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**University Examinations 2015/2016**

SECOND YEAR SECOND SEMESTER EXAMINATION FOR DIPLOMA IN ELECTRICAL ENGINEERING

**EEE 2256: CONTROL MEASUREMENTS I**

 **DATE: NOVEMBER 2015 TIME: 11/2 HOURS**

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

**QUESTION ONE (30 MARKS)**

1. With the aid of a labeled diagram illustrate:
2. Analogue signal.
3. Digital signal. (4 Marks)
4. Define the following:
5. Comparator.
6. Blocks in cascade. (4 Marks)
7. Give three components of a control system. (3 Marks)
8. State four modes of a control system. (4 Marks)
9. If three basic quantities to be measured are:

Length L metres.

Mass M kilograms

Time T seconds

Give the dimensional notation in terms of L , M and T for:

1. Velocity
2. Force.
3. Pressure.
4. Acceleration
5. Volume.

In each case state the UNIT used. (10 Marks)

1. What instrument is used to measure;
2. Electrical current
3. Electromotive force
4. Length
5. Mass
6. Time (5 Marks)

**QUESTION TWO (15 MARKS)**

Device a general transfer function using a labeled block diagram when the following parameters are given;

 R=input

 E= Error

 B= Feedback signal

C = Output

H= Feedback element

G=Process (15 Marks)

**QUESTION THREE (15 MARKS)**

Find the transfer function of the following block diagrams;

**QUESTION FOUR (15 MARKS)**

1. In a control system, what is the function of:
2. An actuator.
3. Sensor.
4. Controller (3 Marks)
5. State five advantages and two disadvantages of a closed loop control system. (5 Marks)
6. Evaluate the transfer function of a multi-input system shown: