ZIMBABWE EZEKIEL GUTI UNIVERSITY

FACULTY OF HEALTH, SCIENCE AND TECHNOLOGY

DEPARTMENT OF DIGITAL TECHNOLOGY

EXAMINATION PAPER

COURSE CODE	:	CDT115
COURSE TITLE	:	ELECTRONICS II
SPECIAL REQUIREMENTS	:	**None**
DURATION	:	3 Hours
LEVEL	:	1.2
DATE	:	2021

INSTRUCTIONS TO CANDIDATES:

1. Answer all questions.
2. Calculators and slide rules are allowed.
3. Show all the working.

Question 1

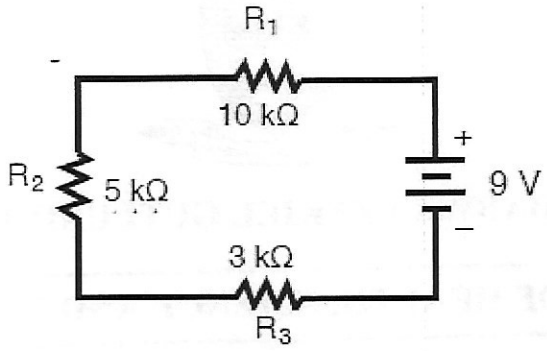

Figure 1

i. What do you understand by elements in series? [2]
ii. What is the total resistance in the above circuit in figure 1? [3]
iii. What is the current in the circuit? [2]
iv. What is voltage drop through resistor R_1? [3]

Question 2

Compare and contrast DRAM and SRAM [10]

Question 3

i. What is a transistor, where is its name derived from? [4]
ii. By means of diagrams explain the differences and the similarities between the *npn* and *pnp* transistors, mention both the minority and the majority carriers. [6]

Question 4

a. Describe the common emitter connection. **[4]**
b. Calculate I_E in a transistor for which $\beta = 40$ and $I_B = 20\mu A$. **[3]**
c. In a transistor if $I_C = 4.9mA$ and $I_E = 5mA$, Calculate the value of α. **[3]**

Question 5

a. A transistor can work as an amplifier, briefly describe how it works? **[5]**
b. In a common base connection, $\alpha = 0.90$. The voltage drop across 3 kilo ohms resistancewhich is connected in the collector is 3V. Calculate the base current. **[5]**

Question 6

Define the following terms as used in the transistors:

a. Thermal runaway. **[2]**
b. Temperature dependence. **[2]**
c. Stabilization. **[2]**
d. Operating point. **[2]**

e. Stability. [2]

Question 7

a. What is faithful amplification? [2]
b. How is faithful amplification achieved [3]
c. Name the conditions for faithful amplification? [6]

Question 8

a. What is transistor biasing? [3]
b. What is its basic purpose? [3]
c. What is a biasing circuit? [3]

Question 9

Give short explanations of the following terms.

a. Unipolar logic family. **[3]**
b. Bipolar logic family. **[3]**
c. Auxiliary Memory. **[2]**
d. Main memory. **[2]**

Question 10

The logic families are classified into two types: (i) Bipolar logic families, and (ii) Unipolar logic families.

a. Explain the two terms. **[4]**
b. Give **three** examples of bipolar logic family. **[3]**
c. Give **three** examples of unipolar logic family. **[3]**