3.23   COMPUTER STUDIES (451)

3.23.1 Computer Studies Paper 1 (451/1)

SECTION A (40 marks)

*Answer **all** the questions in this section in the spaces provided.*

1   State **one** function for each of the following elements of a computer system:

    (a)   hardware;   (1 mark)

    (b)   software;   (1 mark)

    (c)   liveware.   (1 mark)

2   Explain **two** health issues that could arise from the use of an unsuitable computer desk.
(4 marks)

3   List the **two** categories of system software.   (1 mark)

4   Explain **two** contents of a warranty that should be considered when purchasing computer
hardware.   (4 marks)

5   Students of a school intend to elect their school captain by secret ballot. State **three** ways in
which computers can be used to improve the election process.   (3 marks)

6   **Figure 1** and **figure 2** show icons representing commands used to manipulate graphics in a
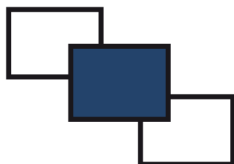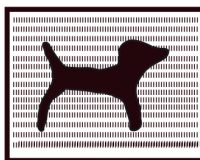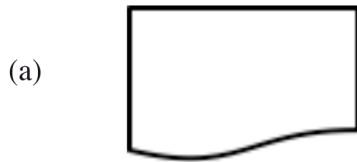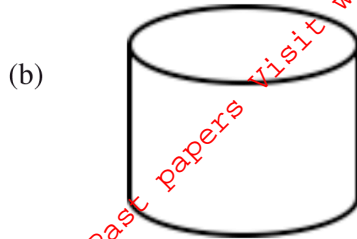desktop publishing package.

Figure 1   **Figure 2**

Explain the use of each of the icons labelled **figure 1** and **figure 2**.   (2 marks)

7   Give **two** differences between a Graphical User Interface (GUI) and a Commandline
Interface.   (4 marks)

8 Identify each of the following symbols as used in a system flowchart.

(a)

(1 mark)

(b)

(1 mark)

9 A student typed a letter in a wordprocessor and the last line of the letter flowed to the second page. State **three** ways in which the student could have adjusted the letter to fit on one page without changing the paper size. (3 marks)

10 A computer user is unable to retrieve a file stored in a server in an organisation. State **three** reasons why the user would need to contact the network administrator. (3 marks)

11 State **three** ways in which mobile phones have affected money transactions in the country. (3 marks)

12 State **two** items that an electronic mail should have for it to be sent. (2 marks)

13 List **four** devices that use scanning technology that would be used to capture data directly from the source. (2 marks)

14 State **two** ways in which hardware failure is a threat to data security. (2 marks)

15 Given the binary number 101011101111011, determine the number of:

(a) nibbles; (1 mark)

(b) bytes. (1 mark)

SECTION B (60 marks)

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

16 (a) State **two** advantages of using low level programming languages. (2 marks)

(b) Other than flowcharts, state **three** tools that can be used to present an algorithm. (3 marks)

(c) A form one admission interview consists of four tests; Mathematics, English, Kiswahili and Science. In order to qualify for admission, an applicant must attain a minimum average of 65% in the four tests and not less than 70% in Mathematics. All applicants must sit for the interview. Draw a flowchart that would read the scores for each applicant and determine whether an applicant is successful or not.   (10 marks)

17 (a) With the aid of a diagram, describe time sharing mode as used in computer data processing.   (5 marks)

(b) A company's management has opted to use computers to process data. State **four** factors that the management needs to consider when selecting the company data processing mode.   (4 marks)

(c) Explain the purpose of each of the following in system documentation:

(i) user manual;   (2 marks)

(ii) sample data;   (2 marks)

(iii) table descriptions.   (2 marks)

18 (a) State the role of each of the following data communication devices:

(i) repeater;   (1 mark)

(ii) router.   (1 mark)

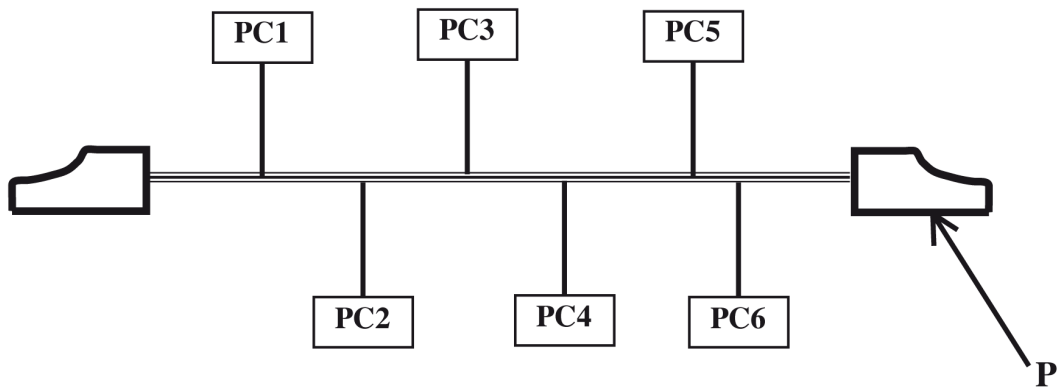(b) **Figure 3** shows a network based on the bus topology.

