

# COMPUTER STUDIES

451/1 PAPER 1(Theory) JULY/ AUGUST 2010

## BOMET/CHEPALUNGU M-CATS

### MARKING SCHEME

1. a) -Computer programs in the main memory that control the basic computer hardware resources and the operation of the entire system✓1mk or  
-Main program that controls the execution of user applications / enable the user to access the hardware and software and resources of the computer✓1mk  
Any definition 1x1=1mk
- b) -command line base operating system e.g. MS-DOS✓  
- Menu driven operating system e.g. later✓ versions of MS-DOS  
- Graphical user interface e.g. windows✓ 1x3=3mks
- 2.a) - Computer laboratory is a room specially designed / prepared to facilitate installation of computer/ provided safe conducive environment for teaching and learning of computer studies 1x2=2mks
- b) – security of computer✓  
-Reliable source of power✓  
-Number of computers to be installed/ space ✓  
-Max number of users✓ Any2 stated and explain2x2=4mks
- 3.a) - Fragmentation is re-arrangement of scattered file/ folders on a storage media to occupy one location✓1mk
- (ii) -Compression is creating of more space on a disk by squeezing disk contents (files) into smaller storage location on a disk✓1mk
- (iii) -Partitioning is dividing a large physical disk into two or more partition / volumes✓1mk
4. a) -turnaround documents are documents produced as output and which can be re-used as input by the computer✓1mk 1x2=2mks
- b) - Optical character recognition (OCR) 1mk  
- Optical mark recognition✓ (OMK)  
- Magnetic ink character ✓recognition (MICR)  
- Optical bar recognition✓ (OBR)  
-magnetic stripe recognition✓ 1x2=2mks
- 5.a) –Algorithm is step by step instruction followed to solve a problem  
-program followed to solve a task  
-Steps followed✓ in solving a problem Any one definition 1x1=1mk
- b) -Calculate the area of a triangle  
Enter the base (b)✓  
Enter the height (h)✓  
Calculate area Area:  $= \frac{b \times h}{2}$   
Read/ print Area✓ 2mks
6. –carries out the processing of data✓  
-System control i.e. controls the sequence of operation within the computer✓  
-Supplies the commands to all parts of the computer✓

- Controls the main memory in storing of data and instructions ✓
  - Provides temporary storage (ROM) ✓
  - Provides permanent storage (ROM) ✓      Any 3 functions 1x3=3mks
7. -Batch processing is where data is first collected and data collected is processed✓ at once✓ 1mk
- Real-time –data is processed so quickly such that the results (output) produced are able to influence, control, or affect the outcome of the activity currently taking place✓ 1mk
- 8.a) - Document formatting is applying various styles to enhance the appearance of a document✓ 2mks
- b) -bolding✓
- font colouring✓
  - text alignment✓
  - font type / font size✓
  - setting tabs✓
  - underlining✓
  - Italizing✓      Any 5 1x5=5mks
- 9.a) Spread sheet is a computer program like the manual ledger sheet with rows and columns for entering data that can be manipulated mathematically using formulae✓2mks
- b)  $5+7+10+10=32$ ✓
10. -Normalization is the✓ process trying to eliminate✓ storage of duplicate values of in a data base      2mks
- b) -Relate different table in a database✓
- Ease the retrieval of data from a relational database✓
  - Breaking up multi theme tables into smaller workable tables✓      1x3=3mks
- 11.a) -Text wrap is controlling the flow of text over or around a graphical object✓ 1mk
- b) -Makes the text jump the object to the next page or column✓
- Allow the text to jump over the object and continue✓
  - Create a rectangular text wrap around all the sides of the object✓      2x3=6mks
12. -Transmission control protocol (TCP):-governs how data is transferred from one place to another✓ 1mk
- Internet protocol (IP):-it used to provide routing from one network✓ to another (i.e. - enables data to be sent and received by different computers on a network) 1mk
- 13 (i) -Data security
- The protection or international disclosure to unauthorized persons or from unauthorized modification✓      1mk
14. -A logical file is viewed in terms of what data items it contains and what processing operations may performed on the data while physical file is viewed in terms of how the data items found in a file are arranged on the storage media and how they can processed✓      4mks
15. -Portrait-tall✓
- Landscape-wide✓      2mks
- SECTION B**
- 16.a) **START**
- PRINT “Enter member name, share and deposit” ✓2mks
- INPUT Name, shares, deposit
- If share>100,000 THEN✓1mk

