Name..... Class..... Adm No.....
451/1
COMPUTER STUDIIES
2½ hours

ALLIANCE HIGH SCHOOL
FORM 4 PRE-MOCK TERM 2 2016

COMPUTER STUDIES
Paper 1
(Theory)
Instructions to Candidates

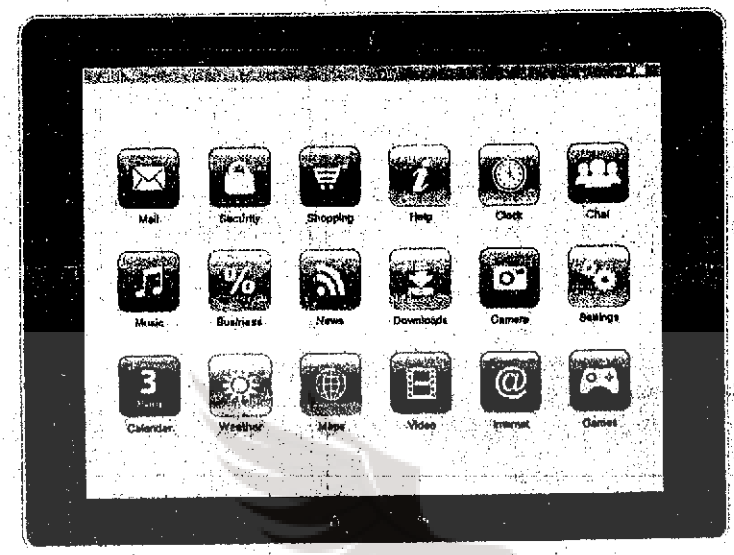
1. *Write your name, class and admission number in the spaces provided above.*
2. *This paper consists of TWO sections; **A** an **B**.*
3. *Answer **ALL** the questions in section A.*
4. *Answer question 16 and any other **THREE** questions from section B*
5. ***ALL** answers should be written in the spaces provided on the question paper.*
6. ***This paper consists of 10 printed pages.***
7. ***Candidates should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.***
8. Show ALL workings where applicable

For Examiner's use Only

Section	Questions	Candidate's Score
A	1-15	
B	16	
	17	
	18	
	19	
	20	
	Total Score	

SECTION A (40 MARKS)

1. The figure below shows an example of a tablet computer



One characteristic of a tablet computer is that it has a number of built-in physical devices to output data, such as a touchscreen.
State **three other** built-in physical devices that allow data to be output to a typical tablet computer. [3]

2. A factory uses a computer system to store information about customers, spare parts and general administration.
(a) Spare parts can be identified by selecting from diagrams on a computer screen.
Describe what hardware would be needed to allow the parts to be selected in this way [2]

b) The factory needs to buy a new printer. It has decided to buy either a dot matrix printer or an inkjet printer. Discuss **one** advantage and **one** disadvantage of using both types of printer in this application. [4]

3. A small company runs six cars in its fleet. They have produced a spreadsheet to compare running costs over a five month period:

	A	B	C	D	E
1	Car Identity	Total number of km	Cost per km ($)	Total cost ($)	Average cost per month ($)
2	10001	30 000	1.00	30 000	6 000
3	10002	20 000	4.00	80 000	16 000
4	10003	50 000	1.50	75 000	15 000
5	10004	30 000	2.00	60 000	12 000
6	10005	20 000	2.50	50 000	10 000
7	10006	30 000	1.50	45 000	9 000
8		Averages:	2.08	56 667	11 333

(a) It was decided to print out the spreadsheet formulas from D2 to E8. Write down the formulae in the cells D4 and E6 [2]

4. State **two** advantages of integrated software as opposed to single application software [2]

5. Name **two** files that are used in mail merge process [2]

6. State **two** types of storage devices [2]

7. Describe **four** components of an Expert System. [2]

8. A student tried opening an application program on a computer that was not functioning well. The program did not load and the operating system reported that the memory was insufficient. Give **two** causes of such response. [2]

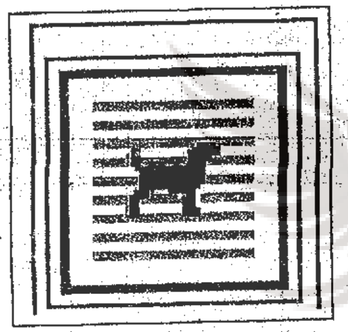
9. One function of an operating system is communication. Describe two types of computer user interfaces that an operating system might have. [2]

b) An operating system is described as 32-bit. Explain what this means. [2]

10. Describe **three** types of computer buses [3]

11. The electoral body in Kenya intends to automate polls. State **three** ways in which computers can be used to improve the election process [3]

12. An object was placed in text as shown in the figure below



State **four** text wrapping styles that can be applied to the object [2]

13. There is a tendency of adopting flat screen monitors as opposed to CRT monitors. List **three** advantages of using flat screen monitors. [3]