Figure 3

(i) Identify the component labelled **P**.   (1 mark)

(ii) State the function of the component labelled **P**.   (2 marks)

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(c) Students of Neema Secondary School formed an environmental club with a goal of taking part in environmental conservation activities. Outline **three** ways in which they can use the internet to achieve this goal. (3 marks)

(d) (i) A company has three branches A, B and C where A is the headquarter. The local area network (LAN) at A is directly connected to the LAN at B and directly to the LAN at C. Explain **two** benefits of having the LAN at B also directly connected to the LAN at C. (4 marks)

(ii) State **three** ways in which a company can protect its computer network from hackers. (3 marks)

19 (a) The following is an extract from a document created using a wordprocessor.

<u>CHALLENGES FACING THE YOUTH IN TODAY'S SOCIETY</u>

Most of the problems facing today's youth are not restricted to any one ethnic or religious group, but affects young people generally. Studies have shown that issues such as drug abuse, crime, violence, sexuality and poverty are the most serious challenges afflicting them.

Other challenges include:

- Identity crisis: *Who am I?*
- Lack of self confidence and low esteem: *I am worthless?*
- Sense of hopelessness: *Where am I going?*
- Confusion and ambiguity concerning moral issues: *What is right and wrong?*
- Negative impact of electronic media: *Entertainment*?
- Competitiveness in education the uneven playing field: *Excellence by whom*? ~~Not Me~~

Identify **six** formats that have been applied on the extract. (3 marks)

(b) State **three** tools in a wordprocessor that would help a user to minimize spelling mistakes when creating a document. (3 marks)

(c) The following is an extract of a spreadsheet created to manage sales. Use it to answer the questions that follow.

	A	B	C	D
1	ITEM NAME	UNIT PRICE	UNITS SOLD	
2	Bed	12,300	2	
3	Wardrobe	16,000	4	
4	Blanket	5,000	4	
5	Mattress	7,000	5	
6	Table	10,000	3	

(i) Write a formula that will compute the number of items whose unit price is more than 10,000. (3 marks)

(ii) If the formula = $B2 * C$2 was placed in cell D2, state the output if it was copied to D3. (2 marks)

(d) A school administers examinations to all students in sciences, humanities and languages. Use the entities, EXAMINATIONS, STUDENTS, SCIENCES, HUMANITIES and LANGUAGES to illustrate a network database model.

(4 marks)

20 (a) Describe the octal number system. (2 marks)

(b) Convert each of the following to the number system indicated:

(i) 111.101_2 to decimal; (3 marks)

(ii) 14.6875_{10} to binary. (4 marks)

(c) Convert the number -17_{10} into 8-bit:

(i) signed magnitude representation; (2 marks)

(ii) two's complement. (2 marks)

(d) Perform the arithmetic operation.
$110.11_2 + 11.011_2$ (2 marks)

1 Singlen Clean Limited is a waste management company. They have new services which they would wish to introduce to their clients through a letter. An invoice for previous services offered will be attached to the letter.

The following is a letter and an invoice to one of their clients.

SINGLEN CLEAN
Limited

P. O. Box 34891-4444
KONA NZURI
PHONE: +254(123)12345   FAX: +254(123)12346

Ref: PB/SCL/A234

Mr. Peter Mkubwa
P. O. Box 3789 - 4444
Mtaa Street

28th February 2011

Dear Customer,

Re: New Waste Management Services

Singlen Clean Ltd , a leading company with expertise in waste management, is pleased to inform you that it has expanded their services. We are now offering disposal of electronic waste at the following reasonable fees:

Code	Item Description	Fee per unit
432809	Tonner	Ksh. 60.00
432810	Computer Monitor	Ksh. 6000.00
432811	Computer's System Unit	Ksh. 6000.00
432812	Cables	Ksh. 30.00

We are happy to have you as one of our esteemed customers and we promise that we shall always strive to remain competitive in this emerging area.

