

01455

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

Term-End Examination

June, 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 answered 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 : **2x7=14**

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

(i) 0.25%

(ii) 0.5%

(iii) 1.25%

(iv) 1%

- (b) A moving coil voltmeter has a uniform scale with 100 divisions, the full scale reading is 200V and $\frac{1}{10}$ of a scale division can be estimated with a fair degree of certainty. Determine the resolution of the instrument.
- (i) 0.1V (ii) 0.2V
 (iii) 0.5V (iv) 0.8V
- (c) A dual beam CRO has :
- (i) Two horizontal Amplifiers
 (ii) Two trigger circuits
 (iii) Two vertical Amplifiers
 (iv) All the above.
- (d) Digital instruments are preferred to other indicating instruments because of better Resolution. True/False.
- (e) The SI unit of Luminous intensity is _____.
- (f) When a 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
- (g) The 'Q' is defined as :
- (i) $\frac{X_L}{R}$ (ii) $\frac{X_C}{R}$
 (iii) Both (i) and (ii) (iv) None of the above

2. (a) Draw the circuit and explain how a standard voltmeter may be used to calibrate a dc voltmeter. **7x2=14**
- (b) Describe various types of errors in instruments.
3. (a) Draw the circuit of AC Voltmeter using rectifier and explain its operation. **7x2=14**
- (b) Explain the construction and operation of PMMC meter.
4. (a) Draw the block diagram of successive approximation type DVM. and explain its operation. **7x2=14**
- (b) Explain the working principle of digital phase meter with a neat sketch.
5. (a) Draw the block diagram of function generator and explain the method of producing different waves. **7x2=14**
- (b) Explain the working principle of spectrum analyzer with a neat sketch.
6. (a) Draw the block diagram of DSO and explain its operation. **7x2=14**
- (b) What is the role of time base circuit in a CRO ? Explain how the time base signal is generated.

7. (a) Explain how frequency and phase Angle is measured using CRO with an example. $7 \times 2 = 14$
- (b) Draw the Basic circuit of DC Ammeter and explain.
8. Write short notes on *any four* : $3.5 \times 4 = 14$
- (a) CRO Probes
- (b) Delay lines in CRO
- (c) Digital frequency meter
- (d) RMS reading voltmeter
- (e) Sensitivity and precision
- (f) Q-meter
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