



TECHNICAL UNIVERSITY OF MOMBASA

Select Faculty/School/Institute

Select department

UNIVERSITY EXAMINATION FOR:

DICT

EIT 2135: ELECTRONICS

END OF SEMESTER EXAMINATION

SERIES: Select series Pick year

TIME: Choose hours HOURS

DATE: Pick Date Select Month Pick Year

Instructions to Candidates

You should have the following for this examination

-Answer Booklet, examination pass and student ID

This paper consists of Choose No questions. Attempt Choose instruction.

Do not write on the question paper.

Question ONE

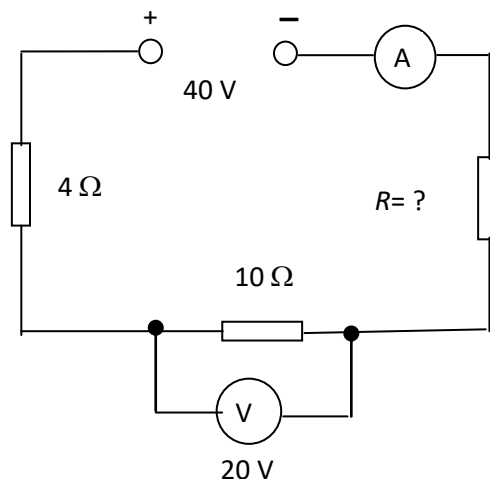
- a) With aid of diagram describe carbon composition resistor (6 marks)
- b) Explain FOUR advantages of film type resistor (4 marks)
- c) State FOUR characteristics of resistor (4 marks)
- d)
 - i. A resistor has the following colored markings; Brown, Violet, Red. , calculate the resistance of the resistor
 - ii. what is the color code for $10\text{k}\Omega$ and $330\ \Omega$ (6 marks)

Question TWO

- a) i) What is the maximum power rating in watts of a fixed resistor which has a voltage of 18 volts across its terminals and a current of 50 mill amperes flowing through it. (2 marks)
- ii) Calculate the maximum safe current that can pass through a $1.8\text{K}\Omega$ resistor rated at 0.5W .

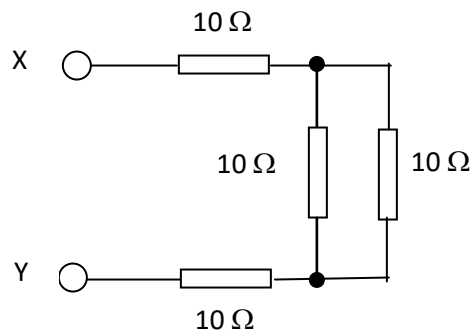
(2marks)

- b) i) Calculate the unknown values R of the resistors in the following circuits.



(2 marks)

- ii) Calculate the total resistance between X and Y for the following combinations of resistors



(2marks)

c) i) State Kirchoff's Laws

(4 marks)

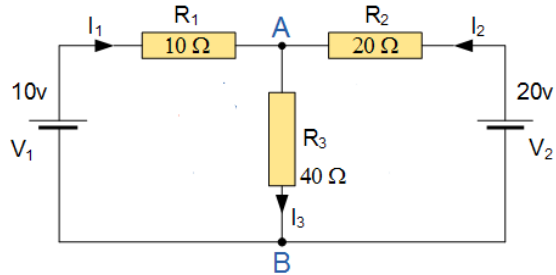
ii) Consider the circuit shown below where $R_1 = 10\Omega$, $R_2 = 20\Omega$, $R_3 = 40\Omega$, $V_1 = 10V$, $V_2 = 20V$

Required:

Using Kirchoff's Laws find:

I The current through R_3

II The Voltage across through R_3



(8 marks)

Question THREE

a) Explain the following terms

i) avalanche breakdown

(2marks)

ii) Zener breakdown

(2marks)

iii) biasing as used in PN junction.

(3 marks)

b) With aid of diagram explain how N-type and P-type semiconductor materials are formed

(7marks)

c) Explain formation depletion layer in a PN junction

(6marks)

Question FOUR

a) Explain the following terms

i) Capacitance

ii) Farad

ii) Dielectric

(6 marks)

- b) I) State FOUR types of capacitors (4 marks)
ii) State THREE characteristics of a capacitor (3 marks)
iii) State THREE applications of capacitors (3 marks)
- c) A capacitor is connected to a 240 V 50HZ supply , and it was found to have reactance of 500Ω .
calculate
i) value of capacitance in micro farad
ii) the total charge stored in the capacitor (4 marks)

Question FIVE

- a) Describe the relationship between, conductors, insulators and semiconductors and State ONE application of each. (9 marks)
- b) Compare and contrast the application of the following
i. Zener diode and normal diode
ii. Thermistor and thyristor
iii. BJT and FET transistor (6 marks)
- c) With aid of diagram explain two basic configurations of Operational Amplifier Inverting and Non-inverting. (5marks)