BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(MID SEMESTER EXAMINATION SP2023)

CLASS: BTECH   SEMESTER : VI
BRANCH: MECHANICAL   SESSION : SP2023

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)	What is the difference between accuracy and Precision? Give Examples.	[2]	1	L
Q.1(b)	Explain about static characteristics of measurement? What are the types of measurement? Give Examples.	[3]	2	M
Q.2(a)	What do mean by static characteristics of Instruments? Give Examples.	[2]	1	L
Q.2(b)	With the help of Line and block diagram explain the three stages generalized measurement system. Give examples.	[3]	2	M
Q.3(a)	What do you mean by dynamic characteristics of instruments? Give Examples.	[2]	1	L
Q.3(b)	Distinguish between electrical and mechanical Transducers?	[3]	2	L
Q.4(a)	Explain briefly error classifications in measurement.	[2]	1	L
Q.4(b)	By using a micrometer the following reading were taken of a certain physics length	[3]	2	M

1.34, 1.38, 1.56, 1.47, 1.42, 1.44, 1.53 1.48, 1.40, 1.59 mm

Assuming the random errors are present calculate the following :

     (i)   Arithmetic mean
     (ii)   Average deviation
     (iii)   Standard deviation
     (iv)   Variance

| Q.5(a) | Write short Notes on (i) Digital Instruments (ii) Analog Instruments | [2] | 1 | L |
| Q.5(b) | Define: (i) Amplification | [3] | 2 | M |

        (ii) Impedance
        (iii) Filters