**Name………………………………………………………. Index No…………………/…….**

**School………………………………………………… Date ………………………….…**

**Candidate’s Signature………………………**

**451/1**

**COMPUTER STUDIES**

**PAPER 1**

**(THEORY)**

**OCT/NOV 2021**

**TIME: 2 ½ HRS**

**ACK JOINT EVALUATION EXAM**

***Kenya certificate of secondary education (K.C.S.E)***

451/1

COMPUTER STUDIES

PAPER 1

(THEORY)

TIME: 2 ½ HRS

**Instructions to candidates**

1. This paper consists of TWO sections; A and B
2. answer all questions in sections A.
3. Answer question 16 and any other three questions from section B.

**for examiners use only**

|  |  |  |
| --- | --- | --- |
| **section** | **Question** |  |
| **A** | **1 – 15** |  |
| **B** | **16** |  |
| **17** |  |
| **18** |  |
| **19** |  |
| **20** |  |
| **Total marks** |  |

***This paper consists of 11 printed pages.***

***Candidates should check to ensure that all***

***pages are printed as indicated and no question(s) is missing***

1. Name two factors that determine the quality of a scanner (1 mark)

………………………………………………………………………………………………………………………………………………………………………………………………………………………………

1. Differentiate between freeware and shareware (2 marks)

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

1. Name and explain three types of system maintenance (3 marks)

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

1. Describe briefly the functions of a modem for transmitting data between two computers through a standard telephone line (2 marks) ………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………
2. Define the term Biometrics and explain how it could be used to enforce security in computer systems (2 marks)

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

1. Describe any three integrity constraints in a database ( 3 marks)

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

1. Explain the following basic operations of the machine cycle in the control unit (3 marks)
2. Fetching

……………………………………………………………………………………………………………………………………………………………………………………………………

1. Decoding

……………………………………………………………………………………………………………………………………………………………………………………………………

1. Execution

……………………………………………………………………………………………………………………………………………………………………………………………………

1. Write the following acronyms if full (2 marks)
2. HDMI…………………………………………………………………………
3. SATA…………………………………………………………………………
4. PnP…………………………………………………………………………
5. WORM…………………………………………………………………………
6. Ministry of Lands prefers to use hard copy output over soft copy when handling documents for land matters. Give two reasons for this preference (2 marks)

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

1. Joan needs to send 15 photos to her friend Jean. She chooses to send all the photos together as a single email attachment. Each photo is 1.5 MB in size ,but the maximum possible attachment size is 20 MB.State how Joan can solve this problem (2 marks)

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

b) Differentiate between a word wrap and a text wrap (2 marks)

………………………………………………………………………………………………………………………………………………………………………………………………………………………………

1. a) Define the term ergonomics (2 marks)

………………………………………………………………………………………………………………………………………………………………………………………………………………………………

b) State and explain three examples of ergonomics (3 marks) ………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

1. Name and explain three functions of operating system (3 marks)

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

b) Explain the term Pen Computing (2 marks)

………………………………………………………………………………………………………………………………………………………………………………………………………………………………

1. As regards to communication within a computer network, what do you understand by the following terms: (2 marks)
2. Ethernet topology

………………………………………………………………………………………………………………………………………………………………………………………………………………

1. Token ring topology

………………………………………………………………………………………………………………………………………………………………………………………………………………

1. Explain the following terms as used in Desktop Publishing (2 marks)
2. Cropping

………………………………………………………………………………………………………………………………………………………………………………………………

1. Master page

………………………………………………………………………………………………………………………………………………………………………………………………

1. Change case is where a user applies so that the text can have some contrast in size .Write the word(2 marks)

Corona VIRUS

1. Title case…………………………………………………………………………
2. Toggle case ………………………………………………………………………...

**SECTION B (60 MARKS)**

**Answer question 16 and any other three questions from this section**

1. a) state two qualities of a pseudo code (1 mark)

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

b) Explain two methods of testing the program for errors (2 marks)

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

 The Figure below shows a flowchart. Use it to answer the questions that follow.



a) Interpret the flowchart (7marks)

b) Write a pseudo code for the flowchart (5 marks)

1. Seal Honey sells computer accessories and needs to order supplies. A spreadsheet program is used to calculate the orders as shown below.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | A | B | C | D |
| 1 | ITEM | Price per unit | Number ordered | Cost(Ksh) |
| 2 | Flash Disk | 1200 | 50 |  |
| 3 | Memory card | 1000 | 15 |  |
| 4 | Modem | 3000 | 20 |  |
| 5 |  |  | TOTAL |  |

1. Using absolute cell reference, write an expression to calculate the total cost in cell D3 (1 mark)
2. Write down the data type that is stored in cell (2 marks)
3. C4
4. D3
5. Write a function to display the number of cells in which the price per unit is greater than 2,000 (1 mark)

…………………………………………………………………………………………………………………………………………………………………………………………………………………….

1. State three ways by which threats to data integrity can be minimized (3 marks)

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

ii) Differentiate between logical file and physical file (2 marks)

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

e) Explain the following concepts as used in telecommunication systems. (3 Marks)

 (i) Attenuation

………………………………………………………………………………………………………………………………………………………………………………………………………………………………

 (ii) Bandwidth

………………………………………………………………………………………………………………………………………………………………………………………………………………………………

 (iii) Repeater

………………………………………………………………………………………………………………………………………………………………………………………………………………………………

f.Explain any three functions of UPS (3 marks)

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

1. a)With the aid of a diagram, describe the Hierarchical Database Model. (4 marks)

(b) List **three** factors that should he considered when developing a database application and
give reasons why each should be considered. (6 marks)

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

(c) (i) Name **three** types of validation checks during data entry in data processing.(3 marks)………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

 (ii)Differentiate *between primary key* and *index, key* as used in databases. (2 marks)

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

19a) Explain any two coding schemes used in data representation (2 marks)

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

B i) Using 8 bit representation, give the ones complement of -3510 (3 marks)

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

ii) What is the seven –bit of twos complement of 01102 (2 marks)

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

c)Perform the following calculation ( 3 marks)

 1100012+1001112-011112

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

d)(i) Convert the binary number 110.1012 to decimal (2 marks)

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

 ii) Convert 9.625 10 to binary (3 marks)

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

20(a) Despite the introduction of the ATM cards, human resource is still necessary in banks. Give two reasons why human beings are still needed. (2mks) ………………………………………………………………………………………………………………………………………………………………………………………………………………………………

………………………………………………………………………………………………………………………………………………………………………………………………………………………………

(b) State three advantages of the using the ATM card. (3mks) ……………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………...

 (c) What is virtual reality? (2mks)

……………………………………………………………………………………………………………………………………………………………...................................................................................................

 (d) List three areas where virtual reality is used. (3mks)

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

(e) What is GPS in air traffic control? (2mks ) ………………………………………………………………………………………………………………………………………………………………………………………………………………………………

 (f) Outline three ways computers can be used to enhance marketing. (3mks)………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………