

451/1 COMPUTER STUDIES (2018)**KCSE Trial Exam
MARKING SCHEME**

1. **Define a primary key field** (3mks)
 - This is a field that is used to distinguish one record from another.
 - A candidate key that is selected to identify all the attributes uniquely.

2. **State three functions of a database management system.** (3 mks)
 - -It makes it easy to access information
 - -It stores large amount of data with many types of records occurring many times
 - -Helps in establishing relations between data items
 - -Offers many different user requirements
 - -Enables flexible editing features
 - -Offers data storage and retrieval
 - -Offers authentication services
 - -Offers transaction support
 - -Offers authentication services
 - -Offers integrity services
 - -Offers support for data communication
 - -Offers utility services e.g. import/export/ statistical analysis e.t.c.

3. **State three functions of the central processing Unit (CPU).** (3 mks)
 - To perform all the processing including all computations
 - To control sequence of operations
 - To give commands to all parts of the computer system
 - To control the use of the main memory storage to store data and instruction.

4. **Explain the difference between a system software and application programs.** (2 mks)
 - Application software handles the job of the end user
 - system software helps in controlling and assisting in performance of the computer system

5. **State any four criteria for choosing an operating system** (4 mks)5
 - Hardware design and basic design of the computer.
 - Security
 - Application intended for the computer
 - Method of communicating with the computer i.e. many or few peripherals
 - Efficiency

6. **Worksheet cells are referenced using the column letter and row number e.g. D2 is cell in column D and row 2.**

Use the sample worksheet provided to answer the questions below

	A	B	C	D	E	F
1	Month	Jan.	Feb.	Mar.	April	Total
2	Fees	460	460	460	460	
3	Food	300	350-	305	270	
4	Electricity	100	100	100	100	
5	Fuel	150	150	150	150	
6	Transport	380	270	150	300	
7	Total					

- a) **Write down the data type that is stored in cell C5 (1mk)**
 -what cell contains the data items representing transport for the month of February?
 (1mk)
- b) **What cell contains the data items representing transport for the month of February?**
 -c6 (1mk)
- c) **Write down the formula that may be used to compute the total in cell f6.**
 (1mk)
 -=sum (B6: E6)
7. **Explain any three of the terms: Creating, editing, printing and saving as used in word-processing. (3mks)**
 Creating –starting a new document
 Editing- altering contents of a document
 Printing- getting a hard copy of the typed document
 Saving – storing a document on secondary media
8. **What is the use of the search and replace feature in a word-processor. (2mks)**
- i) To locate a particular word or character or text
 ii) To locate and replace the occurrence of a particular word/text or character with another
9. **State two differences between Disk Operating System (DOS) and WINDOWS operating system. (2 marks)**
- DOS is command driven while Windows is GUI driven
 - DOS is difficult to learn and use while Windows is easier to learn and use.

- 10. Explain how each of the following would affect the suitability of a room for use as a computer room. (1mks)**

(a) Burglar proofed door- enhances the security system as it prevents Unauthorized users from entering

(b) Availability of taps and sinks in the room – Could be detrimental since water can cause damage to computer equipment (1mks)

- 11. List three differences between a microcomputer and a super – computer (3mks)**

Microcomputers	Supercomputers
1. Huge in size	Small in size
2. Fast processing capacity	Low speed compared to
3. Mainly used in scientific and weather forecasting	Intended for use at home or Offices for normal application engineering application e.g. Like WP
4. Very expensive	Low cost compared to supercomputers.

- 12. Describe each of the following data processing methods (3 mks)**

- (i) Batch processing – transactions are collected and the processed at a pre- specified time. Once processing begins no amendments can be made.
- (ii) Distributed processing- Data processing where computations and data storage are spread out geographically among the computers on a network
- (iii) Multiprogramming- Running of two or more programs simultaneously

- 13. List three disadvantages of using traditional file management method (3mks)**

- Separation and isolation of data
- Duplication of data- same data stored in different departments/ locations
- Data dependence – when a change occurs it must be made in all other related departments that it affects.
- Incompatible file formats since data is stored in several places

- 14. State any three components of a local area network (1 ½ mks)**

- file server
- Printer server
- communication controller (software)
- workstation or terminals
- Network interface cards (NIC)
- Network cables
- networking accessories e.g. accessories e.g. ports

