

MATRICULATION AND SECONDARY EDUCATION CERTIFICATE EXAMINATIONS BOARD  
 UNIVERSITY OF MALTA, MSIDA

**SECONDARY EDUCATION CERTIFICATE LEVEL**  
**MAY 2012 SESSION**

SUBJECT: **Computer Studies**  
 PAPER NUMBER: I  
 DATE: 26<sup>th</sup> April 2012  
 TIME: 9:00 a.m. to 11:00 a.m.

**Directions to Candidates**

*Write your index number where indicated at the top of the page.*

*Answer **ALL** questions in the spaces provided. You are not allowed to use extra sheets other than those provided in this booklet.*

*Good English and orderly presentation are important.*

*The use of flowchart templates is permitted. The use of calculators is **NOT** permitted.*

Question Number	1	2	3	4	5	6	7	8	9	10	<b>FOR MARKERS' USE</b>
For Markers' use only											Total number of Marks or Grade obtained by candidate
<b>MARKS</b>											

DO NOT WRITE ABOVE THIS LINE

1. The following is an incomplete truth table of a logic circuit where A, B and C are the inputs to the circuit.

A	B	C	A.B	$\overline{C}$	(A.B) ? $\overline{C}$
0	0	0		1	1
0	0	1		0	0
0	1	0		1	1
0	1	1		0	0
1	0	0		1	1
1	0	1		0	0
1	1	0		1	1
1	1	1		0	1

- (a) Fill in the **values** in the empty column of the truth table above. [2]
- (b) Determine the **missing gate** which is denoted by a '?' in the heading of the last column of the truth table.  
Missing gate: \_\_\_\_\_ [1]
- (c) Draw the **logic circuit** represented by the truth table above. [4]

- (d) Complete the following **statement** for two particular rows of the truth table.  
(Assume that logic 0 is represented by 'false' and logic 1 by 'true'.)

The output from the logic circuit is true when A and B are both true and C is

- \_\_\_\_\_ [2]
2. (a) (i) How many **bits** are required to store 128 as an unsigned integer?  
\_\_\_\_\_ [1]
- (ii) Which **number system** is used as a shorthand notation for binary?  
\_\_\_\_\_ [1]
- (b) (i) Complete the following **table** about units of storage.

kilobyte		$2^{10}$ bytes
	1024 bytes x 1024 bytes	$2^{20}$ bytes
gigabyte		

- (ii) Complete the following **table** so that each row shows the same number in

DO NOT WRITE ABOVE THIS LINE

decimal, binary and hex.

Decimal	Binary	Hex
65		
		A4

[4]

*Space for working:*

3. For each of the statements below choose the FIVE **correct terms** from the following list.

***GUI, RAM, Hard disk, CPU, Compact disk, ROM, Pen drive***

- (a) The permanent memory that is built in your computer and whose contents cannot be changed.

[1]

- (b) The computer's working memory whose data may be accessed at random.

[1]

- (c) A fixed, large capacity magnetic storage medium for computer data.

[1]

- (d) This storage medium has information such as audio, video and computer data recorded on it using a laser.

[1]

- (e) The use of graphical symbols instead of text commands to control common computer functions such as opening programs.

[1]

4. Underline the **correct answer** for each of the following seven questions.

- (a) In computers, which is the basic and smallest unit of storage?

- (i) Bit.  
(ii) Byte.  
(iii) Terabyte.  
(iv) Megabyte.

[1]

DO NOT WRITE ABOVE THIS LINE

- (b) Which of the following is responsible for the management and co-ordination of activities and the sharing of computer resources?
- (i) Application software.
  - (ii) Motherboard.
  - (iii) Operating system.
  - (iv) RAM. [1]
- (c) Machine language is:
- (i) a low level language.
  - (ii) an assembly language.
  - (iii) a high level language.
  - (iv) source code. [1]
- (d) A word processing program is an example of:
- (i) system software.
  - (ii) operating system.
  - (iii) utility software.
  - (iv) application software. [1]
- (e) Which software is used for accessing sites or information on a network?
- (i) Operating system.
  - (ii) Web browser.
  - (iii) Spreadsheet program.
  - (iv) Word processing program. [1]
- (f) Specially designed computers to perform very complex calculations extremely rapidly are called:
- (i) laptops.
  - (ii) mainframes.
  - (iii) mini computers.
  - (iv) super computers. [1]
- (g) The file extension .zip usually refers to:
- (i) a hidden file.
  - (ii) a compressed archive file.
  - (iii) an animation/movie file.
  - (iv) a system file. [1]

5. Define each of the following **terms**.

- (a) System analysis:

---

---

---

[2]

(b) Algorithm:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_ [2]

(c) Flowchart:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_ [2]

(d) Data validation and data verification:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_ [2]

(e) Program documentation:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_ [2]

6. (a) Mention TWO **advantages** of a computer on a LAN rather than standalone.

