
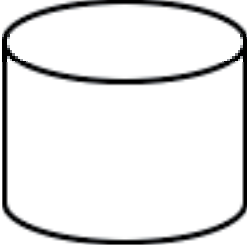


## 4.23 COMPUTER STUDIES (451)

### 4.23.1 Computer Studies Paper 1 (451/1)

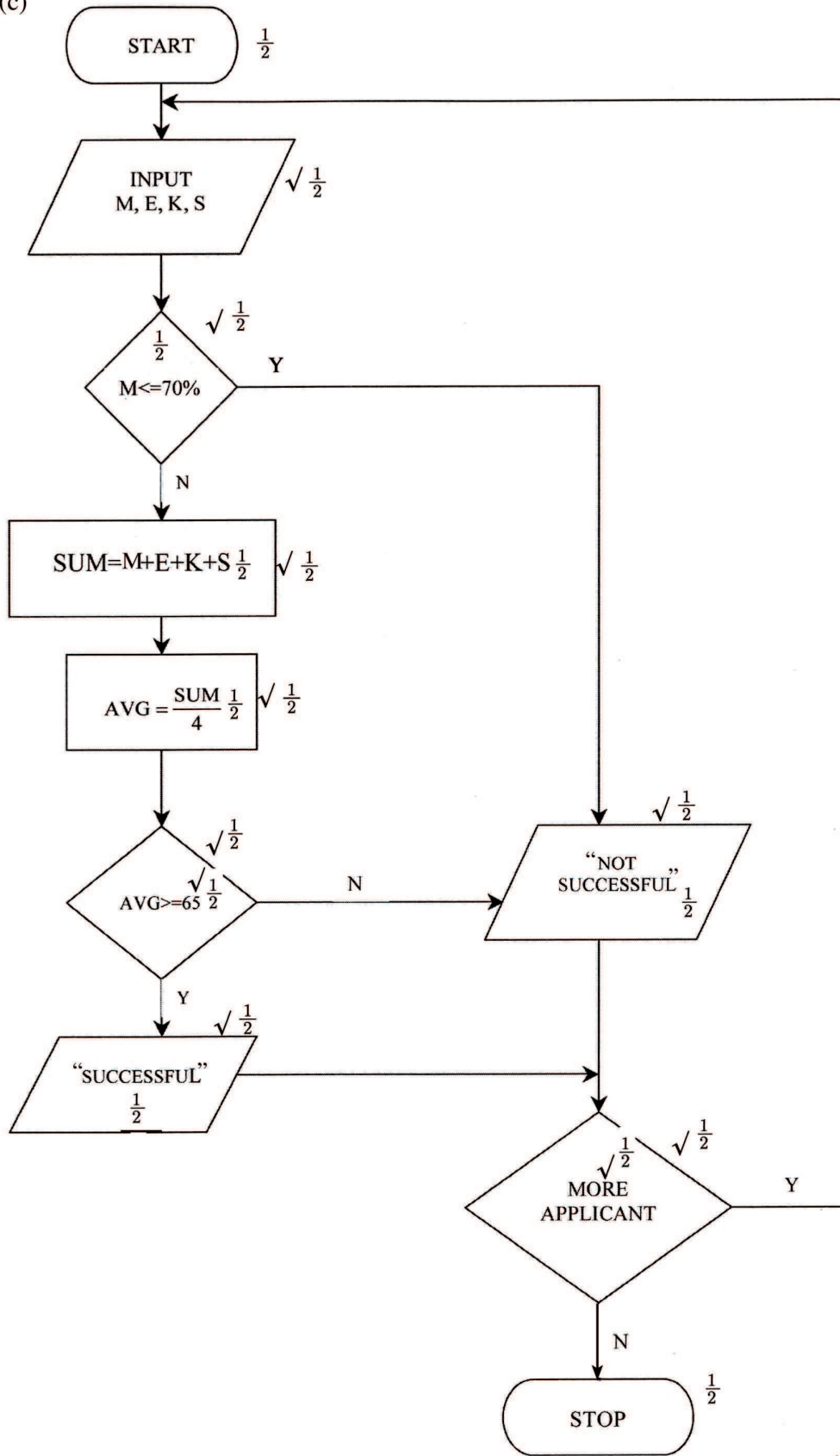
SECTION A (40 marks)		
QNS	RESPONSES	MARKS
1.	<p><b>Function of:-</b></p> <p>(a) Hardware: To perform tasks of inputting, storage, outputting, processing during data processing and communication.</p> <p>(b) Software: - Instructs the hardware/computer on what to do during data processing. - Provides interface between hardware and liveware. - Accept functions of software based category ie. system / application/working/uses.</p> <p>(c) Liveware: Meant to design or operate a computer.</p>	<p>1</p> <p>1</p> <p>1</p>
2.	<p><b>Problems arising from use of unsuitable computer desk.</b></p> <p>✓ It could lead to back problems if the desk is of an unrealistic height.            ✓ If it does not provide good positioning of the monitor, it could result in eye strain.            ✓ Wrist problems will arise if the keyboard and mouse seating positions are bad.            ✓ Injury as a result of falling computer components due to weak computer desks/ small size.</p> <p style="text-align: right;">(First 2 x 2)</p>	4
3.	<p><b>Categories of system software</b></p> <p>✓ Firmware;            ✓ Networking software;            ✓ Operating system;            ✓ Utilities.</p> <p style="text-align: right;">(First 2 x <math>\frac{1}{2}</math>)</p>	1
4.	<p><b>Two factors to consider when evaluating warranty</b></p> <p>✓ Period/ duration/scope of cover: The warranty should specify the duration of time covered.            ✓ Service agreement/level: The warranty should indicate the type of service to be provided.            ✓ Cost implication/liability agreement: Cost sharing between the dealer and the buyer in the event of any loss or malfunction.            ✓ Call out response.</p> <p style="text-align: right;">(First 2 x 2)</p>	4

