BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION MO/SP20)**

CLASS: **BTECH** **SEMESTER : III**
BRANCH: **ECE** **SESSION : MO 2022**

SUBJECT: EC207 ELECTRONIC MEASUREMENTS

TIME: **03 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*. Tables/Data handbook/Graph paper etc., if applicable, will be supplied to the candidates**

Q.1(a)	Briefly explain the primary sensing element and variable conversion element with examples.	[2]	CO1	BL2
Q.1(b)	Differentiate between any two of the following (i) Loading effect and hysteresis (ii) Scale Range and Scale Span (iii) Accuracy and Precision	[3]	CO1	BL2
Q.1(c)	What are different sources of noise in output of the instrumentation system? Explain Johnson's noise briefly. An amplifier whose bandwidth is 100 KHz has a noise power spectrum density input of $7X10^{-21}$J. If the input resistance is 50KΩ and the amplifier gain 100, what is the noise output voltage? (k=Boltzmann's constant = $1.38X10^{-23}$ J/°K)	[5]	CO1	BL3
Q.2(a)	Briefly explain the role of controlling and damping torque in analog instruments.	[2]	CO2	BL4
Q.2(b)	Draw Moving Iron instrument and derive its torque equation.	[3]	CO2	BL1
Q.2(c)	Describe the construction and working of series type and shunt type ohmmeter. Write down their design equation.	[5]	CO2	BL2
Q.3(a)	What do you understand by vertical deflection system and synchronization in CRO operation?	[2]	CO3	BL4
Q.3(b)	With help of a diagram, provide the construction of a Cathode Ray Tube.	[3]	CO3	BL1
Q.3(c)	Why Maxwell's bridge is suitable only for medium Q-coils? Give description of Maxwell's Bridge in different configurations.	[5]	CO3	BL2
Q.4(a)	Describe briefly a sample and hold circuit with help of diagram.	[2]	CO4	BL2
Q.4(b)	Discuss the utility of analog-to-digital (A/D) converter in electronic instrumentation with brief description of any one type of A/D converter (ADC).	[3]	CO4	BL4
Q.4(c)	With help of circuit diagram, explain the working of a weighted resistor digital-to-analog converter (DAC)	[5]	CO4	BL2
Q.5(a)	Define transducer and classify transducers based on different approach.	[2]	CO5	BL2
Q.5(b)	Write short notes on any two of following (i) Active and passive transducer with one example for both types, (ii) Thermistor (iii) Strain Gauge	[3]	CO5	BL4
Q.5(c)	Explain with diagram the operation of LVDT.	[5]	CO5	BL2

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