KENYA NATIONAL EXAMINATION COUNCIL
REVISION MOCK EXAMS 2016
TOP NATIONAL SCHOOLS

MANG'U HIGH SCHOOL

COMPUTER STUDIES

PAPER 1

MARKING SCHEME

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451/1 PAPER 1

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SECTION A (40 MARKS)

Answer all the questions in this section

1. State the technology used in the following computer generations (2 mks)
   i) 4th generation: very large integrated circuits
   ii) 1st generation: Thermionic valves (vacuum tubes)
   iii) 2nd generation: Transistors
   iv) 3rd generation: Integrated circuits (Award ½mk for each correct answer)
2. Outline **two** areas that should be considered when categorizing software. (1 mk)
   - ✓ System software
   - ✓ Application software
3. State any three disadvantages of a magnetic diskette (3 mks)
   - ✓ Small storage capacity consultable for storing files
   - ✓ Limited life span (2 years at most)
   - ✓ Slow read/write speeds
4. a) Define data processing ` (1 mk)
   - ✓ Refers to the process of transforming raw data into meaningful output i.e. information. It can do either manually or electronically

   b) Explain **two** characteristics of good information (2 mks)
   - ✓ Complete
   - ✓ Timely
   - ✓ Relevant
   - ✓ Accurate (*2 marks for any two)
5. Distinguish between data verification and data validation (2 mks)
   Data verification is the process of checking that data is correctly transcribed while data validation is the process of checking that data entered at input satisfies is correct
   Award 2x1=2 mks
6. Describe the following menu tools as used in Ms. Word (2 mks)
   i) Print layout: Enables the user view the document as it would appear on the printed page.
   ii) Web layout: Enables the user to view the document as it would look as a web page.
   (*1 mark for every correct description)

7. Define the following terms as used in mail merging (4mks)
   - ✓ Main document: form letter (standard letter) which you intend to print or e- mail multiple times, sending each copy of different recipients
   - ✓ Data source: special record divided into field (list of addresses), when used in the merge document are called merge fields

8 a) What is the difference between real- time system and Online systems (2 mks)
   - ✓ Real- time: A situation where a computer processes the incoming data as soon as it occurs up- dates the transaction file and gives an immediate response that would affect the events as they happen. i.e. Airline booking.
   - ✓ Online- system: data processed is immediately received at a terminal or online input device attached to the computer: i.e. banking

   b) Explain how information and communication technology has contributed to teaching and Learning in schools. (2 mks)
   - ✓ Development of the digital content to enhance learning and teaching in schools.

- ✓ E-learning content has been made available to students
- ✓ Research is now done easily from the internet

9. State the uses of the following network devices. (2 mks)

i) Network interface cards
- ✓ Create the physical link between the computer and the transmission media

ii) Routers
- ✓ Interconnects different networks and directs the transfer of data packets from source to destination.

iii) Distinguish between thinnet and thicknet coaxial cables. (2 mks)
- ✓ Thinnet: has one dielectric insulator while thicknet has two dielectric insulator around the core and is thicknet than thinnet

10. Convert (111.010_2 to a decimal number (3 mks)

Place value	2^2	2^1	2^0	.	2^{-1}	2^{-2}	2^{-3}
Binary digit	1	1	1	.	0	1	0
value	4	2	1	.	.0	0.25	.0

Add values from left to right

111.010_2 is equivalent to 7.25_{10}

11. Explain the types of error that are likely to exist in a program? (4 mks)
- ✓ Syntax error :- grammar of programming language not followed
- ✓ Logical error:- program runs but does the wrong thing e.g. multiplies to give wrong product
- ✓ User unacceptability:- program runs but does not meet users requirements
- ✓ Run time error:- abnormal unexpected stoppages at the time of running / during execution e.g. on encountering something like 75/0

12. State **three** ways in which **ICT** can be used in industrial control (3 mks)
- ✓ Temperature control
- ✓ Fluid flow i.e. in petroleum refineries
- ✓ Regulation of pressure i.e. nuclear power stations

