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BIEL-029

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DIPLOMA IN ELECTRONICS AND COMMUNICATION ENGINEERING (DECVI)/ ADVANCED LEVEL CERTIFICATE COURSE IN ELECTRONICS AND COMMUNICATION (ACECVI)

Term-End Examination

December, 2012

BIEL-029 : ELECTRONIC MEASUREMENT AND INSTRUMENTS

Time : 2 hours *Maximum Marks : 70*

Note : *(i) Attempt* ***any five*** *of the following. All questions carries* ***equal*** *marks.*

*(ii) Question No.**1** is compulsory.*

(iii) All the questions are to be answerd in English language Only.

(iv) Use of scientific calculator is ***permitted.***

1. Attempt the following multiple choice, Fill in the blank and ***True - False*** *(T–F)* type questions : **7x2=14**

(a) The SI unit of electric current is _____.

(b) A moving coil voltmeter has a uniform scale with 100 divisions, the Full scale reading is 200 V and 1/10 of a scale division can be estimated with a Fair degree of certainty. Determine the resolution of the instrument.

(i) 0.1 V (ii) 0.2 V

(iii) 0.5 V (iv) 0.8 V

(c) The expected value of the voltage across a resistor is 80 V. However the measurement gives a value of 79 V. Then the percentage error is :

(i) 0.25% (ii) 0.5%

(iii) 1.25% (iv) 1%

(d) When a.c voltage is connected to a permanent magnet moving coil, Then the :

(i) Meter will indicate zero reading

(ii) Meter will get damaged

(iii) Pointer will start vibrating

(iv) Pointer will not move at all

(e) Digital instruments are preferred to other indicating Instruments because of better Resolution. ***True/False.***

(f) The 'Q' is defined as :

(i) $\frac{XL}{R}$ (ii) $\frac{XC}{R}$

(iii) Both (i) and (ii) (iv) None

(g) A 1 mA meter movement with an internal resistance of 100 kΩ is to be converted into 0-100 mA ammeter. The shunt resistance required is _____.

(i) 1.010 kΩ (ii) 0.55 kΩ

(iii) 2 kΩ (iv) 0.25 kΩ

2. (a) Explain the term Accuracy and Precession with an example. **2x7=14**

(b) Differentiate clearly between systematic and Random errors in measurements.

3. (a) Draw a circuit of True RMS meter and explain its working. **2x7=14**

(b) Describe the working principle of Analog multimeter with a neat diagram.

4. (a) Draw the block diagram and explain the working of dual slope type DVM. **2x7=14**

(b) Draw the circuit and explain the working principle of 'Q' meter.

5. (a) Explain the working of dual trace oscilloscope with the help of Functional block diagram. **2x7=14**

(b) Explain how frequency and phase angle is measured using CRO with an example.

6. (a) Explain different types of CRO probes and its applications with examples. **2x7=14**

(b) Draw the block diagram of Spectrum Analyzer and explain.

7. (a) Draw the block diagram of RF type signal generator and explain. **2x7=14**

(b) Explain the working principle of PMMC instument with a neat diagram.

8. Write short notes on ***any four*** : **4x3.5=14**

(a) Pulse generator

(b) Dead Zone

(c) Importance of Grounding

(d) DSO

(e) Gross error

(f) Ramp type DVM