**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.mucst.ac.ke**](http://www.mucst.ac.ke) **Email:** **info@mucst.ac.ke**

**University Examinations 2014/2015**

SECOND YEAR, SECOND SEMESTER EXAMINATION FOR DIPLOMA IN ELECTRICAL ENGINEERING

**EEE 0235: CONTROL AND MEASUREMENT I**

**DATE: DECEMBER 2014 TIME: 1**$\frac{1}{2}$ **HOURS**

**INSTRUCTIONS:** *Answer questions* ***on****e**and any other* ***two*** *questions*

**QUESTION ONE (30 MARKS)**

1. With the aid of a labelled diagram illustrate:
2. Digital signal (1 marks)
3. A transient response (2 marks)
4. State four modes of a closed loop control system (4 marks)
5. Enumerate three kinds of processes encountered in industrial applications (3 marks)
6. Define the following terms
7. Command input (1 mark)
8. Servomechanism (1 mark)
9. System (1 mark)
10. Controlled variable (1 mark)
11. Plant (1 mark)
12. Using simple labelled sketches show
13. Three blocks in cascade (3 marks)
14. A comparator (2 marks)
15. State the instruments and units used to measure:
16. Wave length (2 marks)
17. Electric charge (2 marks)
18. Sound (2 marks)
19. Frequency (2 marks)
20. Resistance (2 marks)

**QUESTION TWO (15 MARKS)**

1. Give three components of a control system (6 marks)
2. State four parameters against which a control network is measured (4 marks)
3. What five abilities should a control system have (5 marks)

**QUESTION THREE (15 MARKS)**

1. State five advantages and two disadvantages of a closed loop control system

(7 marks)

1. In a transient response, what is meant by: (6 marks)
2. Under-Damped
3. Over-Damped
4. Critically-Damped
5. Define a transfer function (2 marks)

**QUESTION FOUR (15 MARKS)**

Simplify the block diagrams shown and obtain a transfer function of each