13. State **two** reasons why it is necessary to have well connected and proper cables in a computer lab (2 mks)
- ✓ To avoid stepping on live wires
- ✓ To ensure stable flow of power to electronic devices
- ✓ Loose connections can cause accidents in the lab

14. What do you understand by the term '**soft system''** in a system development? (1 mk)
- ✓ Systems whose boundaries keep on changing
- ✓ Have goals and objectives that usual conflict
- ✓ One cannot exactly define the exact measure of performance *1 mark any of the above

15. What is a relational database (1 mk)

A database structure in which data is organized in two- dimensional tables called relations where an element in any one table can be related to another piece of data in another table as long as they have a common data element

SECTION B (60 MARKS)

Answer question 16 and any other three questions from this section in the spaces provided.

16. Mumias sugar company pays casual employees based on the number of hours worked as follows

Less than 10 hours @ khs 100/= per hour

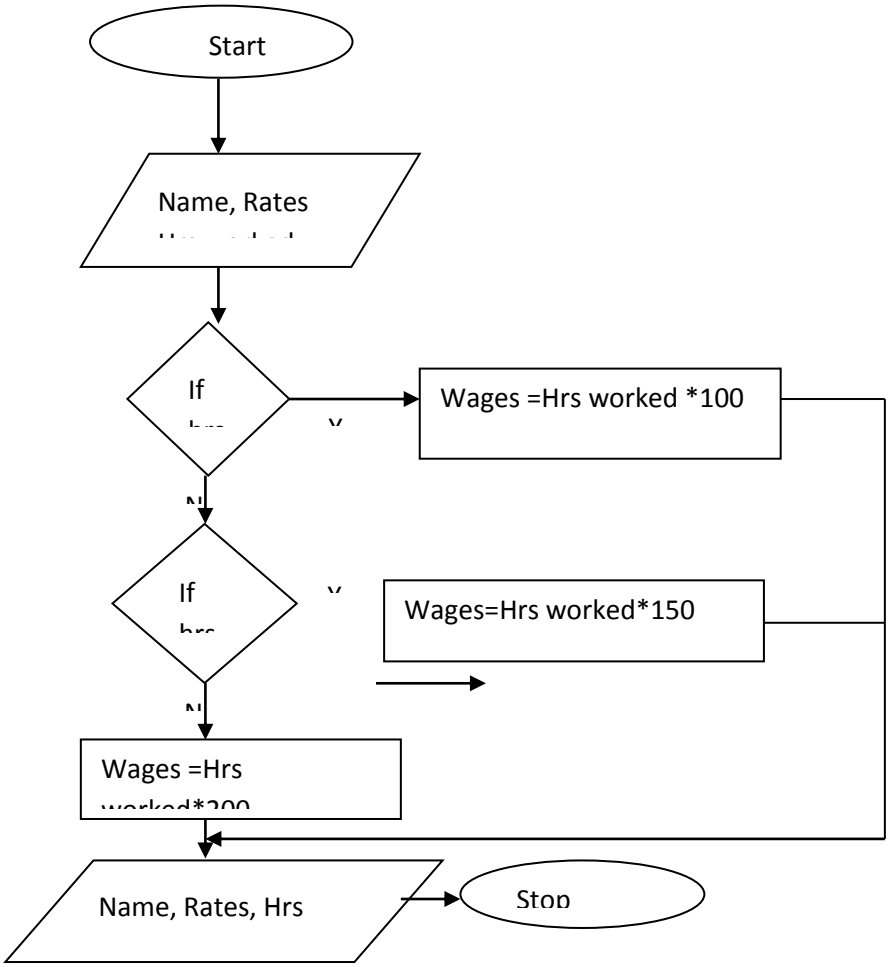
Up to 15 hours @khs 150/= per hour

More than 15 hours@khs. 200/=per hour

a) Write a pseudo code to input the name, rate hours worked. The pseudo code should output the name, hours worked and the wage paid. (6 mks)

