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3E1485

Roll No. : \_\_\_\_\_

Total Printed Pages : 3

3E1485

B. Tech. (Sem. III) (Main & Back) Examination, January - 2013  
 Electrical Engg.  
 3EE5 Electrical Measurements

Time : 3 Hours]

[Total Marks : 80

[Min. Passing Marks : 24

*Attempt any five questions, selecting one question from each unit. All questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.*

Use of following supporting material is permitted during examination.  
 (Mentioned in form No. 205)

1. \_\_\_\_\_ Nil \_\_\_\_\_

2. \_\_\_\_\_ Nil \_\_\_\_\_

### UNIT - I

- 1 (a) Explain the classification of moving Iron Instruments. 8
- (b) Derive the general torque equation for a moving iron Instruments and how they are different, from moving coil instruments. 8

OR

- 1 (a) Explain calibration of single-phase energy meter by phantom method. 8
- (b) Explain errors in wattmeter and energy meter and how they are corrected ? 8



## UNIT - II

- 2 (a) State and derive the Blondel's theorem. 8
- (b) Explain applications of current transformer for measuring current and energy. 8

## OR

- 2 (a) Describe the two wattmeter method of measurement of power in 3-phase circuit. 8
- (b) Explain ratio and phase angle error in polyphase metering. 8

## UNIT - III

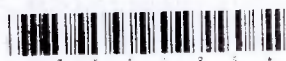
- 3 (a) Explain in detail the construction and working principle of A.C. potentiometer. 10
- (b) Explain crompton potentiometer in detail. 6

## OR

- 3 (a) Explain construction and operation of slide wire D.C. Potentiometer. 8
- (b) Explain the wattmeter calibration using a D.C. Potentiometer. 8

## UNIT - IV

- 4 (a) Explain the principle of working of a Kelvin's double bridge for low resistance measurement. 8



- (b) Explain Price-Guard's wire method for measurements at high resistance.

8

**OR**

- 4 (a) Explain method of measuring earth resistance.

8

- (b) Explain classification of resistance, how Wheatstone bridge method is employed to measure resistance ?

8

**UNIT - V**

- 5 (a) Explain the working and construction of De Sauty bridge for capacitance measurement.

8

- (b) Explain the Schering's bridge. Where it is used ? Derive its equation of balance.

8

**OR**

- 5 (a) Explain Heaviside bridge for measurement of mutual inductance.

8

- (b) Explain in detail the working principle of Anderson's bridge.

8

