Candidate's Examination Number .....

SMZ

ZANZIBAR EXAMINATIONS COUNCIL

FORM THREE ENTRANCE EXAMINATION

057 ELECTRICAL INSTALLATION

TIME: 2:30 HOURS SUNDAY 27TH DECEMBER 2020 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. Write your examination number on every page of this booklet.
4. Write all answers in the space provided.
5. Use a blue or black pen in writing. Diagrams must be in pencil.
6. Calculators, cellular phones and unauthorized materials are not allowed in the examination room.

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

This paper consists of 12 printed pages

Candidate's Examination Number ……..

SECTION A: (10 Marks)

Attempt ALL questions from this section.

1. Choose the correct answer and write its letter in the table provided below.

i) When measuring voltage across a bulb, the voltmeter should be connected

A: parallel to the bulb B: in series with the bulb

C: horizontal to the bulb D: immediately after the bulb

ii) What is a first aid?

A: First aid box with the medicine

B: First aid kit

C: temporary measures or services given to a victim of accident before taken to a skilled person.

D: permanent treatment given to a victim of an electric accident.

iii) 1KWh is equivalent to

A: 3.6MJ B: 3.6KJ C: 3600MJ D: 360J

iv) Why is it important to study workshop safety rules and precautions?

A: In order to maintain workshop discipline

B: In order to prevent accidents in the workshop

C: In order to be familiar with job descriptions of the workshop

D: In order to know various workshop rules and regulations

v) Which one of the following material has negative temperature coefficient of resistance?

A: carbon B: Silver C: Aluminium D: Copper

vi) If the charge conveyed in an electric is 300Coulomb,The time taken to pass a current of 10A is

A: 30Ks B: 30.1ms C: 200μs D: 30s

vii) A good conductor is the one that has

A: High resistivity B: low permeability

C: High conductivity D: low conductivity

viii) The meter used to measure electric energy for ZECO bill is

A: clamp meter B: Watt meter

C: Galvanometer D: KWh meter

ix) Capacitor consist of

A: insulation separated by dielectric B: Silver coated insulator

C: two conductors separated by insulator D: ceramic plate and disc

x) The following are examples discharge lamp

A: Incandescent lamp and discharge lamp

B: Semi resonant stating and high frequency

C: Filament and fluorescent lamp

D: Incandescent and filament lamp

Answers

i	ii	iii	iv	v	vi	vii	viii	ix	x

SECTION B: (45 Marks)

Attempt ALL questions from this section.

2. a) What do you understand by KWh?

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b) State the cable size and current rate of a cooker circuit.

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c) State the size of a fuse suitable for protection of a ring circuit.

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3. a) Define the following terms.

i) Core

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ii) Ambient temperature

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b) Draw the following symbols

i) Switch socket

ii) Three conductors

4. a) Why a first aid kit is important in a work shop?

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b) What do the following safety sign show?

i) Information sign ii) prohibition sign

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5. a) What do you understand by "distribution board"?

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b) List down three (3) types of distribution box.

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c) State three (3) types of diagrams which are popularly used in electrical installation.

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6. a) State Ohm's law.

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b) Briefly explain three (3) characteristics of insulating materials.

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7. a) What is the function of external cover in a cable?

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b) List down three (3) factors to be considered when making a choice of a cable.

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c) What do you understand by the term cable?

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8. a) State the application of each of the following standard voltages.

i) Extra low voltage

ii) Low voltage

iii) High voltage

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b) List down any two (2) advantages of grid system.

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9. a) Determine the equivalent resistance of two (2) 2Ω resistors arranged in Parallel.

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b) Give three (3) differences between Ammeter and Voltmeter.

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10. State any five (5) precautions to be observed while working in a workshop.

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SECTION C: (45 Marks)

Attempt ALL questions from this section.

11. a) Define specific resistance of a material.

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b) Find the resistance of a copper wire at 20^0C whose crossectional area is $0.03cm^2$ and length 300m. Assuming that the resistivity of copper at 20^0C is $1.7X10^{-8}\Omega m$.

c) A PVC twin copper cable 59m long has a total voltage drop of 15V when carrying a current equal to 25A. Determine

i) The crossectional area of the cable

ii) The power lost in a cable when the current is flowing

Resistivity is $1.7X10^{-6}\ \Omega m$.

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12. a) Give the main difference between a fuse and a circuit breaker.

b) i) Give two (2) advantages of fuses.

ii) Write down one (1) disadvantage of using circuit breaker.

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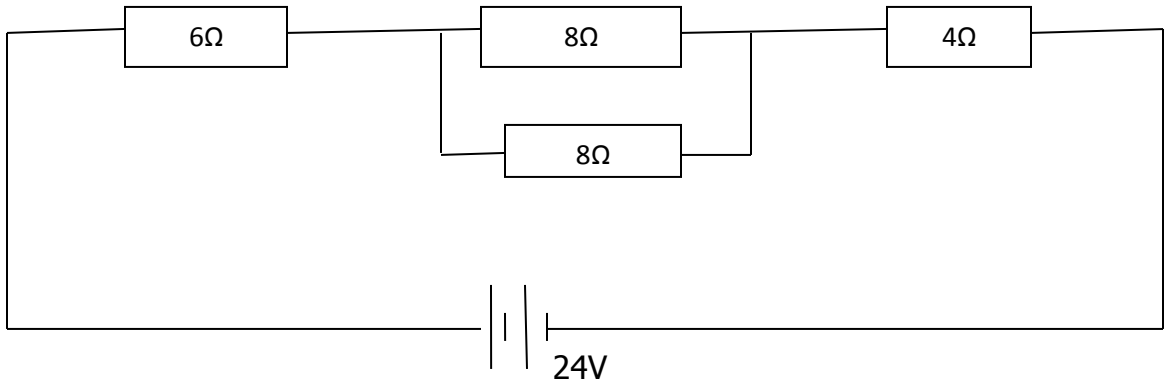
c) Draw a wiring diagram of two (2) lamps and each lamp is controlled by a separate switch.

13. A series parallel circuit is shown below



Determine

i) The Equivalent circuit resistance

ii) Current supplied by the battery

iii) Power consumed by the circuit

Assuming that the internal resistance of the battery is 0.3Ω

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