5.	<p><b>Three ways of using computers in electing school captain</b></p> <ul style="list-style-type: none"> <li>✓ Registering voters/(faster);</li> <li>✓ Voter identification (accurate);</li> <li>✓ Actual voting;</li> <li>✓ Tallying process (speedy).</li> </ul> <p style="text-align: right;">(Any 3 x 1)</p>	3				
6.	<p><b>Figure 1: Bring to front or bring to back</b> Used when the target graphic is hidden by other objects. When clicked, the target graphic is brought to the front.</p> <p><b>Figure 2: Text wrap</b> It is used when a graphic is placed within the text area and the user needs to define how the text flows around the graphic.</p>	1  1				
7.	<p><b>Distinction of GUI and command line operating systems</b></p> <table border="1" data-bbox="236 808 1268 1435"> <thead> <tr> <th data-bbox="236 808 751 853">GUI</th> <th data-bbox="751 808 1268 853">Command line</th> </tr> </thead> <tbody> <tr> <td data-bbox="236 853 751 1435"> <p>Makes use of emerging software/and hardware technologies Their interfaces have:</p> <ul style="list-style-type: none"> <li>- ribbons</li> <li>- control buttons</li> <li>- scroll bars</li> <li>- menus</li> <li>- can process complex graphics</li> </ul> <p>The user interacts by:</p> <ul style="list-style-type: none"> <li>- clicking</li> <li>- scrolling</li> <li>- mouse over</li> </ul> <p>More user friendly.</p> </td> <td data-bbox="751 853 1268 1435"> <p>Hardly makes use of emerging hardware/software technologies. Their interfaces have:</p> <ul style="list-style-type: none"> <li>- typed commands</li> <li>- prompt</li> <li>- editor window</li> <li>- cannot process complex graphics</li> </ul> <p>Users interact by typing in commands</p> <p>Less user friendly.</p> </td> </tr> </tbody> </table> <p style="text-align: right;">(Any 2 x 2)</p>	GUI	Command line	<p>Makes use of emerging software/and hardware technologies Their interfaces have:</p> <ul style="list-style-type: none"> <li>- ribbons</li> <li>- control buttons</li> <li>- scroll bars</li> <li>- menus</li> <li>- can process complex graphics</li> </ul> <p>The user interacts by:</p> <ul style="list-style-type: none"> <li>- clicking</li> <li>- scrolling</li> <li>- mouse over</li> </ul> <p>More user friendly.</p>	<p>Hardly makes use of emerging hardware/software technologies. Their interfaces have:</p> <ul style="list-style-type: none"> <li>- typed commands</li> <li>- prompt</li> <li>- editor window</li> <li>- cannot process complex graphics</li> </ul> <p>Users interact by typing in commands</p> <p>Less user friendly.</p>	4
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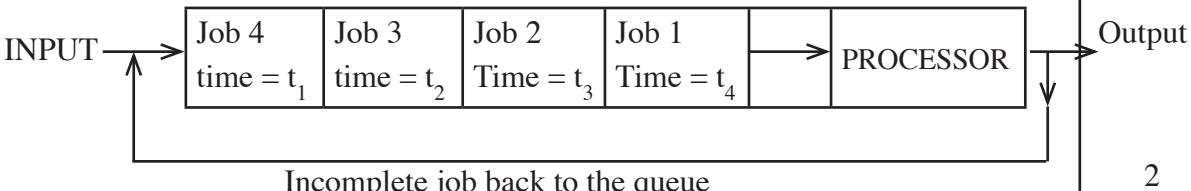
8.	<p><b>A system flowchart symbols</b></p> <p>(a)  Report or documentation</p> <p>(b)  Disk/ master file/ database</p>	1  1
9.	<p><b>Ways of adjusting a document to fit a page</b></p> <ul style="list-style-type: none"> <li>✓ change page orientation.</li> <li>✓ change the font;</li> <li>✓ decrease font size;</li> <li>✓ reduce margin size;</li> <li>✓ reduce character spacing;</li> <li>✓ reduce line height.</li> <li>✓ change font style eg. bold/italic</li> </ul> <p style="text-align: right;">(Any 3 x 1)</p>	3
10.	<p><b>Role of network administrator</b></p> <ul style="list-style-type: none"> <li>✓ to confirm that the network services are running;</li> <li>✓ to confirm that the user is granted appropriate privilege to access the network services/password/authentication;</li> <li>✓ to confirm that the network infrastructure is in good condition;</li> <li>✓ to confirm that the files sought are in existence.</li> </ul> <p style="text-align: right;">(First 3 x 1)</p>	3
11.	<p><b>Impact of mobile phones</b></p> <ul style="list-style-type: none"> <li>✓ Users no longer queue in the bank in order to deposit or withdraw money;</li> <li>✓ Easy acquisition of financial statements;</li> <li>✓ Easy payment of bills;</li> <li>✓ Online banking is possible;</li> <li>✓ Money transfer is fast.</li> <li>✓ Safer transfer of money.</li> <li>✓ Provides wide coverage.</li> <li>✓ Can offer services anywhere any time.</li> <li>✓ Cheaper money transfer services.</li> <li>✓ Increase in fraud.</li> </ul> <p style="text-align: right;">(First 3 x 1)</p>	3