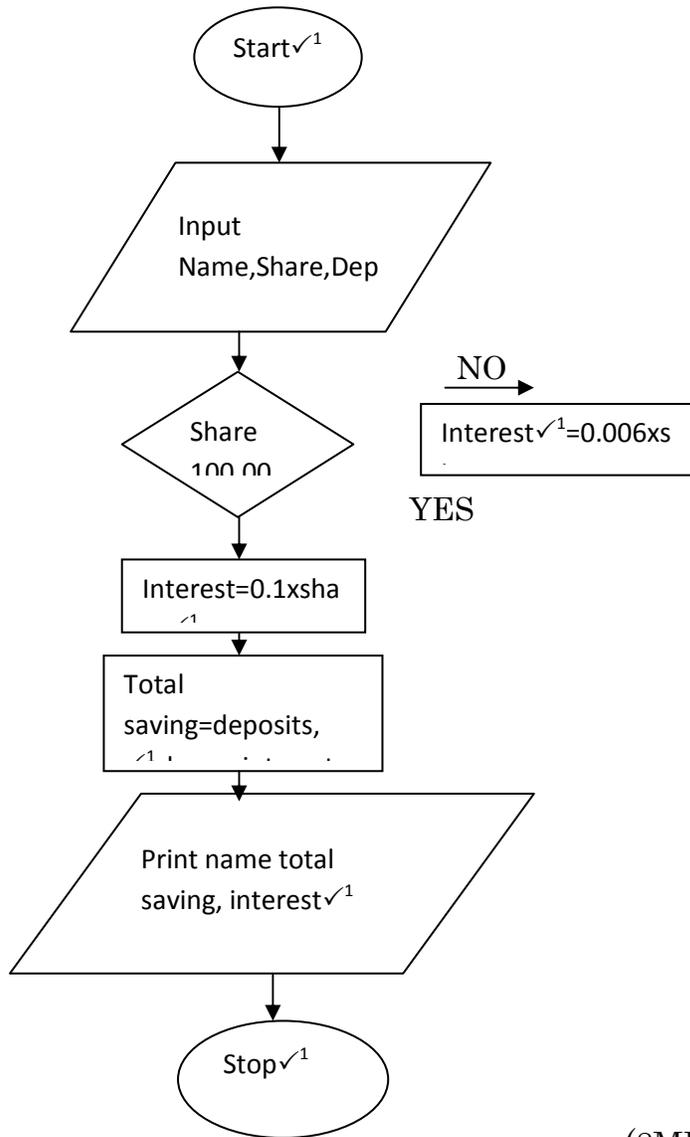
```

Interest=0.1xshares✓1mk
ELSE
    Interest=0.06xshares✓1mk
ENDIF✓
TOTAL saving=deposit +shares+ interest
PRINT Name, Total sharing, ✓interest✓ 2mks
END✓1mk

```

7mks

b)



(8MKS)

- 17.a) –efficiency✓1x2  
 -volume of data✓  
 -Number of users✓  
 -Time of data processing✓/ speed  
 -Reliability of the system✓

-Security of data✓  
 -Cost of the new system✓ Any 3 mention area and describe 2x3=6mks

b) -Output specifications✓  
 -input specification✓  
 -Table / file structure specification✓  
 -Hardware specification✓  
 -Software specification✓ Any 3 1x3=3mks

c) -system planning✓<sup>2</sup>  
 -System analysis✓<sup>2</sup>  
 -System design✓<sup>2</sup>  
 -System implementation and testing✓<sup>2</sup> Any 3 2x3=3mks

18.a) 1001-0111=01110✓ 1mk

b) 0111✓<sup>1</sup>(+7)

0010 ✓<sup>1</sup>(+2)

-0010=1110

Adding the two numbers

0111✓<sup>1</sup>

+1110

Sum 10101✓<sup>1</sup> Total 4mks

c) (i) 91B<sub>16</sub> to octal

Step 1

16 <sup>2</sup>	16 <sup>1</sup>	16 <sup>0</sup>
9	1	B

9x16<sup>2</sup>+1x16<sup>1</sup>+11x16<sup>0</sup>✓ 1mk

2304+16+11=2331<sub>10</sub>✓ 1mk

Step 2

Convert 2331 to octal

8	2331	Rem	↑
8	291	3	
8	36	3	
8	4	4	
	4	4	

91B<sub>16</sub>=4433✓<sup>1</sup>

Total 3mks

ii) Step1

8 <sup>2</sup>	8 <sup>1</sup>	8 <sup>0</sup>
3	7	6

3x8<sup>2</sup>+7x8<sup>1</sup>+6x8<sup>0</sup>✓

192+56+6=25410✓<sup>1</sup>

Step 2

Convert 254<sub>10</sub> to hexadecimal

16	245	Rem
----	-----	-----

4

16	15	14
----	----	----

$$376_8 = FE_{16}$$

Total 3mks

(iii)  $9.625_{10}$  to binary

2	9	Rem
2	4	1
2	2	0
	1	0
	1	1 ✓ 1mk



$0.625 \times 2 = 1.25 \rightarrow 1$  ✓ 1mk  
 $0.250 \times 2 = 0.50 \rightarrow 0$   
 $0.50 \times 2 = 1.00 \rightarrow 1$   
 $0.625_{10} = 101_2$  ✓ 1mk  
 $9.625_{10} = 1001.101_2$  ✓ 1mk

