

NANDI CENTRAL DISTRICT MOCK
Kenya certificate of secondary education (KCSE)
451/1
COMPUTER
PAPER 1
JULY / AUGUST 2010

MARKING SCHEME

1. a) Distinguish between optical scanners and magnetic ink scanner 2mks
- Optical scanners capture data using optical or light technology, while magnetic ink scanner is used to capture data written using magnetic ink or coded onto a magnetic strip.
- b) The automated input technique where keying of script data is designated is sometimes referred to as data capture 2mks
2. a) Analog signal is made up of continuous varying waveform while digital signal is made up of non continuous discrete waveform
- b) - Message transmission and reception is very fast and efficient
- Telephone exchange relies of on computers to switch incoming outgoing mails
- Railway corporations rely on computers to coordinate movements of their wagons and goods
- Airtime industry, computers are heavily used in air traffic control and surveillance of air space using radar equipment as well as for reservation purpose
3. a) - Cache memory – speeds up processing (fetch cycle)
- Buffer – Act as interface between very fast processor and slow input and output devices
- Registers – temporarily holds data instructions just before and after processing
- b) - An accumulator is a register that holds the results of the last processing step of the ALU temporarily while address register temporarily holds next piece of data waiting to be processed (2mks)
4. a) i) Formatting – Its creation of tracks and sectors on a disk
- is the process of preparing a new disk for use by improving equally empty sectors and tracks on the surface of the disk so that the operating system can recognize and make it accessible
- ii) Partitioning – creating volumes by subdividing a large physical disk
- refers to the process of deviating a large physical disk into two or more partitions called logical drives
- iii) Compressing – creating more space on a disk by squeezing files into smaller storage locations on the disk.
- reduces the amount of space they occupy on a drive. Compressing is done decreases the amount of space used by all of the files and folders stored on that done
- iv) Defragmenting - consolidating fragments files into one area if the disk or so that each file occupies a single, contiguous space on the above.
- b) - Multitasking – allows a single CPU to execute what appears to be more than one application programs apparently at the same time
- Multi-user – access: allows more than one user to interactively use a computer
5. a) Its widely used in research, news and information dissemination, lessure and communication, a place to do business.
- b) i) Sign in / log in –when you want to access a website, type the full address of the website in the address box.
- ii) Surf in / browse – the process of accessing websites
- iii) Downloading – The process of transferring information from a remote computer to a local storage
6. a) process of publications like cards, newspapers etc by designing their text and graphics, input and inserting, editing, formatting and printing of text and graphical objects
- b) - Graphic design – using a STP software, typesetter can create and edit very complex text and