Enclosed, find your invoice for the services offered last month.

Yours faithfully,

Beatrice Lembele
General Manager

SINGLEN CLEAN LTD
P. O. BOX 34891-4444
KONA NZURI
Phone +254(123)12345 Fax +254(123)12346

INVOICE

Order Number	Customer Name	Order Date	Required Date
234	Peter Mkubwa	23rd Jan 2011	24th Feb 2011

No	Item Description	Units	Unit Price (Ksh.)	Total Amount (Ksh.)
1	Broken furniture	2	30000.00	
2	Waste papers	5	75.00	
3	Assorted wastes	3	1200.00	
			Grand Total	

Received by:_____ **Signature**_____ **Date**_____

(a) Using a wordprocessing package, create a document with the following as they appear.

    (i) The letter.

    (ii) The invoice on the next page.

    (iii) Save the document as **Singlen**.   (42$\frac{1}{2}$ marks)

(b) (i) Copy the content of the document named Singlen into a blank document. Save the document as **Newsinglen**.   (1$\frac{1}{2}$ marks)

    (ii) Convert the data in the columns; code, item description and fee per unit into a table without retyping.   (2 marks)

(c) Use wordprocessing formulae to calculate the following in the invoice on the document named Newsinglen.

    (i) Total amount for each item.   (1 mark)

    (ii) Grand total.   (1 mark)

Save your work.

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(d)   Print each of the following on both sides of the printing paper.

    (i)   Singlen.   (1 mark)

    (ii)   Newsinglen.   (1 mark)

2   The figure below shows an extract of a worksheet showing sales and expenses for Amani Company for the months of January to June. Use it to answer the questions that follow.

	A	B	C	D	E	F	G	H
1								
2	SALES AND EXPENSES							
3								
4		Jan	Feb	Mar	Apr	May	Jun	Total
5	Sales	150000	125000	180000	130000	98000	165000	
6	Expenses							
7	Rent	10000	10000	10000	10000	10000	10000	
8	Utilities	5000	3000	5000	8000	4000	5000	
9	Salaries	40000	40000	42000	40000	40000	40000	
10	Suppliers	30000		39000	50000		50000	
11	Consultants			9000		45000		
12								
13								
14								
15	Profit or loss							
16								
17	% tax on sales	15%						

(a)   Create the worksheet as it appears in the figure in a spreadsheet package and save it as **Incomestatement**.   (9 marks)

(b)   Use a function that references only to cells to calculate:

    (i)   Total sales from January to June.   (1 mark)

    (ii)   Total for rent expenses and apply the formula to obtain the total for other expenses.   (2 marks)

    (iii)   The profit or loss for each month.   (2 marks)

(c)   Format the worksheet as follows:

    (i)   Merge the cells from A_2 to H_2.   (1 mark)

    (ii)   Resize the title to fontsize 16 and apply bold.   (2 marks)

(iii) Apply a single line border to all the cells containing data. (1 mark)

(iv) Align to the right all the column headings in the worksheet. (1 mark)

(v) Apply a grey background colour to all column headings. (1 mark)

(d) (i) Rename the current worksheet as **Profit**. (1 mark)

(ii) Copy the content of the worksheet named Profit to a new worksheet and rename the new worksheet **Modified**. (1 mark)

(e) The company is expected to remit 15% of their sales as sales tax to a revenue authority.

(i) Insert a blank row below the sales row and label it as "Sales Tax". (1 mark)

(ii) Compute the sales tax for January using absolute cell referencing to obtain the tax for the other months. (3 marks)

(iii) Calculate profit or loss for each month after taxation. (2 marks)

(f) (i) Insert a blank row below the profit or loss row and label it as "Comment". (1 mark)

(ii) Use the "IF" function to display comments for the profit or loss as follows:

Profit or loss	Comment
More than 60,000	Ok
More than 30,000 and less than 60,000	Break even
Less than 30,000	Check

(4 marks)

(g) Create a bar chart to compare the sales and the total expenses for each of the six months and:

(i) Insert the chart title: "Sales Expenses Analysis";

(ii) Insert the x-axis label: "Month";

(iii) Insert the y-axis label: "Amount";

(iv) Insert data labels for the sales series;

(v) Save it as a new worksheet named **Comparison**. (11 marks)

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(h)   Set page orientation of the worksheet named Modified to landscape.   (1 mark)

(i)   Print the following worksheets:

    (i)   Profit;

    (ii)   Modified;

    (iii)   Modified showing the formula;

    (iv)   Comparison.   (5 marks)