

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

Term-End Examination

June, 2013

**BIEL-029 : ELECTRONIC MEASUREMENT AND
INSTRUMENTS**

Time : 2 hours

Maximum Marks : 70

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- Note : (i) Attempt **any five** of the following questions.
(ii) Question No.1 is compulsory.
(iii) All questions carry **equal** marks.*
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1. (a) A 0-10A ammeter has a guaranteed accuracy of 1% of full scale deflection the limiting error while reading 5 A is : $2 \times 7 = 14$
- (i) 1% (ii) 2%
- (iii) 4% (iv) None of above
- (b) An aquadag is used in a CRO to collect :
- (i) Primary electron
- (ii) Secondary emission electron
- (iii) Both primary and secondary emission electron
- (iv) None of these

- (c) The electrostatic deflection of electron in deflection plates of a CRO is a :
- (i) Hyperbola (ii) Parabola
(iii) Straight (iv) Circle
- (d) The ratio of output signal or response of the instrument to change of input or measured variable called _____.
- (e) Measuring range of a voltmeter can be extended by using _____.
- (f) Voltmeter are connected in parallel with the circuit whose voltage is to be measured. Is it true or false ?
- (g) Permanent moving coil instrument can measure only very high frequency quantities. Is it true or false ?

2. (a) What is the principle of pmmc ? Explain the construction and working of pmmc. **7x2=14**
- (b) Explain "rectifier type Instrument" draw the rectifier element characteristics. What is the effect of temperature on rectifier type Instruments ?
3. (a) Describe the working principle of Integrating type Digital Voltmeter with suitable block diagram and waveforms. **7x2=14**
- (b) Derive the Torque equation for pmmc.

4. (a) A pmmc instrument has a coil of dimensions $15\text{mm} \times 12\text{mm}$. The flux density in air gap is $1.8 \times 10^{-3} \text{ wb/m}^2$ and the spring constant is $0.14 \times 10^{-6} \text{ Nm/rad}$. Determine the number of turns required to produce an angular deflection of 90° . When a current of 5 mA is flowing through the coil. $7 \times 2 = 14$
- (b) Explain the general purpose oscilloscope with the help of block diagram.
5. (a) Prove the electrostatic deflection of CRO is Parabolic. $7 \times 2 = 14$
- (b) An electrically deflected CRT has a final anode voltage of 2000 V and Parallel deflection plates 1.5 cm long and 5mm apart, if screen is 50 cm from the centre of deflecting plates find :
- (i) beam speed and
- (ii) the deflection sensitivity of tube.
6. (a) Describe the operation of spectrum analyser with block diagram. $7 \times 2 = 14$
- (b) State and explain the different parts of function generator.
7. Write short notes on **any two** of the following : $7 \times 2 = 14$
- (a) Accuracy and Precision
- (b) Calibration of Instruments
- (c) Loading effects on Instruments
- (d) DFM
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