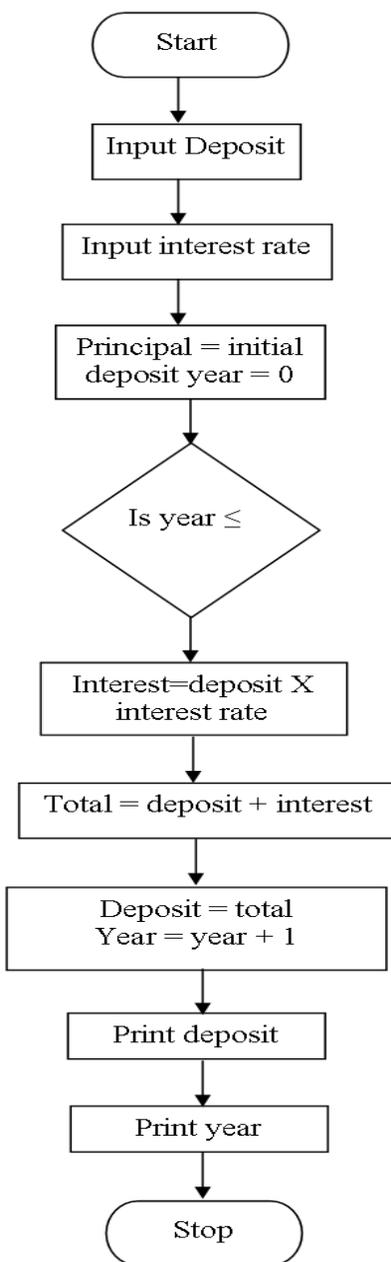
- graphical objects like pictures to the finest details
- Page layout design
 - Printing
7. a) - Source program: refers to the program code that the programmer enters in the program editor window that is not yet translated into machine readable form. 2mks
- Object code: Refers to the program code that is in machine readable form.
- b) - problem recognition 3mks
- Problem definition
 - Problem design
 - Problem coding
 - Programmer testing and debugging
 - Implementation and maintenance
8. Correct 126_8 to hexadecimal equivalent 1 ½ mks
- $$\left. \begin{array}{l} 1^2_8 \ 2^1_8 \ 6^0_8 \\ 8^2 \ 8^1 \ 8^0 \end{array} \right\} \text{ to decimal}$$
- $$64 + 16 + 1 = 81_{10}$$
- $$126_8 = 56_{16}$$
- | | |
|----|---------|
| 16 | 68 |
| 16 | 5 rem 6 |
| | 0 5 |
- $126_8 = 56_{16}$
- $$\begin{array}{r} 1 \ 2 \ 6 \\ 001 \ 010 \ 110 \\ 01010110110 \ \text{Hex} \\ 56 \end{array}$$
9. Alignment – Refers to where and how the text is arranged ie right, left, center, justified etc
- Specific – refers to the spacing between the lines or the characters
- Indenting – tabs settings are applied ie moving text away from the margin
- Section breaks – used to identify a section or column where a page ends or beginning of the next page
- Bullets and numbering – used to make steps in a procedure or items in a list
10. a) Its an arrangement of people, data processes and information that work together to support and improve the day-to-day operations in business and the decision making process.
- b) - Reviewing the existing system
- Making recommendations on how to improve or implement an alternative system
 - Working hand in hand with programmers to construct a computerized system
 - Co-coordinating training of the new system users and owners
11. i) Hierarchical model or tree – data stems are arranged in order of levels eg level 1, level 2, level 3, etc to access level 2 data stems, you have to access level one data stems there is a specific path that leads to each stem at lower levels
- ii) Relational data stems are stored together in structure eg table or relations. Therefore the relationship can be created between tables such that one record from one table can be related to another record in another table
12. - It's faster, accurate and efficient in accomplishing tasks
- It offers larger virtual sheet for data entry and manipulation
 - Electronic spreadsheet have better document formatting capabilities
 - It has inbuilt formulae (functions) that enables the user to manipulate mathematical data quickly.
 - Automatically adjusts the results of a formula if the values of worksheet are changed
 - It enables the user to produce neat work
 - It utilizes large storage space on computer storage devices to save and retrieve documents
13. Is protection of data against unauthorized access or modification? Its also denial or provision of data to unauthorized users

14. i) Misreading errors: They occur as a result of incorrect reading of the source document by the user and hence entering wrong values eg hand written figure 276 and it s typed 27b ie confusing 6 for b
- ii) Transportation error – occur as a result of incorrect arrangement of character ie putting character, in the wrong order eg the user may enter 469 instead of 496 1mk
15. - Data creation
- Data transmission
 - Data preparation
 - Media conversion
 - Light validation
 - Sorting

SECTION

Answer questions 16 and any other three questions in this section

16. a) Start
- Input initial deposit
 - Input interest rate
 - Set deposit to initial deposit
 - Set year to 0
 - While year \leq 5 Do
 - Interest = Deposit x Interest rate
 - Total = Deposit + Interest
 - Deposit = Total
 - Year = year + 1
 - END WHILE
 - Print, deposit , year
- STOP
- b)

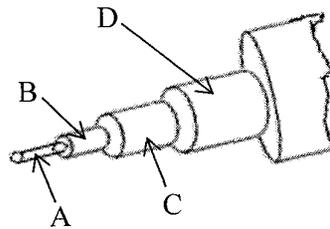


- c) IF.....THEN
 IF....THEN.....ELSE
 Nested IF
 Case

17. a) Refers to the accuracy and completeness of data entered in a computer or received from information system
- b) - Back up, especially on external storage media
 - Control access to data by enforcing securing measures
 - Design user interfaces that minimize chances if invalid data entry
 - Using error detection and correct software when transmitting data
 - Using devices that directly capture data from the source such as for code reader, digital cameras, optical character readers etc
- c) i) - The computer processes the incoming data as soon as it occurs, updates the translation files and gives the immediate response that would affect the even as it happens
 - The main purpose of a real-time processing is to provide accurate up-to-date information

hence better services based on a true (real) situation eg making reservation for airline seats ie booking through remote terminal the information is given immediately by the reservations

