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BIEL-029

01932

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

Term-End Examination

December, 2011

BIEL-029 : ELECTRONIC MEASUREMENT AND INSTRUMENTS

Time : 2 hours *Maximum Marks : 70*

Note : *Attempt **any five** of the following questions. Question No. **1** is **compulsory**. All questions carries **equal** marks.*

1. Attempt the following multiple choice, Fill in the blank and ***True/False*** type questions : **2x7=14**

(a) The potentiometer is _____ type of instrument.

(b) A 0 - 300V voltmeter has an error of ±2% of full scale deflection. What would be the range of reading, if true value is 30 V ?

(i) 24 – 36V

(ii) 29.4 – 30.6V

(iii) 20V – 40V

(iv) none of the above

(c) Rectifier type instrument gives directly :

(i) average value of A.C.

(ii) RMS value of A.C.

(iii) peak value of A.C.

(iv) none of the above.

(d) The deflection 'θ' is directly proportional to which value of applied input in PMMC instrument :

(i) current (ii) voltage

(iii) power (iv) none of above

(e) The CRT of cathode ray oscilloscope is called as electron lens - (T/F)

(f) Maxwell - capacitance bridge is used to measure unknown _____.

(g) In CRO, deflection 'D' is directly proportional to anode voltage - (T/F)

2. (a) Explain the term "limiting error". What is the limiting error in ohms if the value of resistance is written as $R = 10K \pm 2\%$?

(b) What is the meaning of Ground, write the importance of grounding. **7x2=14**

3. (a) Draw the block diagram and explain the working of Digital Ramp type voltmeter.

(b) How will you measure the 'θ' of the coil in your laboratory ? **7x2=14**

4. (a) Describe the working principle of average responding voltmeter with proper circuit diagram. **7x2=14**

(b) In A.C. measurement using PMMC prove that

(i) $V_{dc} = 0.45\ V_{ac}$
For Half Wave Rectifier

(ii) $V_{dc} = 0.9\ V_{ac}$
For Full Wave Rectifier

5. (a) Draw the block diagram of Dual-Trace Oscilloscope. Write in brief about its different modes of operation. **7x2=14**

(b) An electrically deflected CRT has final anode voltage of 2000V, the length of deflecting plates is 1.5 cm and placed at 1.5 cm apart. If the screen is placed at 50 cm from the centre of deflection plates.

Find (i) Sensitivity of CRT

(ii) Deflection factor.

6. (a) Describe the operation of signal generator with block diagram in brief. **7x2=14**

(b) State and explain the different parts of function generator.

7. Write short notes on ***any two*** : **7x2=14**

(a) Accuracy and precision

(b) PMMC

(c) DFM

(d) Spectrum analyzer