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

CLASS: BTECH **SEMESTER : V**
BRANCH: MECHANICAL **SESSION : MO/2025**

SUBJECT: ME357 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)	Explain why calibration is necessary for measurement.	[2]	1	1
Q.1(b)	The following measurements of the freezing point of aluminum were made using a platinum/rhodium thermocouple 658.2, 659.8, 661.7, 662.1, 659.3, 660.5, 657.9, 662.4, 659.6, 662.2. Find (a) mean of deviation (b) the mean, (c) the standard deviation, and (d) the variance of the measurements.	[3]	1	3
Q.2(a)	Enumerate statics characteristics for instruments.	[2]	1	2
Q.2(b)	Explain the difference between systematic and random errors. What are the typical sources of these two types of errors.	[3]	1	2
Q.3(a)	Outline the basic industrial application of measurement.	[2]	1	2
Q.3(b)	With neat sketch describe Bourden tube Pressure gauge.	[3]	1	2
Q.4(a)	A capacitive transducer uses two quartz diaphragms of area 675mm^2 separated by a distance of 3.8mm.A pressure of 850KN/m^2 when applied to top diaphragms produces a deflection of 0.55mm.The capacitance is 330Pf when no pressure is applied to diaphragms. Determine value of capacitance after application of pressure of 850KN/m^2.	[2]	2	2
Q.4(b)	Demonstrate capacitive transducer. Give its specific application.	[3]	2	3
Q.5(a)	Illustrate the classification for transducer.	[2]	2	2
Q.5(b)	Outline the basics of inductance transducer.	[3]	2	2

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