1<sup>st</sup> advantage: \_\_\_\_\_ [1]

2<sup>nd</sup> advantage: \_\_\_\_\_ [1]

(b) What is the function of a **modem** in data communication?

\_\_\_\_\_

\_\_\_\_\_ [2]

(c) Explain the term **video-conferencing**, mentioning any special hardware required.

Explanation: \_\_\_\_\_

\_\_\_\_\_ [1]

Special hardware: \_\_\_\_\_

\_\_\_\_\_ [1]

7. Fill in the **missing terms** by choosing one from the following list. *Note that a term may be used more than once.*

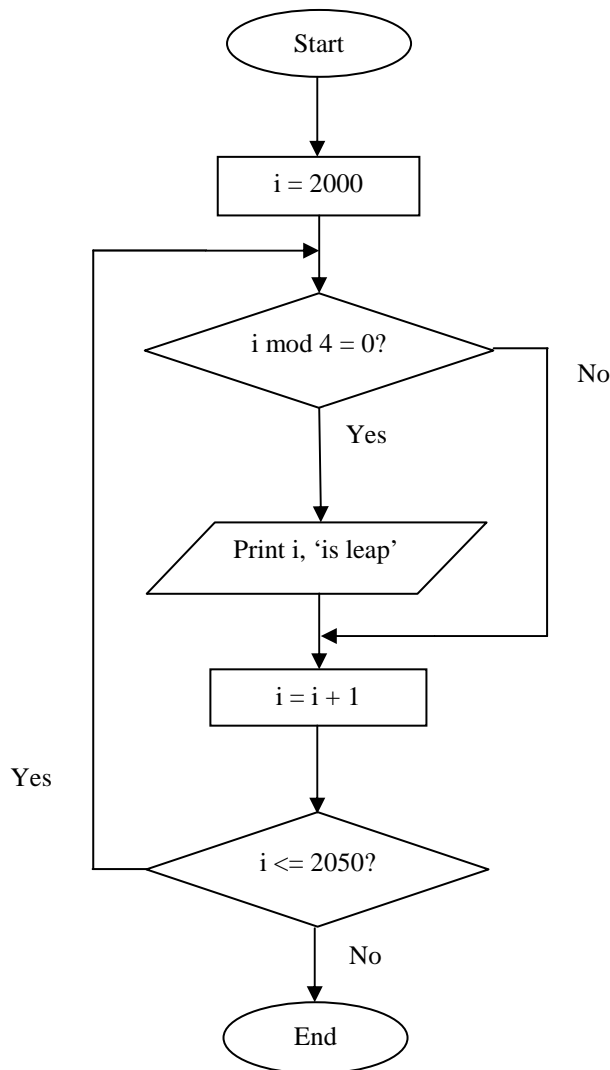
**compiler, interpreter, machine, assembly, source, translator**

A language \_\_\_\_\_ is used to convert from \_\_\_\_\_ code to \_\_\_\_\_ code. There exist three types of translators which

DO NOT WRITE ABOVE THIS LINE

are the \_\_\_\_\_, assembler and \_\_\_\_\_. An assembler is used to convert \_\_\_\_\_ language to machine code. An \_\_\_\_\_ is best suited for use during program development since it translates and executes the code line by line each time the program is run. On the other hand a \_\_\_\_\_ translates the program at one go and the machine code generated is saved in a separate file thus the program need not be translated each time it is run. [8]

8. (a) Study the following **flowchart** and then answer the questions set on it.



(i) Explain the **task** that is represented by the flowchart above.

---



---



---



---

[4]

DO NOT WRITE ABOVE THIS LINE

- (ii) Write a **program** in Pascal equivalent to this flowchart.

[10]

- (b) Consider the following program. *Note that each line has been numbered for ease of referencing.*

```
1 Program Area;  
2 Var  
3 a,b,c : integer;  
4 Begin  
5 Writeln('Enter length and breadth of rectangle); 6  
  Readln(a,b);  
7 c := a+b;  
8 Writeln('The area of the rectangle is ', c); 9 End.
```

Identify the **lines** in the above program which have the following two errors. For each error give a **reason** for your choice.

- (i) Syntax error:

Line number: \_\_\_\_\_ [1]

Reason: \_\_\_\_\_

\_\_\_\_\_ [1]

- (ii) Logical error:

Line number: \_\_\_\_\_ [1]

Reason: \_\_\_\_\_

\_\_\_\_\_ [1]

DO NOT WRITE ABOVE THIS LINE

9. (a) Mention TWO types of **operations** that may be performed on a database to keep its data up to date.

1<sup>st</sup> type: \_\_\_\_\_ [1]

2<sup>nd</sup> type: \_\_\_\_\_ [1]

- (b) A large private company consists of many departments each with a number of employees. One **employee** is assigned to a single **department** and each employee is responsible for one particular **task**.

In the context of relational databases, what is the **relationship** between:

department and employee? \_\_\_\_\_ [1]

task and employee? \_\_\_\_\_ [1]

- (c) (i) Distinguish between a **master file** and a **transaction file** in a payroll system.

