1. Name the methods used to represent information on A, B, C and D using the words from the list.

   A. Magnetic stripe
   B. Chip
   C. Optical marks
   D. Bar code

2. Ring two items which are output devices.

   - Buzzer
   - Graphics tablet
   - Joystick
   - Monitor
   - Optical character reader
   - Web cam

3. Tick TRUE or FALSE next to each of these statements.

   - Computer programs are examples of hardware [False]
   - An internet browser is an example of software [True]
   - A pointer is used to select items in a command line interface [False]
   - A PDA is larger than a desktop computer [False]

4. Complete the following sentences using the most appropriate device from this list.

   A remote control  A joystick  A keyboard  A chip reader  A graphics tablet  A microphone

   (a) A microphone is used in the recording of voices for presentation software.
   (b) A remote control is used to control a multimedia projector.
   (c) A keyboard is used to write a letter.
   (d) A chip reader is used to read information from a bank card.
   (e) A joystick is used in a flight simulator.
5 Describe the role of a proxy server when a LAN is connected to the internet.
   - Can act as a web server
   - Can act as a buffer (between internet and LAN)
   - Server passes on requests to the internet
   - Passes the requested web pages to individual computers
   - Can cache/store the webpages
   - Subsequent requests for that/those web page(s) are responded to more quickly
   - Can be used to monitor internet usage
   - Can block certain sites

6 Susan uses a memory stick to transfer her work from school to home. Give three reasons why memory sticks are often preferred to CDs for storing work.
   - Can store more data
   - Easier to carry/more portable
   - Majority of computers have USB ports/many school computers don’t have CD drives
   - Speed of access is quicker
   - Speed of data transfer is quicker
   - Pen drives are more robust/less prone to damage

7 A floor turtle can use the following instructions:

<table>
<thead>
<tr>
<th>INSTRUCTION</th>
<th>MEANING</th>
</tr>
</thead>
<tbody>
<tr>
<td>FORWARD n</td>
<td>Move n mm forward</td>
</tr>
<tr>
<td>BACKWARD n</td>
<td>Move n mm backward</td>
</tr>
<tr>
<td>LEFT t</td>
<td>Turn left t degrees</td>
</tr>
<tr>
<td>RIGHT t</td>
<td>Turn right t degrees</td>
</tr>
<tr>
<td>PENUP</td>
<td>Lift the pen</td>
</tr>
<tr>
<td>PENDOWN</td>
<td>Lower the pen</td>
</tr>
</tbody>
</table>

Complete the set of instructions to draw this shape by filling in the blank lines.

PEN UP   PEN DOWN   FORWARD 40
FORWARD 50  PEN UP    FORWARD 50
FORWARD 70  PEN UP    FORWARD 70
RIGHT 90   PENDOWN   FORWARD 80

1 mark for each pair of statements [5]
8 Describe what is meant by a blog and a wiki.
   (a) Blog   Web log
       • Personal journal/online diary
       • Owners’ observations/opinions on a topic
       • Can have links to other sites i.e. external links
       • Others can post comments
       • Frequently updated by owner
   (b) Wiki
       • Allows users to create/edit web pages using a web browser
       • Many people can contribute/edit/update entries
       • Anyone can contribute so not to be taken as totally accurate
       • Can have links within it or to other sites i.e. internal and external links
       • Holds information on many topics which can be searched

9 Tick TRUE or FALSE next to each statement to indicate if it is an example of online processing.

<table>
<thead>
<tr>
<th>Statement</th>
<th>True</th>
<th>False</th>
</tr>
</thead>
<tbody>
<tr>
<td>Withdrawing money from an ATM</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Producing utility bills</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Booking a plane ticket</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Producing payslips</td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>

10 Describe the three types of test data:

Normal data – data within a (given) range/appropriate for that data type (1)
Abnormal data – data outside the range/of the wrong data type (1)
Extreme data – data on the boundaries of the range (1)

11 The head teacher of a school wants to build a weather station. She wants to use a computer to collect the results.
   (a) Describe three reasons why she wants to use a computer rather than allow students to collect the results.   
       Three from:
       • Computer (readings) more accurate than students
       • Students might forget to take readings/readings can be taken at regular intervals
       • Students might be unavailable to take readings during school holidays
       • Computers can analyse the results immediately/ can produce graphs more quickly
       • Readings can be taken more frequently
       • Readings can be taken any time of day or night
   (b) The results will be stored in a spreadsheet. The head teacher wants a word processed report. The report will contain a description of the weather and will use the spreadsheet results. Describe how the report will be created. Five from:
       • Save spreadsheet in suitable format
       • Create graphs
       • Load word processing software
       • Frames could be created
       • Insert spreadsheet/import spreadsheet/copy and paste spreadsheet
       • Insert/copy and paste graphs
       • Type in text/description of weather
       • Edit text/description of weather
       • Import/insert pictures
       • Format report
(c) Spreadsheet data is often used for modelling purposes. Give three reasons other than reducing danger why computer models are sometimes used rather than the real thing.

Three from:
- Cheaper to make than the real thing
- Real thing may represent too large a time scale (genetics etc.)
- Real thing may be wasteful of materials
- Real thing may be on too vast a scale
- Easier to change data/variables
- Costs less to change data/variables
- The real thing may be impossible to access/create

12 A supermarket uses POS terminals. The stock levels in the supermarket are updated automatically. Describe the steps involved in updating the stock level of a product when the bar code is read.

