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**University Examinations 2015/2016**

SECOND YEAR FIRST SEMESTER EXAMINATION FOR DIPLOMA IN ELECTRICAL ENGINEERING

**EEE 2203: DIGITAL ELECTRONICS I**

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

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

**QUESTION ONE (30 MARKS)**

1. Define the term base or radix as used in number systems. (2 Marks)
2. Perform the following number conversions:
3. to decimal
4. to binary (7 Marks)
5. Evaluate (111.001)2 x (1.11)2 to two binary places. (3 Marks)
6. Draw the truth table of a 2-input NOR gate. (4 Marks)
7. Subtract -37 from +18 using 2’s complement technique. (6 Marks)
8. Write the gray code equivalent of decimal numbers 0 to 7. (8 Marks)

**QUESTION TWO (15 MARKS)**

1. Perform the following number conversions:
2. to decimal
3. to binary (7 Marks)
4. Draw the truth table of the following logic circuit (8 Marks)-

**QUESTION THREE (15 MARKS)**

1. With the aid of a truth table and logic circuit describe the operation of a half adder. (9 Marks)
2. Draw the truth table of a Two-input-NoR gate. (4 Marks)
3. Define the term byte as used in digital systems. (2 Marks)

**QUESTION FOUR (15 MARKS)**

1. Distinguish between a decoder and a demultiplexer (4 Marks)
2. Draw the truth table of a 3-to-8 line decoder. (8 Marks)
3. Define the term multiplexer as used in digital circuits. (2 Marks)
4. Define the term combination logic circuit. (1 Mark)