14. Distinguish between Cell Margin and Cell Border [2]

15. State **two** application areas of ICT in Banking other than record keeping. [2]

SECTION B (60 MARKS)

Answer Q16 (Compulsory) and any other THREE questions from this section

16. a)There are many tools that can help the programmer to reduce errors in their code when developing a computer program. State **three** tools that can help to identify errors or reduce the chance of there being errors when developing a program. [3]

b) The following algorithm shows a function:

```
FUNCTION Compare(x,y)
        IF x > y THEN
                RETURN -1
            ELSE
        IF x < y THEN
                RETURN 1
            ELSE
                RETURN 0
        ENDIF
        ENDIF
ENDFUNCTION
```

The function Compare returns an integer value.

i) Explain why a Boolean return value could not have been used. [1]

ii) Each of the following expressions evaluates to an integer. Give the output value for each:

- Compare(5,4) [1]

- (ii) Compare(-1,1) [1]

c) Draw a flowchart segment for the function above [5]

d) Describe **three** types of translator programs [3]

17. The two tables **Product** and **Supplier** form a relational database used by a shoe shop. Study them and use them to answer the questions that follow:

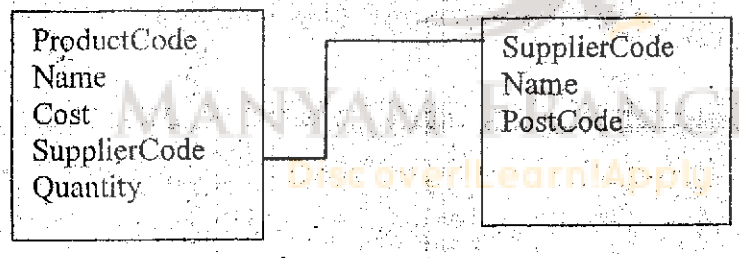
Product

ProductCode	Name	Cost	SupplierCode	Quantity
101AA	SandySole	21.50	32	105
321FD	Flipperty-Flop	5.80	51	19
423FF	RunFasterStripes	19.99	32	87
321FD	ComfyLoafers	38.99	51	43
431ED	ShapSpats	20.00	51	9
454CB	Army Boots	25.00	51	47

SupplierCode	Name	PostCode
32	BillsBigBoots	CG4 6UP
51	Trainers4Us	RC23 5XA

(a) State the primary key of the **Supplier** table and justify your answer. [2]

b) List the results of executing the following SELECT query on the database above. [1]



Field	Name	Quantity	PostCode	Name
Table	Product	Product	Supplier	Supplier
Sort				
Show	☐	☐	☐	☐
Criteria		>40		Trainer4Us
Or				

c) Draw an entity-relationship diagram for the following scenario, stating any assumptions you find it necessary to make, and showing cardinalities on the relationship line. Underline the attributes you consider suitable candidates for being primary keys in each entity. Also resolve any m:n cardinalities.

A university consists of a number of departments. Each department offers several courses. A number of modules make up each course. Students enroll in a particular course and take modules towards the completion of that course. Each module is taught by a lecturer from the appropriate department, and each lecturer tutors a group of students

18. a) Define data communication [1]

b) Describe three data communication elements [3]

c) State the meanings of the following network terms: [5]

i. Protocol
ii. Client
iii. Server
iv. Web application
v. Topology

c) Using an illustration describe the ring network [6]

19. (a) (i) What is an information system [1]

(ii) State two roles of an information system [2]

b) System Development Life Cycle is a structured methodology to develop a system. Explain the term **structured** [1]

ii) Describe five activities that are performed in the maintenance phase of SDLC. [5]

iii) Give three types of system maintenance tha an information system can undergo. [3]

(b) The following records were extracted from two files that contained student data

FILE A:

Reg. No	Student Name	Sex	Address
3002	Christine Onyancha	F	Box 8932 Kisii
3008	John Otieno	M	Box 7222 Nairobi
3001	Amina Muthee	F	Box 1234 Butere
3015	Peter Musyoki	M	Box 6621 Nyeri

FILE B:

Reg No.	Fees Payments	Date of payment
3002	1000	04/05/2011
3008	1500	03/09/2011
3001	900	02/09/2011
3015	400	21/09/2011

(i) Which of the two files above represent a transaction file? [1]

(ii) Give a reason for your answer in c (i) above. [1]

(iii) Name the other type of file represented above [1]

20. a) State **three** standard data coding schemes used in computing and electronic systems. [3]

b) Convert each of the following numbers:

i) 1010.101_2 to denary [3]

ii) 12.595_{10} to binary [4]

c) Subtract 110.011_2 from 11001.0101_2 using twos compliment [2]

d) Using ones compliment, perform the following binary arithmetic leaving the answer in binary notation.

$1101_2 - 100101_2$ [3]

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