1. Start
2. Enter name, hours worked.
3. If hours worked is less than 10 hours Rate= hours *100,
4. If hours worked is greater than 10 hours and less than 15 hours Rate =hours *150
5. If hours worked is greater than 15 hours Rate = hours *200
6. Calculate payment; wage =hours *Rate
7. Display hours worked, payment rate and name.
8. Stop

b) Draw a flowchart for the above problems



C) Write brief notes on structured programming (4 mks)

- A systematic technique of program design that assumes the disciplined use of a few basic coding structures and
- The use of top down concepts to decompose main functions into lower-level components for modular coding purpose to me workplace network.
- It takes advantage of growing communication networks to reduce unnecessary travel to the place of work.
- In turn it translates to reduced travel expenses and less stress due to commuting inconveniences such as traffic jams.

17. List four characteristics of a system (2 mks)

- ✓ Holistic thinking
- ✓ Subsystem
- ✓ Boundary and environment

- ✓ Purpose
- ✓ Process
- ✓ Inputs and Outputs

b) Give any three circumstances that may make an organization to develop new information system. (3 mks)

- ✓ New opportunities: chance to improve quality of internal processes and service delivery.
- ✓ Problems: Undesirable circumstances that prevent the organization from meeting its goals.
- ✓ Directives: demands from internal or external influence e.g. management, Government

c) Study the spreadsheet below and answer the questions that follow

	A	B	C	D
1	WESTLINK COMPUTER BOOKS CENTRE			
2	TITLE	PRICE	NO.SOLD	COST
3	Computer longhorn book 2	320	25	
4	Visual basic (6)turbo	820	21	
5	Computer longhorn book 4	350	100	
6	Computer science	900	12	
7	Computer Applications	845	36	
8	Computer hardware	1250	10	
9	Computer software	1250	27	
10				

i) Write down the formula that can be used to find the cheapest book (1 mk)

- ✓ = small ((c3:c9), 1) or =min (c3...c9)

ii) Write down the formula that can be used to determine the total sales for the book titled' computer Applications (1 mk)

- ✓ =b6*c6

iii) Write down the formula that can be used determine the average price of the books (2 mks)

= (B3+B4÷B5+B6+B7+B8+B9)/7

d) State any four advantages of using an electronic spreadsheet as compared to a traditional worksheet (2 mks)

- ✓ Utilizes powerful aspects of computer like speed, accuracy and efficiency to enable the user quickly accomplish his/ her tasks.
- ✓ Have inbuilt formulae called functions that enables the user to quickly manipulate mathematical data
- ✓ Have better document formatting capabilities.
- ✓ Automatically adjusts the result of a formula if the values in a worksheet are changed i.e. automatic recalculation.
- ✓ Enables the user to produce neat work because traditional papers, pencil, rubber and calculator are put aside
- ✓ Utilizes the large storage space on computer storage devices to save or retrieve documents.

e) Differentiate between a column chart and a bar chart as used in spreadsheet(4 mks)

- ✓ Column chart : represents data as a cluster of columns comparing values across categories
- ✓ Bar charts: Data values arranged horizontally as clustered bars compares values across categories

f) Define the term gutter in relation to column setting in DTP (1 MK)

It refers to the ally or space between columns of text in a page layout in desktop publishing.

