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University Examinations 2013/2014

THIRD YEAR, SECOND SEMESTER EXAMINATION FOR DIPLOMA IN ELECTRICAL
ENGINEERING

EEE 0249: CONTROL AND SYSTEMS III

DATE: APRIL 2014

TIME: 1 ½ HOURS

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

QUESTION ONE – (30 MARKS)

- (a) What is a transducer? (4 Marks)
- (b) State five advantages of electrical transducers. (5 Marks)
- (c) Give one example of;
 - (i) Primary transducer (2 Marks)
 - (ii) Secondary transducer (2 Marks)
- (d) Differentiate between active and passive transducers. (4 Marks)
- (e) With the aid of labelled sketches illustration two applications of LVDT. (4 Marks)
- (f) Using simple sketches explain the operation of:
 - (i) Photo emissive cell (3 Marks)
 - (ii) Photo conductive cell (3 Marks)
 - (iii) Oscillation device (3 Marks)

QUESTION TWO – (15 MARKS)

Briefly explain what you understand by:

- (a) Signal processing (5 Marks)
- (b) Recording (5 Marks)
- (c) Output and display signals (5 Marks)

QUESTION THREE – (15 MARKS)

- (a) State five basic characteristics of an instrument. (5 Marks)
- (b) Give four physical phenomenon that may be measured in terms of:
 - (i) Magnetic signals (2 Marks)
 - (ii) Electromagnetic signal (2 Marks)
- (c) What are the two main parts of an instrument? (6 Marks)

QUESTION FOUR – (15 MARKS)

- (a) What is a servomotor? (3 Marks)
- (b) With the aid of a sketch show;
 - (i) Construction of a field controlled DC motor
 - (ii) Gear train system (9 Marks)
- (c) Use a sketch to show armature controlled DC motor. (3 Marks)