Candidate's Examination Number.....

SMZ

ZANZIBAR EXAMINATIONS COUNCIL

FORM THREE ENTRANCE EXAMINATION

051 RADIO AND TV SERVICING

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 sections A , B and C.**
3. **All answers must be written in the spaces provided.**
4. **Write your examination number on every page.**
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.

Candidate's Examination Number……

SECTION A :(10 Marks)

Answer ALL questions in this section

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

i) The popular semiconductor material is

A: Germanium B: Silicon C: Carbon D: Sulphur

ii) When a pentavalent impurity is added to pure semiconductor it becomes

A: An insulator B: An intrinsic semiconductor

C: P-type semiconductor D: N-type semiconductor

iii) The number of valence electrons in trivalent impurity

A: 4 B: 5 C: 6 D: 3

iv) The barrier voltage at a p- n junction diode is

A: 3.5V B: 3V C: Zero D: 0.3V

v) With forward bias to a p-n junction, the width of depletion layer

A: Decreases B: Increases

C: Remain the same D: None of the above

vi) A zener diode has

A: One p-n junction B: Two p-n junctions

C: Three p-n junctions D: None of the above

vii) Mains AC power is converted in to DC power for

A: Lighting purpose B: Heater

D: Using the electronic equipments D: None of the above

viii) The disadvantage of half wave rectifier is that the

A: Components are expensive B: Diode must have higher power rating

C: Output is difficult to filter D: None of the above

ix) An n-type semiconductor is

A: Positively charged B: Negatively charged

C: Electrically neutral D: None of the above

x) The most widely rectifier is

A: Half wave rectifier B: Centre tap rectifier

C: Half full wave rectifier D: None of the above

ANSWERS

i	ii	iii	iv	v	vi	vii	viii	ix	x

SECTION B: (45 Marks)

Answer ALL questions in this section.

2. a) Define the term doping.

b) List three (3) elements that are used in the formation of p- type materials.

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3. a) Give two (2) causes of accidents in an electronic workshop.

b) Write any three (3) safety precautions while working in an electronic work shop.

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4 Mention any four (4) tools that are used in radio servicing.

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5. Write down the application of the following.

a) LED

b) Zener diode

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6. Give any three (3) electrical specification of a resistor.

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7. State the color code arrangements of the following resistors.

   i) 220Ω $\pm$ 5% ii) 15KΩ $\pm$ 10%

8. a) Define the term capacitor .

   b) Show how to calculate the total capacitance of two capacitors in series.

9. Based on the type of dielectric used, give four (4) fixed capacitor categories.

10. a) What is a donor impurity?

b) Give two (2) differences between n -type material and p- type material.

SECTION C: (45 Marks)

Answer ALL three (3) questions in this section.

11. a) On what factors does the inductance of a coil depend on?

b) Briefly explain the following

i) Fixed inductor ii) Variable inductor

c) Capacitance of 3μ, 6μ and 12μ are connected in series across 350V supply.

i) Draw the required circuit
ii) Determine the equivalent capacitance
iii) Calculate the total charge
iv) Calculate the voltage across 3μ capacitor

12. a) An ideal transformer has turns ratio 8:1 and the primary current is 3A when it is supplied from 240V. Calculate the secondary voltage and current.

b) An ideal transformer is connected to a 240V mains, it supplies 12V, 150 W lamp. Calculate the transformer turns ratio and current taken from the supply.

13. a) Give any three (3) differences between Zener breakdown and Avalenche breakdown.

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b) Draw the following characteristic curves.

i) Voltage - Ampere characteristic curve of zener diode.

ii) V –I characteristic curve of tunnel diode.

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