NAME

FORM CLASS ADM NO

SIGNATURE DATE

**ELECTRICITY (448/1)**

**MINCKS END OF TERM TWO**

**EXAM**

**FORM FOUR**

**(2022)**

**2 ½ HRS**

**MINCKS GROUP OF SCHOOLS**

**FORM FOUR**

**KENYA CERTIFICATE OF SECONDARY EDUCATION (KCSE)**

**INSTRUCTIONS TO CANDIDATES**

1. Write your name in the spaces provided.

2. Answer **ALL** questions in the spaces provided.

3. All working **MUST** be clearly shown.

4. Candidates **MUST** answer the questions in English only.

**EXAMINERS USE ONLY**

**TOTAL MARKS**

**SECTION A (48MKS)**

1. State two uses of piezzo electricity (2mks)

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2. Describe two employers in the field of electrical power engineering (2mks)

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3. A resistor is rated 22Ω ± 5%

Find the maximum and the maximum value of the resistor (6mks)

4. Two capacitors c1 and c2 are connected in parallel. Find the total charge if the voltage across the circuit is 20V (3mks)

4. Name two tools used in layout of holes in sheet metal (2mks)

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5(a) List down two factors that determine capacitance of a capacitor (2mks)

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6. With aid of a diagram show the main parts of a trembler bell (4mks)

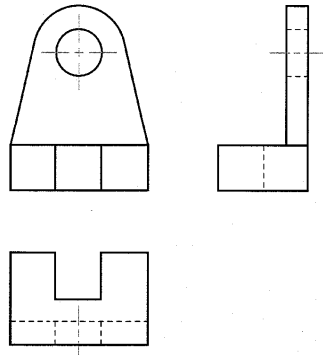
7. Show that β= α/(1-α) (5mks)

8. A moving coil instrument has a full scale deflection current of 20 mA and a resistance of 10Ω. Calculate the values of resistances required to enable it to measure (i) 5A (ii) 10A (iii) 200A

Sketch the multi range Ammeter indicating each range (6mks)

9. A 400KVA rated transformer has a primary winding resistance of 0.1Ω and a secondary winding resistance of 0.01Ω. The iron loss is 2.5 kW and primary and secondary voltages are 5kV and 1kV respectively. If the power factor of the load is 0.85, determine the efficiency of the transformer at full load. Determine the transformer efficiency at full load (7mks)

10. The figure below shows a component drawn in first angle orthographic projection. Draw the component in isometric projection (5mks)



**SECTION B (52MARKS)**

11(a) Draw a capacitor start capacitor run motor and label it’s parts (6mks)

(b) With aid of a diagram explain how a half wave rectifier operates (7mks)

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12 (a) Name three damping mechanisms in measuring instruments (3mks)

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(b) Sketch a wiring diagram of a lamp controlled from two independent positions (7mks)

(b) Give three reasons why polarity test is carried out on an installation (3mks)

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13(a) Draw a single stage amplifier utilizing an NPN transistor and a fixed bias method (7mks)

(b) Draw a two input NAND gate and it’s truth table (6mks)

14(a) A coil having a resistance of 10Ω and an inductance of 75 mH is connected in series with a 80µF capacitor across a 240V, 60 Hz a.c supply. Determine the ; (13mks)

(a) Circuit impedance

(b) Circuit current

(c) Phase angle

(d) Power factor

(e) Draw the phasor diagram