Candidate's Examination Number.....

SMZ

ZANZIBAR EXAMINATIONS COUNCIL

FORM THREE ENTRANCE EXAMINATION

057 ELECTRICAL INSTALLATION

TIME: 2:30 HOURS MONDAY 09TH DECEMBER, 2019 P.M

INSTRUCTIONS TO CANDIDATES

1. **This paper consists of THREE (3) sections A, B and C.**
2. **Answer ALL questions in this paper.**
3. **ALL answers must be written in the spaces provided.**
4. **Write your examination number on every page of the answer's booklet.**
5. **Calculators and cellular phones are not allowed in the examination room.**
6. **Use a blue or black pen in writing and drawing must be in pencil.**

FOR EXAMINER'S USE ONLY					
QUESTION NUMBER	MARKS	SIGNATURE	QUESTION NUMBER	MARKS	SIGNATURE
1			9		
2			10		
3			11		
4			12		
5			13		
6			14		
7					
8					
TOTAL					

This paper consists of 12 printed pages.

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SECTION A :(10 Marks)

Answer ALL questions in this section.

1. For each of the items (i) – (x) choose the correct answer and write its letter in the table below.

   i) The second item of equipment in the sequence of control for domestic premises

   A: Service fuses B: Circuit breaker

   C: Energy meter D: Distribution meter

   ii) Particle of an atom which have negative charges are called

   A: Neutron B: Electron

   C: Protons D: Ions

   iii) The unity of quantity of electricity or charges is called

   A: Farad B: Ampere

   C: Coulomb D: Watt

   iv) The specific resistance of a material is called

   A: Temperature coefficient of resistance B: Insulation resistance

   C: Resistivity D: Conductivity

   v) An ammeter measures

   A: Resistance B: Inductance

   C: Energy D: Current

   vi) Which of the following instruments is used to measure power

   A: Energy meter B: Voltmeter

   C: Galvanometer D: Wattmeter

vii) A standard distribution voltage is

A: 410V B: 415V C: 425V D: 430V

viii) How long will it take a 2.5KW heater to use 5MJ of energy?

A: 2000s B: 5000s C: 1250s D: 500s

ix) The following are the sources of generating electric energy except

A. Natural gas B. Geothermal C. Electrolysis D. Nuclear

x) It is not necessary during the process of soldering

A. Soldering gun B. Solder

C. Electric switch D. Soldering flux

ANSWERS

i	ii	iii	iv	v	vi	vii	viii	ix	x

SECTION B: (45 Marks)
Answer ALL questions in this section.

2. a) Name the type of switch suitable for controlling light from one position.

b) Mention the type of switches used to control light from three different positions

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3. a) Define the term "electric circuit".

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b) Draw a simple electric circuit and label it.

4. a) List down two (2) common conducting materials.

b) State the purpose of sheath in a cable.

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5. a) What is the effect of voltage drop in a circuit?

b) How many socket outlets can be installed in standard domestic ring circuit?

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6. a) Why are fire extinguishers kept in an electrical workshop?

   b) Define the term fist aid.

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7. a) What is the cable size and current rate of a lighting circuit?

   b) Calculate the supply voltage of a heater element rated 2.5KW and absorb a current of 10.5A.

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8. State the application of two (2) basic tools that are required by an electrician for general installation work.

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9. Define the following terms

   i) Transmission ii) Distribution iii) Termination

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10. Draw an electric circuit diagram and show how the ammeter and voltmeter can be arranged to measure the respective quantities.

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SECTION C: (45 Marks)

Answer ALL questions in this section.

11. a) (i) Distinguish between one-way switching circuit and two-ways switching circuits.

ii) Write short explanation on intermediate switching circuit.

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b) Use one (1) 2-ways switch and two (2) lamps to design a circuit which may be used to control these lamps.

Condition: When one lamp is ON the other will be OFF

12. a) Explain five (5) advantages of stranding conductors.

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b) i) Define the current carrying density.

ii) Calculate the current carrying capacity of $0.1cm^2$ conductor if the current density of the conductor is $400A/cm^2$.

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c) Why is copper widely used in manufacturing of cable in preference to aluminium? (Give three reasons)

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13. a) (i) What is meant by the term resistivity of a material?

ii) Mention four (4) factors affecting resistance of a conductor.

b) Calculate the resistance of a copper cable 1000m long if it has a cross-sectional area of 50mm^2 and resistivity of copper is 1.7$\mu\Omega$cm.

c) Why are parallel circuits widely used in electrical lighting systems than series circuit? (Give two reasons)

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