19. a) Online features

- Result of data processing is immediately available ✓ 1mk
- Peripherals are under direct control of control processor ✓ 1mk
- If in put is available the processing begins ✓ 1mk      Any 3 1x3=3mks

Applications

- Banking – balance inquiry etc ✓ 1mk
- Stock exchange- share dealings ✓ 1mk
- Stock control-stock record, reservations ✓ 1mk

Advantages

- Upto date ✓ 1
- Information is ready available ✓
- Queries are processed through terminals ✓      Any 2 1x2=2mks

b) Master file- contains permanent data e.g. reference, dynamic ✓ 1mk

(ii) Transaction file- holds temporary incoming or outgoing data ✓

- Used to update dynamic data on master file e.g. payment from customers ✓ 2mks

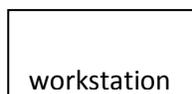
(iii) Back-up- duplicate copies of existing files

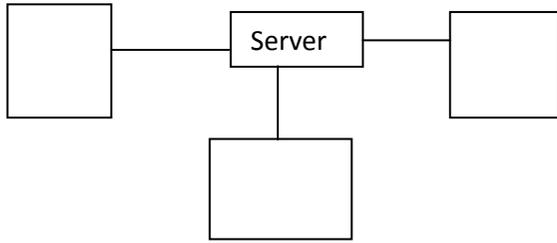
- supplement operational files incase of loss ✓ 2mks

(iv) Report file- contain sets of record a extracted from data in the master file

- used to prepare reports      Any 1x1=1mk

20.a) Star Topology





Server is connected to workstations like in a star✓

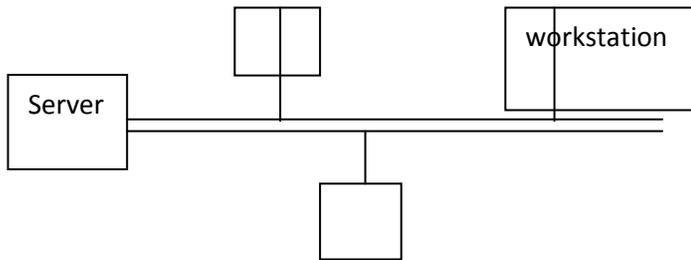
-Commonly used for WANS✓

-Communication is very fast✓

-Each computer has circuit link to the server✓

3mks

### BUS (line) Topology



-Computer are connected like braches✓

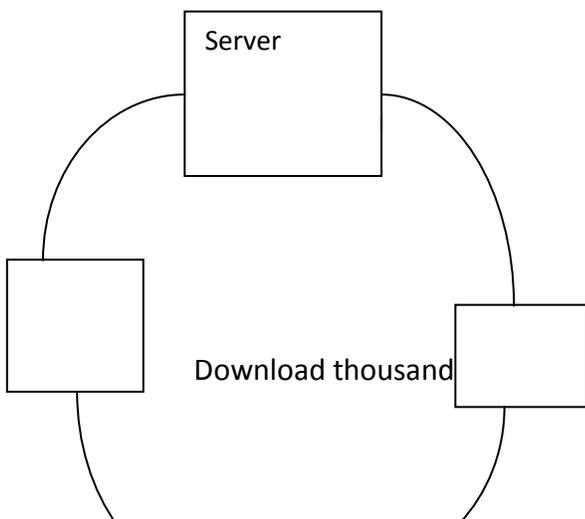
-Stations communicate independently of each other✓

-Like cable provides a common bus✓

-If one station fails other computers on the bus are not ✓affected

3mks

### Ring-Topology



Cabling is out as a ring✓

-Also called peer to peer✓

-Uni-directional communication✓ 3mks

20.b) (i) Interpreter-translate✓ high level language to an immediate form that can be executed✓ 2mks

(i) Compiler- processes✓ statements written in a particular language to machine✓ language (source code) 2mks

(iii) - Source code – programming ✓ statements created by the programmer which is ready✓ to be compiled 2mks