

**MERU UNIVERSITY OF SCIENCE AND TECHNOLOGY**

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**University Examinations 2014/2015**

STAGE THREE SPECIAL/SUPPLEMENTARY EXAMINATION FOR DIPLOMA IN INFORMATION TECHNOLOGY

**DIT 0304: ELECTRONIC CONSTRUCTION I**

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

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

**QUESTION ONE (30 MARKS)**

1. Identify any three types of fixed resistors. (3 Marks)
2. Explain three factors to consider when choosing a capacitor. (6 Marks)
3. Discuss any three types of capacitors. (6 Marks)
4. State ohm’s law. (2 Marks)
5. Derive an expression for output voltage of a three input adder or summer operational amplifier (6 Marks)
6. Draw the electronic symbol of the following components:
7. LED.
8. NPN transistor
9. PNP transistor
10. JFET (4 Marks)

Calculate the output voltage of the circuit shown above. (3 Marks)

**QUESTION TWO (15 MARKS)**

1. Define the following terms:
2. Capacitance.
3. Dielectric. (4 Marks)
4. Derive an expression for equivalence capacitance of four capacitors connected in:
5. Parallel.
6. Series. (11 Marks)

**QUESTION THREE (15 MARKS)**

With the aid of a well labeled diagram, describe the construction of a cathode ray tube.(CRT) (15 Marks)

**QUESTION FOUR (15 MARKS)**

With the aid of circuit diagrams, describe the three modes of transistor connections (transistor configurations) (15 Marks)