12.	<b>Items that an email must have:</b>  <ul style="list-style-type: none"> <li>✓ the email address of the recipient;</li> <li>✓ the content or message being communicated.</li> </ul>	2
13.	<b>Direct input methods</b>  <ul style="list-style-type: none"> <li>✓ OBR</li> <li>✓ MICR</li> <li>✓ OCR;</li> <li>✓ OMR;</li> <li>✓ Image scanner;</li> <li>✓ Magnetic strip technology;</li> <li>✓ Image recognition/ face recognition/finger print.</li> </ul> <p style="text-align: right;">(First 4 × <math>\frac{1}{2}</math>)</p>	2
14.	<b>Insecurity arising from hardware failure</b>  <ul style="list-style-type: none"> <li>✓ Data loss due to total system failure e.g. HD crash;</li> <li>✓ The experts called upon to repair can access critical/ valuable information;</li> <li>✓ Data recovery software may be used to make unauthorised backups.</li> </ul> <p style="text-align: right;">(First 2 x 1)</p>	2
15.	Nibbles - 4 Bytes - 2	1 1
<b>SECTION B (60 marks)</b>		
16.	<b>(a) Advantages of using low-level language</b> <ul style="list-style-type: none"> <li>✓ program execution is immediate;</li> <li>✓ they require no compilation, no interpretation/translation hence they are faster;</li> <li>✓ hardware optimization is extensive;</li> <li>✓ program developed takes less memory space;</li> <li>✓ suitable for micro devices;</li> <li>✓ easy to design electronic device.</li> </ul> <p style="text-align: right;">(First 2 x 1)</p> <b>(b) Three tools that can be used to develop an algorithm</b> <ul style="list-style-type: none"> <li>✓ Decision table</li> <li>✓ pseudocode;</li> <li>✓ natural language;</li> <li>✓ top down charts;</li> <li>✓ flowcharts.</li> <li>✓ DFD/context diagram</li> <li>✓ ERD</li> <li>✓ decision tree</li> </ul> <p style="text-align: right;">(First</p>	2              3

(c)



