B.E. Instrumentation Engineering (MODEL CURRICULUM) Sem-III

IN304(M) : Electronics Measurement

P. Pages : 2 **GUG/W/22/14012**

Time : Three Hours * 3 2 4 1 * Max. Marks : 80

Notes : 1. Same answer book must be used for each section.
2. All questions carry marks as indicated.
3. Due credit will be given to neatness and adequate dimensions.
4. Assume suitable data wherever necessary.
5. Illustrate your answers wherever necessary with the help of neat sketches.

1. a) Draw the basic block diagram of Instrumentation system and state the function of each block. **8**

b) Describe the different types of errors in measurement system. Also explain sources of errors and how to minimize it. **8**

OR

2. a) Enlist the static and dynamic characteristics of Measurement system. Explain dynamic characteristics in detail. **8**

b) Define the following terms w.r.t. Measurement system. **8**
i) Units.
ii) Absolute units.
iii) Fundamental units.
iv) Derived units.

3. a) Describe the constructional details and working of an Electrodynamometer type instrument. **8**

b) A moving Coil instrument gives a full scale deflection of 10mA. When the potential difference across it's terminal is 100 mV. **8**
Calculate:
i) The multiplying factor and
ii) Shunt resistance
for a full scale deflection corresponding to 100A current.

OR

4. a) Describe the construction and working of series type Ohmmeter, why series type ohmmeter is preferred over shunt type ohmmeter. **8**

b) Compare PMMC and moving Iron type basic meter. **8**

5. a) Derive the balance condition of an A.C. bridges with the help of neat diagram. **8**

b) Discuss, how Wheatstone bridge is used for the measurement of unknown resistance. **8**

OR

6.	a)	How can a Schering bridge be used to measure unknown capacitance and its dissipation factor?	**8**
	b)	Draw Maxwell's inductance – capacitance bridge and derive the equations for unknown components.	**8**
7.	a)	Write a short note on : i) Amplified DC meter ii) True RMS – Responding voltmeter	**8**
	b)	Describe in detail the working principle of Digital voltmeter.	**8**

OR

8.	a)	Describe the circuit diagram and working of Q-meter also state its application.	**8**
	b)	Discuss in detail A.C. Voltmeter using rectifier.	**8**
9.	a)	Draw the block diagram of oscilloscope and explain the function of each block.	**8**
	b)	Describe the terms vertical coupling, z-axis and sources of triggering with reference to oscilloscope.	**8**

OR

10.	a)	How sweep method is used to measure frequency and phase difference in dual trace CRO?	**8**
	b)	Describe with the help of neat block diagram the working principle of Digital storage oscilloscope.	**8**

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