

Name \_\_\_\_\_

Index No. \_\_\_\_\_

1920/103  
 BASIC ELECTRONICS  
 July 2015  
 Time: 3 hours

Signature \_\_\_\_\_

Date \_\_\_\_\_



THE KENYA NATIONAL EXAMINATIONS COUNCIL  
**CRAFT CERTIFICATE IN INFORMATION TECHNOLOGY**  
 BASIC ELECTRONICS

3 hours



**INSTRUCTIONS TO CANDIDATES**

*Write your name and index number in the spaces provided above.  
 Sign and write the date of examination in the spaces provided above.  
 Answer ALL questions in section A and any FOUR in section B.  
 Candidates should answer the questions in English.*

**For Examiner's Use Only**

Section	Question	Maximum score	Candidates score
A	1 - 10	40	
B	11	15	
	12	15	
	13	15	
	14	15	
	15	15	
<b>Total score</b>			

A

This paper consists of 12 printed pages.

Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.

## SECTION A (40 marks)

Answer ALL the questions in this section in the spaces provided.

1. Outline **four** advantages of electricity as a source of power in the society. (4 marks)

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2. With the aid of a sketch, explain the alternating current (AC) through a pure inductor. (4 marks)

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3. Explain **two** uses of special bit patterns in binary coded decimal. (4 marks)

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4. Determine the decimal equivalent for each of the following number systems:

- (i)  $F9A_{16}$  (2 marks)

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- (ii)  $11001\ 1011_2$  (2 marks)

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5. Calculate each of the following hexadecimal arithmetic:

(i) EA6 + 424;

(2 marks)

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(ii) CD1 - 311.

(2 marks)

CD1  
 311  
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 9C0

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6. A conductor wire of length 36 m has a resistivity of  $6 \times 10^{-6} \Omega \text{ m}$  and resistance of  $9\Omega$ . Determine the:

(i) cross sectional area of the wire;

(2 marks)

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(ii) conductivity of the wire.

(2 marks)

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7. Explain **two** methods used to encode Binary Coded Decimal (BCD) numbers.

(4 marks)

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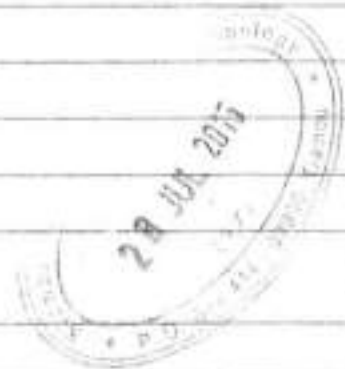


13. (a) (i) Draw a typical graph showing a phasor diagram of a sinusoidal waveform. (4 marks)

- (ii) An a.c current of 30 mA (milliamps) is connected to a  $60\Omega$  resistor R. Determine the:

I. voltage of 4 V peak (maximum); (3 marks)

II. power in R in mW (milliwatts). (2 marks)



(b) Simplify each of the following binary arithmetic operations giving your answer in octal equivalent:

(i)  $1100\ 1001 + 1001\ 1101$ ; (3 marks)

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(ii)  $1110\ 0100 - 1111\ 0000$ . (3 marks)

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14. (a) (i) Outline **two** ways of coping with challenges of emerging trends in electronics. (2 marks)

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(ii) Differentiate between *silicon* and *germanium* semiconductor materials. (4 marks)

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