Logical flow  $\sqrt{1}$

17.	<p>(a) <b>Time-sharing mode</b></p> <p>This is a processing mode in which a central processor serves two or more users with different requirements. The processor time is divided equally among the tasks in the queue. A user whose task requirements are more than is apportioned is send back to the queue. For example, four jobs requiring times <math>t_1, t_2, t_3</math> and <math>t_4</math> to complete is apportioned equal time in each round until when they are done.</p> 	3  2
	<p>(b) <b>Factors to consider when selecting data processing mode</b></p> <ul style="list-style-type: none"> <li>✓ The optimisation of processing time;</li> <li>✓ The time factor required for decision arising from the processed data;</li> <li>✓ The ease of development, use and maintenance;</li> <li>✓ The control over the resources e.g. files, I/O devices e.t.c;</li> <li>✓ The need for the shared resources among several users who may afford purchasing their own facilities as in time sharing configuration;</li> <li>✓ The volume of work involved;</li> <li>✓ The cost of acquiring the relevant hardware, software, media e.t.c and the cost of maintenance;</li> <li>✓ The nature of the task to be processed.</li> </ul> <p style="text-align: right;">(First 4 x 1)</p>	4
	<p>(c) (i) <b>Purpose of user manual</b> It is a documentation whose purpose is to help a user to use the system with little guidance.</p> <p>(ii) <b>Purpose of sample data</b> Before the system is implemented, it has to be confirmed that it is functional. Sample data is meant to be used to test whether the system is giving desired output.</p> <p>(iii) <b>Purpose of table descriptions</b> They are details of table structures that the system will require for the purpose of designing the actual tables.</p>	2  2  2
18.	<p>(a) (i) <b>Repeater</b> A device used to re-construct data signal during data transmission to its original strength/amplify/boost/regenerate.</p>	1

	<p><b>(ii) Router</b></p> <ul style="list-style-type: none"> <li>- It is a device used to facilitate movement of data or packets between two or more LANS of different configuration (expansion of networks).</li> <li>- Delivers a packet/data directly to destination computers.</li> <li>- Interconnects different networks/provides network services.</li> </ul>	1
	<p>(b) (i) The component P is the terminator.</p>	1
	<p>(ii) Terminator in a backbone is used to prevent data signal from bouncing back/absorb signals.</p>	2
	<p><b>(c) Use of internet in environmental conservation club</b></p> <ul style="list-style-type: none"> <li>✓ Source of knowledge on environmental matters;</li> <li>✓ Collaboration with peers from other schools or organisations;</li> <li>✓ Dissemination of information on what the club is doing;</li> <li>✓ Seeking for funding from sponsors.</li> </ul> <p style="text-align: right;">(First 3 x 1)</p>	3
	<p><b>(d) (i) Benefits of linking branch B and C</b></p> <ul style="list-style-type: none"> <li>✓ Speed of communication between B and C is increased since the traffic between the two branches can be re-routed through the link BC;</li> <li>✓ If either AC or AB is down, the three branches can still communicate;</li> <li>✓ If the HQ systems fail, the two branches B and C can communicate using this link.</li> </ul> <p style="text-align: right;">(First 2 x 2)</p>	4
	<p><b>(ii) Ways to protect company network from hackers</b></p> <ul style="list-style-type: none"> <li>✓ Changing password frequently</li> <li>✓ Use of encryption;</li> <li>✓ Use of data proxies;</li> <li>✓ Use of firewalls to filter unwanted packets;</li> <li>✓ User restriction e.g. passwords/ biometrics.</li> <li>✓ Use of complex password.</li> </ul> <p style="text-align: right;">(Any 3 x 1)</p>	3
19.	<p><b>(a) Formats applied</b></p> <p>Bold, strikethrough, underline, italics, centre alignment, dropcap, bulleted list, line height / spacing, 2 column paragraph, column break, casing, font type, left alignment, column separator.</p> <p style="text-align: right;">(First 6 × <math>\frac{1}{2}</math> )</p>	3

