**MERU UNIVERSITY OF SCIENCE AND TECHNOLOGY**

**P.O. Box 972-60200 – Meru-Kenya.**

**Tel: 020-2069349, 061-2309217. 064-30320 Cell phone: +254 712524293, +254 789151411**

**Fax: 064-30321**

**Website:** [**www.must.ac.ke**](http://www.must.ac.ke) **Email:** **info@must.ac.ke**

**University Examinations 2015/2016**

SECOND YEAR SECOND SEMESTER EXAMINATION FOR DIPLOMA IN ELECTRICAL ENGINEERING

**EEE 2207: ELECTRICAL MEASUREMENTS AND TESTING II**

 **DATE: AUGUST 2016 TIME: 11/2 HOURS**

**INSTRUCTIONS:** *Answer question* ***one*** *and any other* ***two*** *questions*

**QUESTION ONE (30MARKS)**

1. State four factors that causes errors in bridge circuit. (4 Marks)
2. With aid of diagram, explain the construction and operation of Weston frequency meter. (6 Marks)
3. With aid of a circuit diagram, explain the operation of a 3$∅$, 3 wattmeter method of power measurement. (6 Marks)
4. State three reasons why consumers are encouraged to draw power at high power factor.(3 Marks)
5. Outline three industrial power tariffs. (3 Marks)
6. Explain the measurement of magnetic flux of a ring specimen. Draw the circuit diagram. (6 Marks)
7. The readings of ammeter is 0.1A and on voltmeter it is 22 volts, calculate the resistance. (2 Marks)

**QUESTION TWO (15 MARKS)**

1. Explain the measurement of earth resistance using earth tester. (5 Marks)
2. The power to a 3 phase motor running on a 250V 50HZ supply was measured by two wattmeter method and the readings were 3000W and (-1000 W). Calculate:
3. Total input power
4. Power factor
5. Line current (6 Marks)
6. Explain briefly the measurement of reactive power using a single wattmeter. (4 Marks)

**QUESTION THREE (15 MARKS)**

1. With aid of diagram, explain the measurement of hysteresis loop in a ring specimen using step by step method. (7 Marks)
2. Explain the operation of ferro-dynamic type frequency meter. (5 Marks)
3. State three advantages of Hay’s bridge. (3 Marks)

**QUESTION FOUR (15 MARKS)**

1. Two wattmeter connected to a 3, 500 V motor indicate the total input power of 10 KW at a p.f of 0.3. find the reading of the two wattmeters. (7 Marks)
2. An Owen’s bridge is used to measure the properties of a sample of sheet steel of 2 KHZ. At balance arm cd is and arm da is  in series with  Derive at balance condition the effective impedance of the specimen under test condition. Calculate the effective impedence of the specimen. (8 Marks)