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. Write each of the following acronyms in full as used in computing. (2 marks)
   
   (a) CAD  
   
   (b) DVD  
   
   (c) WORM  
   
   (d) POS

2. A school keeps student records in a database. The data is coded before entry. State *three* reasons why the coding is necessary. (3 marks)

3. Differentiate between Bcc and cc in an email. (2 marks)

4. State *three* risks posed by improper cabling in a computer laboratory. (3 marks)

5. List *two* career opportunities directly associated with computer networking. (2 marks)

6. A retailer uses a spreadsheet program to calculate profits. **Figure 1** shows the spreadsheet.

<table>
<thead>
<tr>
<th></th>
<th>A Items</th>
<th>B Cost Price</th>
<th>C Selling Price</th>
<th>D Profit per Item</th>
<th>E Items sold</th>
<th>F Total Profit</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Item 1</td>
<td>305</td>
<td>350</td>
<td>45</td>
<td>32</td>
<td>1440</td>
</tr>
<tr>
<td>3</td>
<td>Item 2</td>
<td>100</td>
<td>120</td>
<td>20</td>
<td>45</td>
<td>900</td>
</tr>
<tr>
<td>4</td>
<td>Item 3</td>
<td>200</td>
<td>220</td>
<td>20</td>
<td>32</td>
<td>640</td>
</tr>
<tr>
<td>5</td>
<td>Item 4</td>
<td>107</td>
<td>130</td>
<td>23</td>
<td>89</td>
<td>2047</td>
</tr>
</tbody>
</table>

**Figure 1**

(a) Which row contains labels only? (1 mark)

(b) Write the formula that has been entered in cell F2. (2 marks)

7. State *three* reasons why an organisation may opt to develop its own software in-house rather than buy off-the-shelf software. (3 marks)
The topology below is formed by combining two types of topologies.

Figure 2

(a) Give one name for the combined topology in figure 2. (1 mark)

(b) Name the two topologies forming the combined topology in figure 2. (2 marks)

An organisation intends to replace an existing system by carrying out the process in stages.

(a) Name this implementation strategy. (1 mark)

(b) Give two reasons why the organisation is opting to use the implementation strategy in (a) above. (2 marks)

Explain the importance of disk partitioning. (2 marks)

Differentiate between pull-down menu and pop-up menu as used in Graphical User Interface (GUI) operating systems. (2 marks)

The 21st century has had many forms of ICT technologies improving the various means of communication. However, these changes have brought many challenges. State three negative social impacts of these technologies. (3 marks)

Explain why a DTP application would be preferred to a word processing application when designing a publication. (2 marks)

A computer is idle but the hard disk light is blinking, indicating some activity. State two possible causes of this. (2 marks)

Describe compatibility as a factor to consider when purchasing a computer. (2 marks)

Identify the appropriate output device for the production of each of the following:

(a) receipts where carbon copies are required; (1 mark)
Answer question 16 and any other **THREE** questions from this section in the spaces provided.

16  (a) **Figure 3** shows a flowchart. Use it to answer the questions that follow.

(i) Determine the output from the flowchart if:
   
   I. $X = 5$;  
   II. $X = 7$.

(ii) Write a Pseudocode for the flowchart in **figure 3**.

(iii) Modify the flowchart so that it can be used to get the sum of integers between 50 and 100.

(b) List **two** programming language translators.
17  
(a) Describe three types of validation checks as used in data processing. (6 marks)

(b) A company has opted to store its employees' personal details in a computer system. Describe two software methods that may be used to prevent unauthorized access to these details. (4 marks)

(c)  
(i) Describe each of the following data processing modes:
   I. real-time;
   II. interactive. (2 marks)

(ii) State an application area where real-time data processing mode is applied. (1 mark)

18  Figure 4 shows an advert placed in a newspaper. Use it to answer the questions that follow.

<table>
<thead>
<tr>
<th>NEW ARRIVALS - LAPTOP COMPUTER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hdd</td>
</tr>
<tr>
<td>300 GB</td>
</tr>
<tr>
<td>RAM</td>
</tr>
<tr>
<td>512 MB</td>
</tr>
<tr>
<td>Clock Speed</td>
</tr>
<tr>
<td>2.3 GHz x 2</td>
</tr>
<tr>
<td>Optical Drive</td>
</tr>
<tr>
<td>DVD</td>
</tr>
<tr>
<td>Screen</td>
</tr>
<tr>
<td>17 inches</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

OTHER PCs AVAILABLE

Ksh 48,000

(a)  
(i) Define a laptop computer. (1 mark)

(ii) The screen is said to be 17 inches. Explain what this means. (2 marks)

(b) State one advantage of having each of the following provided with a laptop.

(i) modem .......................................................... (3 marks)

(ii) USB .................................................................

(iii) free suite .........................................................
State the software package in the free suite which is most suitable for each of the following:

(i) computing budgets ..............................................................................................................
(ii) creating documents ..............................................................................................................
(iii) designing of brochures .......................................................................................................
(iv) records management .........................................................................................................

(c) (4 marks)

State three advantages of using a computer to design an advert such as the one in Figure 4.

(3 marks)

State two benefits of having the advert uploaded on the internet.

(2 marks)

19 A worker is unable to travel to the office but may still be able to do the office work through telecommuting.

(a) Explain why the worker may use each of the following:

(i) email; .................................................(2 marks)
(ii) fax; ................................................... (2 marks)
(iii) digital camera; ................................. (2 marks)
(iv) firewall. ............................................ (2 marks)

(b) The worker needs to make regular backups of documents sent to the office. State three reasons for this.