	<p><b>(b) Tools for proofreading</b></p> <ul style="list-style-type: none"> <li>✓ Spell checker and grammar/ dictionary;</li> <li>✓ Autocomplete;</li> <li>✓ Autocorrect;</li> <li>✓ Thesaurus.</li> </ul> <p style="text-align: right;">(Any 3 x 1)</p>	3
	<p><b>(c) (i) = @ or + Countif (B2: B6, "&gt;10,000")</b></p> <ul style="list-style-type: none"> <li>(B2:B6) Argument range ✓ 1</li> <li>(&gt;10,000) Criteria ✓ 1</li> <li>All Formula correct ✓ 1</li> </ul> <p><b>(ii) At D3</b> Formula is</p> <ul style="list-style-type: none"> <li>\$ B3 * C\$2 ✓ 1</li> <li>= 16000 × 2</li> <li>= 32,000 ✓ 1</li> </ul>	3
		2
	<p><b>(d)</b></p> <div style="text-align: center;"> <pre> graph TD     SCHOOL[SCHOOL] --- EXAMINATION[EXAMINATION]     EXAMINATION --- SCIENCES[SCIENCES]     EXAMINATION --- LANGUAGES[LANGUAGES]     SCIENCES --- HUMANITIES[HUMANITIES]     LANGUAGES --- HUMANITIES[HUMANITIES]     HUMANITIES --- STUDENTS[STUDENTS] </pre> </div> <p style="text-align: right;">Any 4 entities each <math>\frac{1}{2}</math> Any 4 connectors 4 each x <math>\frac{1}{2}</math></p>	4
20.	<p><b>(a) Characteristics of octal number system.</b></p> <ul style="list-style-type: none"> <li>✓ each symbol is represented by 3 bits.</li> <li>✓ The number is made of 8 symbols 0, 1, 2, .....7;</li> <li>✓ Maximum value of a single digit is 7 (one less than the value of the base);</li> <li>✓ This number system uses base 8.</li> </ul> <p style="text-align: right;">(Any 2 x 1)</p>	2



	<p>(b) (i) <math>111.101_2</math> to decimal</p> $111 = 7_{10} \checkmark 1$ $0.101 = \frac{1}{2} + \frac{0}{4} + \frac{1}{8} = \frac{5}{8} \checkmark 1 \quad \text{OR}$ $= 0.625$ $111.101_2 = 7.625_{10} \text{ or } 7.625 \checkmark 1$	<p>210</p> $111 = 1 \times 2^2 + 1 \times 2^1 + 1 \times 2^0$ $= 4 + 2 + 1 = 7_{10}$ $101_2 = 1 \times 2^{-1} + 0 \times 2^{-2} + 1 \times 2^{-3}$ $= 1 \times \frac{1}{2} + 0 \times \frac{1}{4} + 1 \times \frac{1}{8}$ $= 0.5 + 0 + 0.125 = 0.625_{10}$ <p><math>\therefore 111.101_2 = 7.625</math></p>	3
	<p>(ii) <math>14.6875_{10}</math> to binary</p> $14_{10} = 1110_2 \checkmark 1$ $0.6875 \times 2 = 1.375$ $0.375 \times 2 = 0.75$ $0.75 \times 2 = 1.5$ $0.5 \times 2 = 1.0 \checkmark 1$ <p>decimal portion = 0.1011 <math>\checkmark 1</math>  Number is <math>1110.1011_2 \checkmark 1</math></p>	4	
	<p>(c) (i) <math>17_{10} = 10001</math> or <math>10001_2 \checkmark 1</math></p> $1 \ 0010001 \checkmark 1$ <p>↑  binary equivalent of 17  Sign bit for negative.</p>	2	
	<p>(ii) <math>17_{10} = 10001</math>  In 8 bit <math>00010001</math></p> <p>Reverse bits <math>11101110 \checkmark 1</math></p> $\begin{array}{r} 11101110 \\ + \quad \quad \quad 1 \\ \hline 11101111 \end{array}$ <p>Number is <math>11101111_2 \checkmark 1</math></p>	2	
	<p>(d) <math>110.11_2 + 11.011_2</math></p> $\begin{array}{r} 110.110 \\ + 011.011 \checkmark 1 \\ \hline 1010.001 \checkmark 1 \end{array}$		