- 15. State three advantages of computer networking (1 ½ mks)**

- i) Sharing of resources/information (computers, printers, modem, internet etc)
- ii) Provision of local facilities without the loss of central control
- iii) Even distribution of work, processing loads etc.
- iv) Stored risk and mutual support

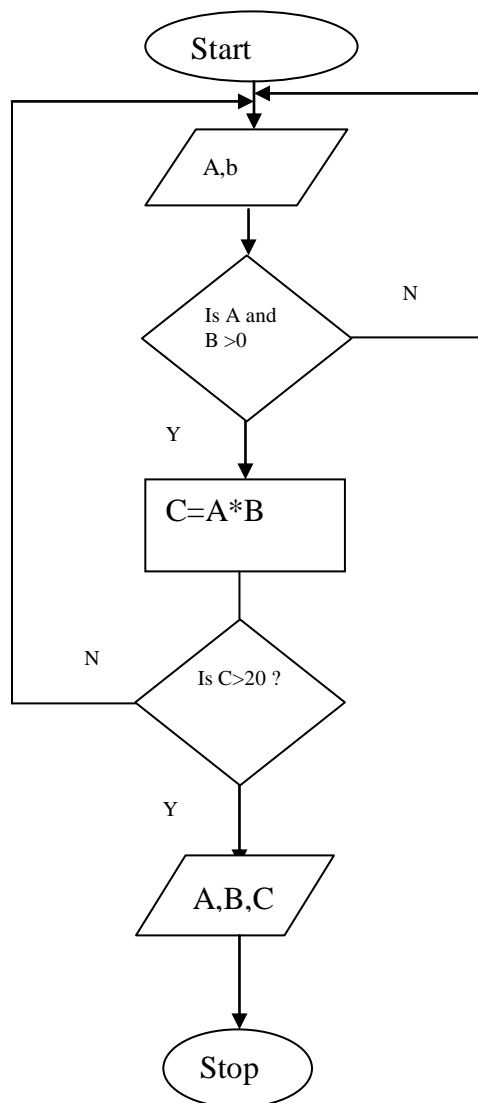
SECTION B (60 MARKS)**Answer Question 16 and Any Three Other Questions****16 a) What is meant by each of the following terms:****(i) Pseudo code****(3 Marks)**

- Pseudo code (or structured English) describes module design in words using syntax like programming language. It aims at providing programmers with clear and unambiguous process specification.

(ii) Flowchart

- A flowchart is a diagrammatic or pictorial representation that illustrates the sequence of operations to be performed to get the solution of a problem.

(b) Draw a flow chart that can be used to create a program which accepts two numbers greater than zero. The two numbers are multiplied to display the product. The product displayed should not be greater than twenty. If the product is greater than twenty, the program will ask for the re-input of the two numbers
(6 marks)