18 a) Name and describe four main application areas of artificial intelligence in ICT. (12 MKS)

- ✓ Expert systems: software designed to operate at a level of a human expert in a specific area of specialization.e.g. medical diagnosis
- ✓ Natural language processing: special programming where computers can recognize and understand natural language
- ✓ Artificial neural networks: Use of electronic devices and software to emulate the neurological structure of human brain
- ✓ Robotics/ perception systems: Computer controlled device that emulate a human being in carrying out tasks that would otherwise be dangerous

(*1 mark for each correct application named and 2 marks each for correct description)

b) State three advantages of automated production in manufacturing industries. (3 mks)

- ✓ Increased efficiency because production ability is well balanced with the workload.
- ✓ Efficient utilization of resources i.e. raw materials, personnel hence less operating costs is incurred.
- ✓ Improved customer service where high quality products are produced in time

(1 mark every correct answer)

19 a) Describe any two roles of the following career opportunities in the ICT field. (8 mks)

i) System analyst

- ✓ Reviewing the current manual/ current system and making recommendations on how to replace it with a more efficient one.
- ✓ Working with programmers to construct and test the system.
- ✓ Co- ordinate training of users of new system.

*(give 2 marks for any two)

ii) Information system manager

- ✓ Prepare budget for the department
- ✓ Managing human resource within the department.
- ✓ Making sure all tasks in the IT department are done properly
- ✓ Keeping department inventory records up-to-date.

*(give 2 marks for any two)

iii) Network administrator

- ✓ Set-up a computer network.
- ✓ Maintain and enforce security measures on the network.
- ✓ Monitor the use of network resources
- ✓ Maintain and troubleshoot network related problems

*(give 2 marks for any two)

iv) Computer trainer

- ✓ Develop training reference material
- ✓ Train people on how to use a computer and various application programs.
- ✓ Prepare learners for ICT exams.
- ✓ Advising learners on various career opportunities in ICT field

*(give 2 marks for any two)

b) Distinguish between a primary key and a foreign key as used in DBMS. (2 mks)

- ✓ A primary key is a unique key that can uniquely identify each row/record in a file /table while a foreign key is a field in a record that points to a key field in another table

Award 2x1=2 marks

c) What do the term header and footer mean? (2 mks)

- ✓ Headers: are lines of text that appear at the top margin of every page or selected pages.
- ✓ Footer: are lines of text that appear at the bottom margin of every page or selected pages.

d) What do you understand by the terms attenuation and baseband signal. (2 mks)

- ✓ Attenuation: This the decrease in magnitude and energy as a signal progressively moves along the transmission medium.

- ✓ Baseband signal: digital signal that is generated and applied to the transmission medium directly without modulation.

20. a) Define the following terms. (3 mks)

i) Record

- ✓ A collection of related fields that represent a single entity.

ii) File.

- ✓ A collection of related records in a database

iii) Database

- ✓ Holds all related files or tables forming the highest data organization hierarchy

b) i) List any **three** ways of dealing with virus on a computer. (3 mks)

- ✓ Run anti- virus programs frequently
- ✓ Limit the sharing of secondary storage devices.
- ✓ Always install up-to-date anti-virus programs to your computer.
- ✓ Always scan all downloads while using the internet

*(give 3 marks for any three)

ii) Explain the functions performed by:

a) The control unit (2 mks)

- ✓ Co-ordinates all processing activities in the CPU as well as input, storage and output operation
- ✓ Determines which operation is to be executed

b) Arithmetic and logic unit (ALU)

- ✓ Performs al arithmetic and logic operations

c) Convert the 522_8 to its base 10 equivalent (2 mks)

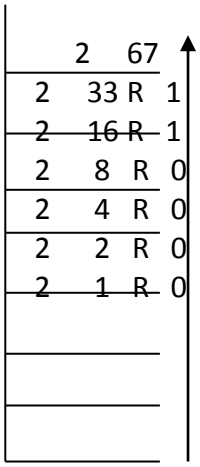
Place value	8^2	8^1	8^0
Octal digit	5	2	2
value	64	8	2

64 *5=320

$8 \quad *2 = 16$

$2 \quad *1 = \frac{2}{338_{10}}$

d) Using long division methods convert 67_{10} into binary. (2 mks)



0 R 1 Read the number upward

$67_{10}=1000011_2$

e) 0utline three disk management activities. (3 mks)

- Disk formatting
- Disk defragmentation
- Disk scanning
- Disk compression
- Disk back-up
- Disk partitioning