B.E. (Electronics Engineering / Electronics Telecommunication Engineering / Electronics Communication Engineering) Third Semester (C.B.S.)

Electronics Measurements & Instrumentation

P. Pages : 2 **NRJ/KW/17/4354/4359**

Time : Three Hours * 0 5 0 2 * Max. Marks : 80

Notes :
1. All questions carry marks as indicated.
2. Solve Question 1 OR Questions No. 2.
3. Solve Question 3 OR Questions No. 4.
4. Solve Question 5 OR Questions No. 6.
5. Solve Question 7 OR Questions No. 8.
6. Solve Question 9 OR Questions No. 10.
7. Solve Question 11 OR Questions No. 12.
8. Due credit will be given to neatness and adequate dimensions.
9. Assume suitable data whenever necessary.
10. Diagrams should be given whenever necessary.
11. Illustrate your answers whenever necessary with the help of neat sketches.
12. Answer **six** questions.

1. a) State the difference between Accuracy and precision in measurement system. **4**

b) Explain generallised Instrumentation system with suitable block diagram. **6**

c) Define the terms. **3**
i) Sensitivity. ii) Reproducibility.

OR

2. a) What are the different types of errors? Give its classification and explain how it can be minimized. **7**

b) A current was measured by six observers as 12.8 mA, 12.2mA, 12.5mA, 13.1mA, 12.9mA and 12.4mA. Calculate. **6**
i) Mean
ii) Deviation from mean.
iii) Average Deviation.
iv) Standard Deviation.
v) Variance.

3. a) Explain how PMMC instrument can be converted to Ammeter. **7**

b) Explain the working of PMMC galvanometer. Give the equation of control torque. **6**

OR

4. a) Explain True rms responding voltmeter. **7**

b) A single phase wattmeter measuring power, a 230 v circuit has current coil of resistance 0.2 Ω and pressure coil of resistance 1000 Ω, load current is 10 A at a power factor 0.8 (lag). Determine the % error in wattmeter reading when. **6**
i) The pressure coil is connected on load side.
ii) The pressure coil is connected on supply side.

5.	a)	Explain the bridge required to measure the inductance of coil for Q>10 with expression and phasor diagram also give its advantages and disadvantages for it. Hay's Bridge.	**7**
	b)	What do you understand by low, medium and high resistance? Describe kelvin's double bridge method for measurement of low resistance.	**7**

OR

6.	a)	Derive eq^{n} of balance of Maxwell's Bridge.	**7**
	b)	Derive eq^{n} of balance of Kelvin's Bridge.	**7**
7.	a)	Describe Active and passive Transducers.	**3**
	b)	Describe Analog and Digital mode of operation of transducers.	**4**
	c)	Draw and explain with neat diagram working of LVDT for measurement of displacement and how it is used for measurement of pressure.	**7**

OR

8.	a)	Define the term 'Flow'. List flow meters. Explain any two of them with their advantages and limitations.	**7**
	b)	Explain the methods of liquid level measurements any two.	**7**
9.	a)	Explain the block diagram of function generator.	**7**
	b)	Explain the different types of sweeps used in CRO.	**6**

OR

10.	a)	Explain dual beam & dual trace CRO.	**7**
	b)	What is digital storage oscilloscope? Draw the block diagram and explain function of each block.	**6**
11.	a)	Explain Digital Data Acquisition system.	**6**
	b)	Explain AC signal conditioning system with block diagram.	**7**

OR

12.	a)	What is Hormonic Distortion? Explain functional block diagram of tuned circuit hormonic analyzer.	**7**
	b)	Explain the Heterodyne wave analyzer with block diagram.	**6**

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