ii) Write a pseudo code for the flow chart in b (i) above

(6 mks)

```

START
Print "enter two numbers"
Read a,b
If(a and b >0 ) then
C= a*b
If (C<=20) then
Print "a", "b", "c"
Else if
Input a,b
End if

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17. (a) State three ways in which computer technology may affect employment patterns in organizations (3mks)

- Job replacement
- Job displacement
- Job creation

(b) State and explain three reasons why the employments patterns are affected (6mks)

- Job replacement- Manual jobs can be done by a computer
- Job displacement- Some employees will find themselves being taken to other departments
- Job creation- Skills will be required for IT personnel in such areas as networking and database management.

(b) Suggest three strategies that can be employed to manage resistance to change (3mks)

- Involve the employees concerned when trying to introduce a new system
- Train the employees in the new system
- Inform the employees in organization plans
- Introduce the new changes in planed order e.g. in phases, in pilot states etc.

(c) Give three advantages of computerization in an organization (3mks)

- IT may cut down on costs e.g. labour cost, storage etc
- IT provides timely and accurate reports that are crucial for decision making
- IT provides for easy management of an organization's data and information e.g. east retrieval of data
- IT may result in overall increase in productivity

18. (a) Identify three public Universities and three National polytechnics in Kenya where further computer training is offered, In each case state the highest level of qualification that can be acquired in computer training. (6mks)

Nairobi University	-	Masters
Kenyatta University	-	Degree
Moi University	-	Degree
JKUAT	-	Masters
Maseno	-	Degree
Egerton	-	Degree
Kenya polytechnic	-	Diploma
Mombasa polytechnic	-	Higher Diploma

Kisumu polytechnic	-	Diploma
Eldoret polytechnic	-	Diploma

(b) Distinguish between “job replacement” and job displacement” in references to computerization (2mks)

Job replacement – loss of job

Job displacement – Change of job but same company

(c) Give four reasons why a firm may decide to computerize its operation (4mks)

- **High quality products/ services**
- Better decision- making
- Cut down on costs/ labour
- Compete effectively
- Timely computations of tasks
- Enjoy benefits of global markets
- Sharing information
- Reduce redundancy

(d) An individual has a right to demand guarantee to privacy of personal information stored on a computer

Give three such types of information (3mks)

- Bank accounts records
- Income tax records
- Medical records
- Legal records
- Bio- data
- Property records

19. (a) Subtract 0111_2 from 1001_2 (2 mks)
 0010_2

(b) Using two’s compliment, subtract 7 from 17 and give the answer in decimal notation (4mks)

$$17 = 10001_2$$

$$7 = 00111_2$$

-7 in two’s compliment is 111001

$$\therefore 010001$$

$$\underline{111001}$$

$$+ (1)001010$$

The resulting answer is 011 since the overflow is ignored. In decimal notation this is 3_{10}

(c) Convert (3mks)

(i) $91B_{16}$ to octal

9	1	B
1001	0001	1011

100	100	011	011
4	4	3	3

$$91B_{16} = 4433_8$$

(ii) 376_8 to hexadecimal

(3mks)

3	7	6
011	111	110

0000	1111	1110
0	F	E

$$376_8 = FE_{16}$$

(iii) 9.625_{10} to binary

(3mks)

$$9 = 1001$$

$$0.625 \times 2 = 1.25 \text{ WRITE } 1$$

$$0.25 \times 2 = 0.5 \text{ WRITE } 0$$

$$0.5 \times 2 = 1.0 \text{ WRITE } 1$$

$$9.625_{10} = 1001.101_2$$



20. (a) Describe the following terms with reference to security of data:

(i) **Log files**

(1 ½ mks)

- A file that lists actions that have occurred. For example, web servers maintain log files listings every request made to the server. With log file analysis tools, its possible to get a good idea of where visitors are coming from, how often they return and how they navigate through a site.

(ii) **Firewalls.**

(1 ½ mks)

- A **firewall** is an information technology (IT) security device which is configured to permit, deny or proxy data connections set and configured by the organization's security policy. Firewalls can either be hardware and/or software based.

A firewall's basic task is to control traffic between compeer networks with different zones of trust. Typical examples are the Internet which is a zone with no trust and an internal network which is (and should be) a zone with high trust The ultimate goal is to provide controlled interfaces between zones of differing trust levels through the enforcement of a security policy and connectivity model based on the least privilege principle and separation of duties

b) A students' database comprises of students¹ details table and fees received table as shown below:

Students' details table

Surname
Middle Name
Admission Number
First Name
Course

Fees Received table

Admission Number
Amount
Date
Receipt Number

(i) **State the primary key field for each table.**

(2mks)

Student table- Admission Number

Fees Received table - Receipt Number

ii) State the field, which should serve as the linking field for the two tables. (1mark)

Admission number

(Note: Make Admission Number a foreign key in the fees table)

c) Describe the following terms with respect to computer security:

i) **Logic bombs**

(2 Mks)

- *A computer virus that is activated after a series of event/commands/date*

ii) **Physical security**

(2 Marks)

Threats that threaten the physical nature of computer equipment e.g. Fire, Lightening water, building access etc

iii) **Tapping.**

(2 Mks)

*Telephone tapping (or wire tapping/wiretapping) is the monitoring of telephone and Internet conversations by a third party, often by covert means. The **telephone tap or wire tap** received its name because historically, the monitoring connection was applied to the wires of the telephone line of the person who was being monitored and drew off or tapped a small amount of the electrical signal carrying the conversation*

(d) **List three functions of antivirus software.** (3 Mks)

- *Identify a virus/Warn*

- *Heal/Clean a virus*

- *Prevent/Protect infection*

- *Quarantine infected files*