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KIRIRI WOMEN'S UNIVERSITY OF SCIENCE AND TECHNOLOGY
UNIVERSITY EXAMINATION, 2023/2024 ACADEMIC YEAR
FOR THE CERTIFICATE IN INFORMATION TECHNOLOGY
CIT 1009 – BASIC ELECTRONICS

Date: 10TH AUGUST 2023
Time: 11:30AM – 1:30PM

INSTRUCTIONS TO CANDIDATES

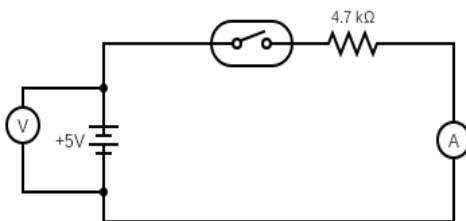
ANSWER QUESTION ONE (COMPULSORY) AND ANY OTHER TWO QUESTIONS

QUESTION ONE (30 MARKS)

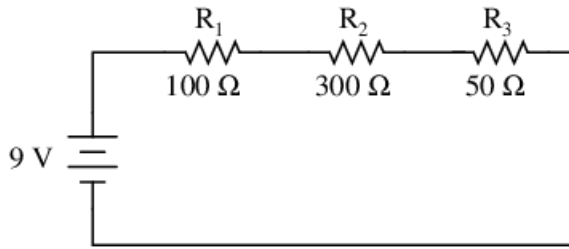
- a) Define the following terms as used in basic electronics
- i) Electrical current
 - ii) Electrical voltage
 - iii) Electrical Resistance (6 Marks)
- b) Specify the following as electrical component or electrical quantity.
- i) Electric charge
 - ii) Resistor
 - iii) Fuse
 - iv) Electromotive force (4 Marks)
- c) Binary codes are classified into different categories. What are the four main categories of binary codes? (4 Marks)
- d) Perform the following number conversion.
- i) 101001011_2 to Octal
 - ii) $4A_{16}$ to binary (6 Marks)
- e) List any four electrical components you can find in a computer motherboard. (4 Marks)
- f) Define Ohms law (2 Marks)
- g) Name and draw any two well labelled logic gate diagrams clearly showing the input to the gate and the output. (4 Marks)

QUESTION TWO (20 MARKS)

- a) The figure below shows symbols used in electric circuit, identify the different symbols in the circuit. (5 Marks)



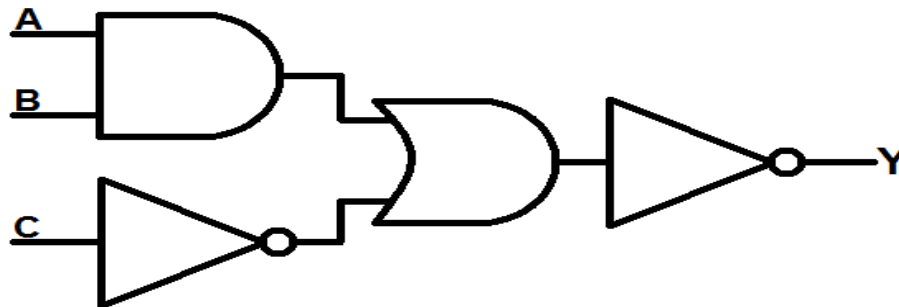
b) Use the circuit below to answer the following questions.



- i) Find the total resistance in the circuit. (4 Marks)
 - ii) Find the current flowing through the circuit. (3 Marks)
 - iii) Calculate the voltage drop across each resistor. (6 Marks)
- c) Why is resistor one of an important component used in electrical circuits. (2 Marks)

QUESTION THREE (20 MARKS)

- a) Draw the following logic gates and show their truth table. (6 Marks)
- i) AND Gate
 - ii) NOT Gate
 - iii) NOR Gate
- b) Study the logic circuit shown below and answer the following questions.



Complete the truth table below for the logic circuit shown above. write the correct value of the out Q for each of the listed sets of inputs. (4 Marks)

A	B	C	Y
1	0	1	
0	1	0	
0	1	1	
1	0	0	

- c) State any four characteristics of primary memory. (4 Marks)
- d) Explain the following examples of secondary memory technologies giving an example for each one of them. (6 Marks)
- i) Magnetic disks
 - ii) Solid State disks
 - iii) Optical disks

QUESTION FOUR (20 MARKS)

- a) Briefly explain the following number systems (6 Marks)
- i) Binary number system
 - ii) Decimal Number system
 - iii) Octal number system.
- b) Convert the binary number **0101101₂** to its equivalent:
- i) Decimal number (4 Marks)
 - ii) Octal number (3 Marks)
 - iii) Hexadecimal number (3 Marks)
- c) Show that:
 $AC + ABC = AC$ (4 Marks)

QUESTION FIVE (20 MARKS)

- a) Explain the following characteristics of computer memory. (6 Marks)
- i) Electrical characteristics.
 - ii) Speed
 - iii) Capacity
- b) Differentiate between volatile and non-volatile memory as used in computer memories. (4 Marks)
- c) Define the two following types of semiconductor. (4 Marks)
- d) Give three main differences between intrinsic and extrinsic semiconductors. (6 Marks)