

**DIPLOMA IN ELECTRICAL ENGINEERING  
(DELVI)**

**Term-End Examination**

**June, 2017**

00694

**BIEE-039 : ELECTRICAL MEASUREMENTS  
AND INSTRUMENTS**

*Time : 2 hours*

*Maximum Marks : 70*

**Note :** Attempt **five** questions including question no. 1 which is **compulsory**. Missing data may be assumed suitably. Use of scientific calculator is permitted.

1. Choose the correct answer :  $7 \times 2 = 14$

- (a) An ammeter is connected in \_\_\_\_\_ with circuit element whose current we wish to measure.
- (i) parallel
  - (ii) series
  - (iii) series or parallel
  - (iv) None of these

(b) A voltmeter is connected in \_\_\_\_\_ with circuit element whose voltage we wish to measure.

- (i) parallel
- (ii) series
- (iii) series or parallel
- (iv) None of these

(c) A CRO is used to measure

- (i) Voltage
- (ii) Frequency
- (iii) Phase
- (iv) All of the above

(d) High resistance can be measured by

- (i) Voltmeter
- (ii) Multimeter
- (iii) CRO
- (iv) Megger

(e) An ideal ammeter has \_\_\_\_\_ resistance.

- (i) low
- (ii) infinite
- (iii) zero
- (iv) high

- (f) The resistance of an ideal voltmeter is
- (i) low
  - (ii) infinite
  - (iii) zero
  - (iv) high
- (g) The metre used for measuring electrical quantities is
- (i) Tachometer
  - (ii) Micrometer
  - (iii) Measuring Instrument
  - (iv) Speedometer
2. (a) Explain the construction and working principle of moving coil instrument. 7
- (b) Explain the working of moving-iron type instruments. Write the merits and demerits of moving-iron type instruments. 7
3. (a) In a CRO, the distance of screen from centre of deflection plate is 0.05 m, the effective length of deflection plate is 0.025 m and the distance between deflection plates is 0.15 m. The deflection voltage is 2 V while the acceleration voltage is 5 V. Calculate deflection on screen, deflection sensitivity and deflection factor. 7
- (b) Write the merits and demerits of a single-phase energy meter. 7

4. What is Megger ? Explain the construction and working of it. Write the applications of Megger also. 14
5. (a) Explain the working of digital multimeter. 7  
(b) Write the advantages and applications of digital multimeter. 7
6. Explain the power measurement in a 3- $\phi$  circuit using the Two Wattmeter Method. 14
7. Write short notes on any *two* of the following :  $2 \times 7 = 14$
- (a) Current Transformer
  - (b) Analog Multimeter
  - (c) 3- $\phi$  Energy Meter
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