(3 marks)

(c) Explain two benefits that the employer will get by allowing this worker to do the office work through telecommuting.

(4 marks)

20 (a) (i) Differentiate between one's complement and two's complement in data representation.

(2 marks)

(ii) Explain the preference of binary number systems over decimal number systems in computers.

(2 marks)

(b) (i) Using one's complement, subtract 100011₂ from 010010₂.

(4 marks)

(ii) Convert the number 21.03125₁₀ to its binary equivalent.

(5 marks)

(c) Perform the following binary operations.

1101 + 11011 + 101 + 11111

(2 marks)
1 **Table 1, table 2 and table 3** are extracts of records kept in a health centre for patients, doctors and consultations respectively.

<table>
<thead>
<tr>
<th>Patients numbers</th>
<th>Names</th>
<th>Year of Birth</th>
<th>Gender</th>
</tr>
</thead>
<tbody>
<tr>
<td>0120</td>
<td>Jean</td>
<td>1970</td>
<td>Female</td>
</tr>
<tr>
<td>0121</td>
<td>Paul</td>
<td>1982</td>
<td>Male</td>
</tr>
<tr>
<td>0122</td>
<td>Alice</td>
<td>1976</td>
<td>Female</td>
</tr>
<tr>
<td>0123</td>
<td>Allan</td>
<td>1998</td>
<td>Male</td>
</tr>
</tbody>
</table>

Table 1

<table>
<thead>
<tr>
<th>doctors numbers</th>
<th>Names</th>
</tr>
</thead>
<tbody>
<tr>
<td>520</td>
<td>Charles</td>
</tr>
<tr>
<td>521</td>
<td>Beatrice</td>
</tr>
<tr>
<td>522</td>
<td>James</td>
</tr>
<tr>
<td>523</td>
<td>Isaac</td>
</tr>
</tbody>
</table>

Table 2

<table>
<thead>
<tr>
<th>Consultation Number</th>
<th>Consultation date</th>
<th>Patient Number</th>
<th>doctor Number</th>
<th>Ailment</th>
</tr>
</thead>
<tbody>
<tr>
<td>101</td>
<td>07/09/2012</td>
<td>0120</td>
<td>520</td>
<td>flu</td>
</tr>
<tr>
<td>202</td>
<td>09/09/2012</td>
<td>0123</td>
<td>521</td>
<td>malaria</td>
</tr>
<tr>
<td>303</td>
<td>13/09/2012</td>
<td>0121</td>
<td>522</td>
<td>cough</td>
</tr>
<tr>
<td>405</td>
<td>14/09/2012</td>
<td>0120</td>
<td>520</td>
<td>flu</td>
</tr>
<tr>
<td>507</td>
<td>15/09/2012</td>
<td>0121</td>
<td>522</td>
<td>cough</td>
</tr>
<tr>
<td>608</td>
<td>16/09/2012</td>
<td>0122</td>
<td>521</td>
<td>malaria</td>
</tr>
<tr>
<td>704</td>
<td>16/09/2012</td>
<td>0123</td>
<td>523</td>
<td>measles</td>
</tr>
<tr>
<td>808</td>
<td>17/09/2012</td>
<td>0121</td>
<td>522</td>
<td>cough</td>
</tr>
<tr>
<td>901</td>
<td>30/09/2012</td>
<td>0122</td>
<td>521</td>
<td>malaria</td>
</tr>
<tr>
<td>1021</td>
<td>01/10/2012</td>
<td>0123</td>
<td>523</td>
<td>measles</td>
</tr>
</tbody>
</table>

Table 3

(a) (i) Using a database application package, create a database file named PATIENTSINFO. (1 mark)

(ii) Create three tables named PATIENTS, DOCTORS and CONSULTATIONS that will be used to store the data in table 1, table 2 and table 3 respectively. (14 marks)

(iii) Set the primary key for each table. (3 marks)

(iv) Create the relationships among the tables. (2 marks)
(b) (i) Create a data entry form for each table. (3 marks)

(ii) Enter the data in **table 1**, **table 2** and **table 3** into the Patients, Doctors and Consultations tables respectively. (9 marks)

(c) (i) Create a query named PatientAge to display Patients' Names, Gender and Age on the year of visit. (4 marks)

(ii) Create a query named Beatricedetails to display Patients' Names, Ailment and Consultation Dates for patients treated by Doctor Beatrice. (3 marks)

(d) (i) Create a report to display the Patients' Names, Consultation Dates, Ailments and the Names of the Doctors consulted. The records in the report should be grouped by Patients' Names and the number of consultations by each patient should be displayed. (5 marks)

(ii) Title the report as "Consultations Per Patient" and save it as Consultations. (2 marks)

(e) Print the following:

(i) Tables: Patients, doctors and consultations; (1 mark)

(ii) Queries: PatientAge and Beatricedetails; (1 mark)

(iii) Report: Consultations; (1 mark)

(iv) Form: Consultations. (1 mark)

2 The **Figure** on page 5 shows the design of the cover page of a book. It comprises of the front, the back and space in between where book pages will be attached. Use a desktop publishing package to design the cover page as follows:

(a) Create a new publication named book cover with the following page layout.

(i) paper size: A4,

(ii) orientation: landscape,

(iii) margins: 3 cm or 1.18 inches all round. (4 marks)

(b) Enter the text and objects and format them as they appear in the **Figure**. The front and back sections of the book cover, each measures 18 cm (7.1 inches) by 12.5 cm (4.9 inches) and the space between them measures 1.7 cm (0.7 inches). (45 marks)

(c) Save and print the publication. (1 mark)