- ii) - refers to dividing processing tasks to two or more computers that are located on physically separate sites but connected by data transmission media. The distributes of processing increases efficiency and the speed of processing eg in banking industry where customers accounts are operated on servers in the branches but all the branch accounts can be administered centrally from the main server as if they reside on it.
- d) Input - hardware
Processing – software
Memory – data / information
Output – procedures
Storage – communication
Communication
- e) - Input
- processing
- memory
- output
- storage
- communication



- 18. a) i) Coaxial cable
- ii) A – Copper core
B – Core insulation
C – Aluminum foil
D – Braided shielding
- iii) - Has large bandwidth – can carry voice data and video simultaneously
- They are very stable even under high loads
- b) i) - Ups – a device that protects the computer from being damaged due to power instabilities
- Ups charges when main power is on and has power surge and brown out protection capabilities
- ii) - It regulates power from unstable power source to the required stable voltage by eliminating surges and brownouts
- It temporarily provides power to the computer incase of sudden power failure hence allowing the user to store / save his work and shut down the computer
- c) i) - Enables reception of output even when a few meters away from the computer
- Makes computing interesting and entertaining
- ii) - Write once read many (WORM)
- decoded once but can be accessed many times without changing content
- 19. a) i) - Effects of ICT (Information and Communication Technology)
- Job creation – it has introduced new job opportunities
- Job displacement – employee is moved to another place or department where computer skills are not required
- Job replacement – computer illiterate people have been replaced with those who have the desired computer skills

- ii) -Repetitive Strain Injury (RSI) – they are injuries resulting from wrist, hand, arm and muscle strain tendons and neck stain due to force repetitive movement eg entering data using keyboards
 - Eye strain and headache: - there is danger of developing computer vision syndrome (CVs). It brings eye strain, headaches, double vision, to solve problem use computer with good resolution use antiglare screen to filter excess light
- b) i) Artificial neural network is the use of electronic devices and software to stimulate the neurological structure of human brain. The idea is to try and emulate the cognitive learning process of the human brain and how it recognizes patterns. Human brain works by receiving signals from special sensory cells called neurons. When neurons receive information, they exit the cell to send a signal to the brain or not. Artificial neurodes in artificial networks in similar manner by perceiving environment stimuli and hence decoding whether to pass it on the system or not.
 - ii) - The neurodes can be trained to distinguish between what constitutes a signal and what does not
 - They are capable of recognizing patterns in large amount of data that are too complex for human brain. Therefore they can make predications and font abnormalities
- c) i) Holistic thinking:- It's a characteristic of a system where a system is considered as a whole. The various components that make up a system may be simple in nature and process but their combination creates a complex whole, whose overall goals are more sophisticated than those of individual components
 - ii) System entropy: - It's a decay of the system. System decay naturally overtime ie a system slowly becomes useless to the user either due to improvement in technology, new management policies or change in user requirements.
- 20. a) i) A system analyst is mostly responsible for analyzing the weakness of the system and designing an alternative system while a programmer mainly writes computer programs based on the system requirements.
 - ii) - Computer repair and maintenance
 - Computer assembling
- b) - Cost
 - Job opportunities
 - Whether the examination offered are recognized
- c) - Need to be onsite consumers a lot of time
 - The person to be observed might alter behaviour leading to wrong requirements being observed
- d) i) Froth old and the new system are run parallel to each other for sometimes until users have confidence in the new system then the old system is phased out.

Phased change over

 - ii) Anew system is implemented in phases or stages e.g. education system is changed from old to the new curriculum. Sometimes one phase may run a new system for fasting before it is implemented into all the other phases.
- e) i) Firewalls: It is a device or software that filters the data and information exchanged between different networks by enforcing the host network access control policy. 1mk
 - ii) Data encryptions: - Data on transit over a network faces danger of being tapped, listened to or copied to unauthorized destinations, such data can be protected by mixing it into a form that only the sender and receiver can be able to understand by reconstructing the original message from mix. 1mk
 - iii) Substances: - This is illegal destruction of data and information with an aim of erupting service delivery or causing great loses to an organization 1mk

