)	Distinguish between direct and indirect methods of measurement. Cite examples to support your answer.	[2]	1	2
Q.1(b)	Define accuracy, precision and sensitivity for a measuring instrument. Give an example or a graph for each.	[3]	1	2
Q.2(a)	Three resistors have the following ratings: R_1 = 200 Ω ± 3%, R_2 = 100 Ω ± 4%, and R_3 = 50 Ω ± 5%. Determine the magnitude of resultant resistance and the limiting errors in percentage and in ohm if the above resistances are connected in series.	[2]	1	4
Q.2(b)	Systematic errors can be classified as instrumental errors. Discuss the different types of instrumental errors giving suitable examples. Explain the measures taken to minimize these errors.	[3]	1	2
Q.3(a)	A 0-10 A ammeter has a guaranteed accuracy of 1.5% of full scale reading. The current measured by the instrument is 2.5 A. Calculate the limiting values of current and the percentage limiting error.	[2]	1	3
Q.3(b)	Starting from the dimensions of M, L, T and μ derive the dimensions of potential difference, capacitance and inductance in electromagnetic system of units.	[3]	1	2
Q.4(a)	Define the terms recording instruments and integrating instruments. Give examples of each case.	[2]	2	2
Q.4(b)	Describe the working and constructional details of an attraction type moving iron instrument.	[3]	2	2
Q.5	Describe the constructional details and working of an electrodynamometer type instrument. Derive the equation for deflection under a.c. operation if the meter is spring controlled.	[5]	2	2

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