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Total No. of Questions : 6] [Total No. of Printed Pages : 4

EGS-190

B.E. 7th Semester (CGPA) Elect. and Commun. Engg. (Zero Sem.) Examination - 2018

ELECTRONICS MEASUREMENT AND INSTRUMENTATION

Paper–EL–701

Time : 3 Hours] [Maximum Marks : 60

Note : ***Question No. 1 is compulsory. There is Internal choice in Question No. 2 to Question No. 6.***

1. Write short answers. 2×5=10

(i) What is the importance of "significant figures" in measurements?

(ii) What is the difference between a bolometer and a calorimeter?

(iii) What is the importance of square wave testing?

(iv) Give advantages of semiconductor strain gauge.

(v) Why is it essential to control Gate Enable' signal very accurately in a frequency counter?

2. (a) What is the advantage of Sampling oscilloscope over a General purpose oscilloscope? Explain its working with suitable diagram. 7

(b) What is delayed mode facility used in CRO? 3

or

(a) Explain with block diagram working of dual trace oscilloscope in both the modes of operation. 7

(b) What is meant by arithmetic mean, average deviation and standard deviation in measurements. 3

3. (a) What are the advantages and disadvantages of a Maxwell's inductance bridge? Write the balance equation for the bridge and draw its circuit and phasor diagram. 5

(b) Explain the working of true rms responding voltmeter. 5

or

(a) A capacitor is tested by a Schering bridge. It forms one arm AB of the bridge. The other arms are : AD – a non reactive resistance of 100Ω, DC: a non reactive resistance of 300Ω shunted by a capacitor of 0.5 μf; BC :

a standard loss free capacitor of 100μf. The supply freq is 50 Hz. The bridge is at balance. Deduce the balance equation and find the capacitance and power factor of the capacitor under test. 5

(b) Discuss different methods of power measurement. 5

4. (a) Describe with the help of block diagram, an electronically tuned sweep frequency generator. Give its applications. 5

(b) Explain how amplitude, frequency and phase of an unknown waveform is measured using CRO. 5

or

(a) What is total harmonic distortion? Explain the working of fundamental suppression Harmonic distortion analyzer. 7

(b) Explain the difference between a CRO and spectrum analyzer. 3

5. Explain the working of any **three** of the following in detail. 10

(i) LVDT

(ii) Strain gauge

(iii) Photo electric transducers

(iv) Temperature measuring transducers.

6. (a) Explain dual slope DVM. How it is advantageous over Ramp type DVM? 5

(b) Give advantages and limitations of digital instruments over analog instruments. 5

or

(a) Explain the principle of operation of LCD. Compare its performance in the LED as display device. 5

(b) Explain the working of successive approximation DVM. Why is it wisdely used? 5