#### 4.23.2 Computer Studies Paper 2 (451/2)

QUESTION	MARKING POINTS	MARKS
<b>1. (a) (i)</b>	<b>Logo</b>	
	- Word Art text (the text)	0.5
	- word Art	1
	- Curve layout	0.5
	- Limited (text)	0.5
	- Large L	0.5
	- Limited layout	1
	- Logo Layout	1
	- Logo position (centre)	1
		<b>6</b>
	- Company contacts typed	1
	- Company contact format (bold, centred case)	0.5
	- Six lines text (completeness, position) @ $\frac{1}{2}$	1
	- RE: Subject text	1
	- RE: Format (Title case, bold, underline)	0.5
	- First paragraph (existence, completeness)	1
	- Last paragraph (existence, completeness)	1
	- Other lines (existence, completeness)	1
	- Other lines format	0.5
	- Three columns at 1 mark	3
	- Tab headers format (BCs)	0.5
	- First left tab/right tab	1
		<b>12</b>
<b>(ii)</b>	<b>Invoice Table</b>	
	- Add table	1
	- R1 Merged/shading	2
	- R1 text (completeness, position)	1
	- R1 reverse text	1
	- R1 text format (case, centre, italics)	0.5
	- R2 Merged	1
	- R2 text “invoice” (bold, upper case)	1
	- R2 text “invoice” (underline)	0.5
	- R2 text “invoice” (vertical, centre)	0.5
	- R3 (4 columns)	1
	- R3 text (completeness, position)	1
	- R3 text format (bold, case)	0.5

QUESTION	MARKING POINTS	MARKS
	- R4 text (completeness, position)	1
	- R4 text format (case x 4)	0.5
	- R5 merged	1
	- Row 6 text (5 columns)	1
	- Row 6 text format	0.5
	- Row 6 text (completeness, position)	1
	- Row 6 text direction (No)	0.5
	- Row 7, 8, 9 text (3 rows)	1.5
	- Adjusted to fix text	1
	- Row 12 text (completeness, position)	1
	- Row 12 format ( bold, case)	0.5
	- Row 12 double border	1
	- Row 13 merged	1
	- Row 13 text (completeness, position)	1
	- Row 13 text format (bold, case)	0.5
		<b>24</b>
<b>(iii)</b>	<b>Saving Singlen</b>	<b>1</b>
<b>(b)</b>	(i) - Saving <b>Newsinglen</b>	1
	(ii) Converting columnar text to table (3 x 5)	2
<b>(c)</b>	Formulae used	
	(i) = product / =C7*D7	1
	(ii) = sum / =E7+E8..... +E11	1
<b>(d)</b>	Printing	
	(i) Singlen (0.5, 2 sides 0.5)	1
	(ii) Newsinglen (0.5, 2 sides 0.5)	1
		<b>7</b>

QUESTION	MARKING POINTS	MARKS
<b>2. (a)</b>	- Saving "Incomestatement"	1
	- 7 columns @ 1 mark each	7
	- Header text (exists and complete)	
	- All other text	1
		<b>9</b>
<b>(b)</b>	(i) Total sales formula = sum (B5:G5)	1
	(ii) Total rent (Jan - June) = sum (B8:G8)	1
	Copying formula to other cells	1
	(iii) Profit or loss formula = B5 - Sum (B8:B12)	2
		<b>5</b>
<b>(c)</b>	(i) Merging cells A2 - H2	1
	(ii) Title font 16	1
	Bold	1
	(iii) Single line border	1
	(iv) Right aligning months labels	1
	(v) Applying grey background	1
		<b>6</b>
<b>(d)</b>	(i) Renaming sheet to 'Profit'	1
	(ii) Copying worksheet	$\frac{1}{2}$
	Renaming as <b>Modified</b>	$\frac{1}{2}$
		<b>2</b>
<b>(e)</b>	(i) Inserting a blank row and naming	1
	(ii) Absolute formula = B4 * \$B17	2
	(iii) Profit or loss formula = B5 - Sum (B6:B12)	2
	Copying to other cells	1
		<b>6</b>
<b>(f)</b>	(i) Inserting blank row and naming	1
	(ii) = IF((B15 > 60,000), "OK", IF(B15 >=30,000 "Break even", check"))	
	Correct function	1
	First selection condition	$\frac{1}{2}$
	Correct output	$\frac{1}{2}$
	Last selection condition	$\frac{1}{2}$
	Correct output	$\frac{1}{2}$
	Copying to other cells	1
		<b>5</b>

QUESTION	MARKING POINTS	MARKS
<b>(g)</b>	Choosing correct chart type (Bar)	1
	- Summing expenses	1
	- Choosing correct series	
	- Month	1
	- Sales	1
	- Total expenses	1
	- Chart title	1
	- Labels	
	- X - axis - Mouth	1
	- Y - axis - Amount	1
	- Moving chart to new worksheet	1
	- Renaming worksheet - Comparison	1
- Data labels	1	
		<b>11</b>
<b>(h)</b>	Changing orientation - Landscape	1
		<b>1</b>
<b>(i)</b>	(i) Profit printing	1
	(ii) Modified printing	1
	(iii) Modified with formulas printing	2
	(iv) Comparison printing	1
		<b>5</b>