- The stock file is searched
- Until a match is found with the entered bar code
- The number in stock of the matching record is read
- One/number purchased is subtracted from the number in stock
- The number in stock is compared with the re-order number
- If it is equal to or less than the re-order number then more goods are automatically re-ordered
- The new value of number in stock is written back to the file
- Next bar code is read

13 A shop owner uses a spreadsheet to calculate his profits. This is part of the spreadsheet.

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Producer</td>
<td>Food type</td>
<td>Number in stock</td>
<td>Cost Price</td>
<td>Selling Price</td>
<td>Profit</td>
</tr>
<tr>
<td>2</td>
<td>Logikkas</td>
<td>Potato flakes</td>
<td>123</td>
<td>$2.30</td>
<td>$2.90</td>
<td>$0.60</td>
</tr>
<tr>
<td>3</td>
<td>Squarebranch</td>
<td>Chocolate bar</td>
<td>158</td>
<td>$0.75</td>
<td>$0.95</td>
<td>$0.20</td>
</tr>
<tr>
<td>4</td>
<td>Roofs</td>
<td>Beefburgers</td>
<td>135</td>
<td>$1.25</td>
<td>$1.55</td>
<td>$0.30</td>
</tr>
<tr>
<td>5</td>
<td>Kapats</td>
<td>Gravy</td>
<td>89</td>
<td>$3.20</td>
<td>$3.95</td>
<td>$0.75</td>
</tr>
<tr>
<td>6</td>
<td>Startle</td>
<td>Yoghurt cream</td>
<td>119</td>
<td>$1.50</td>
<td>$1.85</td>
<td>$0.35</td>
</tr>
<tr>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Total in stock</td>
<td>624</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(a) Give the cell reference of the cell that contains 158.
C3
(b) Give the cell reference of a cell that contains a label.
Any one of A1:G1 or of A1:A6 or of B2:B6 or B8 or E8 or F8
(c) Write down the formula in cell F5.
= E5 − D5
(d) Write down the formula in cell G2.
= C2*F2 or = C2*(E5–D5)
(e) Formulae similar to that used in cell G2 have been used in cells G3 to G6. These were not typed. Describe how these were entered.
Highlight/click on/select G2
Copy G2 and paste into G3:G6
Or
Highlight/click on/select G2
Copy/Fill down to G6
14 John owns a small company. He wishes to replace the existing computerised system with a new one. He has employed a systems analyst, Iqbal, to plan this.
(a) Iqbal will need to collect information about the existing system. Describe three methods he could use to do this.

Three from:
- Examining documents about the system
- Distribute questionnaires to users of the system
- Interview users of the system
- Observing the system/staff
(b) Iqbal has completed the Analysis of the existing system. Describe three items of file structure which he would need to design for the new system.

Three from:
- Field name
- Field type
- Key field
- Field length
- Validation check/rules

(c) After a system is designed it will be implemented. Describe each of the following methods of implementation.
- Direct changeover: new system replaces existing system immediately (1)
- Parallel running – new system runs alongside/together with existing system (1)
- Phased implementation – new system is implemented part by part (1)
- Pilot running – system is implemented in one branch/one office (at a time) (1)

15 OMR, OCR and MICR are methods of direct data entry.
Describe each method, giving an example of an application where each might be used.

(a) OMR: Optical Mark Recognition
Pencil/pen marks are read by scanner/Reader
Positions of marks are identified [2]
Exam papers/school registers/lottery/multiple choice questionnaires [1]

(b) OCR: Optical Character Recognition
Text is read by scanner
Image compared with characters stored in computer
Converted to text for use with other software [2]
Utility bill/turnaround documents/word processors/mail/passports/id cards/car number plates [1]

(c) MICR: Magnetic Ink Character Recognition
Characters read by magnetic reader
Characters compared with characters stored in computer
Converted to text for entry into system [2]
Bank cheques [1]

16 A company uses robots to manufacture cars.
(a) Give three advantages to the company of using robots rather than humans to manufacture cars.
Three from:
- Robots produce the same standard every time
- Cost – once bought they do not have to be paid/fewer employees so lower costs
- No industrial disputes (No Strikes)
- Greater productivity
- Greater accuracy
- Can work in hazardous/extreme conditions/can lift heavier loads
- Robots don’t take breaks/can work 24 hours a day 7 days a week [3]
(b) Give three disadvantages to the company of using robots rather than humans to manufacture cars. Three from:

- Robots have to be reprogrammed when there is a small change/can’t think for themselves
- Robots need programming in order to be adaptable
- Expensive start up costs – redundancy payments for laid out workers
- Expensive start up costs – have to spend money on training workers to use robots
- Expensive start up costs – buying of robots/programming of robots
- Computer crash would halt production
- Maintenance/repair costs can be expensive

17 Jasvir and her family have three computers in their home. She wants to connect the computers to create a network and access the internet. List four additional items she would need to set up this system. Your answers must include hardware and software.

Hardware:
- Network cards
- Modem/router
- Hub

Software:
- (Internet) browser
- Firewall software
- Anti-virus software
- Anti-spyware software

Others:
- ISP – Internet Service Provider
- Cables
- Telephone line/Telecommunication

Note: Must have at least one hardware item and one software item to gain full marks.

18 An automatic washing machine is controlled by a microprocessor.

(a) Other than a temperature sensor, name two sensors used in the machine.

(b) Explain why computers are unable to read the data directly from these sensors and name the device which would enable them to do so.

- Computers work in digital
- Sensors send analogue data
- ADC – Analogue to Digital Converter

(c) Describe how the microprocessor uses data from the temperature sensor.
- Microprocessor compares temperature with pre-set value
- If temperature is lower than preset value microprocessor switches on heater
- If temperature is higher than or equal to pre-set value microprocessor switches off heater

19 Describe two methods of data verification.

Visual verification/checking
- Read through data on screen
- Compare with source document

Double data entry
- Data is typed in twice by one typist or Data is typed in by two operators
- Computer compares versions
- If different/not identical data is rejected