Master file: \_\_\_\_\_ [1]

Transaction file: \_\_\_\_\_ [1]

- (ii) Describe how the above mentioned files may be used to **calculate** the wages of all employees at the end of the month.

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_ [2]

10. (a) In the following statements choose between *security* and *privacy* by underlining the correct word.

- (i) Making sure that data is easily recovered in the case of accidental loss is an issue of data **security** / **privacy**. [1]

- (ii) Making sure that unauthorized users cannot view confidential data is an issue of **security** / **privacy**. [1]

- (b) Identify one method in which data can be made more **secure**, and another method in which the **privacy** of data can be increased.

Increasing security: \_\_\_\_\_ [1]

Increasing privacy: \_\_\_\_\_ [1]



MATRICULATION AND SECONDARY EDUCATION CERTIFICATE EXAMINATIONS BOARD

UNIVERSITY OF MALTA, MSIDA

**SECONDARY EDUCATION CERTIFICATE LEVEL**

**MAY 2012 SESSION**

SUBJECT: **Computer Studies**  
 PAPER NUMBER: IIA  
 DATE: 27<sup>th</sup> April 2012  
 TIME: 9:00 a.m. to 11:00 a.m.

**Directions to Candidates**

*Write your index number where indicated at the top of the page.*

*Answer **ALL** questions in the spaces provided. You are not allowed to use extra sheets other than those provided in this booklet.*

*Good English and orderly presentation are important.*

*The use of flowchart templates is permitted. The use of calculators is **NOT** permitted.*

Question Number	1	2	3	4	5	<b>FOR MARKERS' USE</b>
For Markers' use only						
<b>MARKS</b>						

DO NOT WRITE ABOVE THIS LINE

1. (a) A logic circuit with inputs A and B has the following expression:

$$F = \overline{\overline{A+A}} + \overline{\overline{B+B}}$$

- (i) Draw the **logic circuit** for the expression given above.

[3]

- (ii) Complete the following **truth table** for the expression given above.

A	B	A+A	$\overline{A+A}$	B+B	$\overline{B+B}$	$\overline{\overline{A+A}} + \overline{\overline{B+B}}$	$\overline{\overline{\overline{A+A}} + \overline{\overline{B+B}}}$
0	0						
0	1						
1	0						
1	1						

[4]

- (iii) Which single **2-input gate** is equivalent to this logic circuit?

[1]

- (b) A register in a particular computer stores integers in 8-bit, two's complement format.

- (i) What **range of values** (in decimal) can be stored in this register?

[1]

- (ii) What would be the **contents of the register** (in binary) if 24 is shifted twice to the left?

*Space for working:*

Contents of register: \_\_\_\_\_ [2]

- (iii) Use this register format to perform the subtraction **90 – 38** (a two's complement subtraction).

*Space for working:*

Answer: \_\_\_\_\_ [2]

- (c) The CPU executes instructions through the help of functional units.

- (i) One functional unit is the Arithmetic and Logic Unit (ALU). What is the other **functional unit** called?

[1]

- (ii) The functional unit of part c(i) above is extensively involved in the fetch-execute cycle. List the **sequence of steps** of this cycle.

---

---

---

---

---

---

---

---

---

---

[3]

- 
2. (a) Computer networks are increasingly being used for transferring data.

- (i) Mention TWO major **differences** between a LAN and a WAN.

1<sup>st</sup> difference: \_\_\_\_\_

---

---

[1]

2<sup>nd</sup> difference: \_\_\_\_\_

---

---

[1]

- (ii) Identify TWO **disadvantages** of networked computers.

1<sup>st</sup> disadvantage: \_\_\_\_\_

---

---

[1]

2<sup>nd</sup> disadvantage: \_\_\_\_\_

---

---

[1]

- (iii) Mention TWO **principles** of the Data Protection Act.

1<sup>st</sup> principle: \_\_\_\_\_

2<sup>nd</sup> principle: \_\_\_\_\_

---

---

[1]

- (iv) What do you understand by **copyright** and **piracy**?

Copyright: \_\_\_\_\_

---

---

[1]

Piracy: \_\_\_\_\_

---

---

[1]

- (b) Embedded computer systems are special types of dedicated computers.

- (i) What is an **embedded computer system**?

---

---

[1]

- (ii) Give **TWO examples** of embedded computer systems.

1st example: \_\_\_\_\_

2nd example: \_\_\_\_\_ [1]

- (iii) Mention **TWO differences** between an embedded computer system and a general purpose computer system.

1st difference: \_\_\_\_\_

\_\_\_\_\_ [1]

2nd difference: \_\_\_\_\_

\_\_\_\_\_ [1]

- (c) Real time processing and batch processing require different operating systems.

- (i) **Complete** the paragraph below using the following words.

*resources, files, interface, graphical*

The operating system (OS) is the \_\_\_\_\_ between the computer hardware and the user. It manages all the computer's \_\_\_\_\_ and its \_\_\_\_\_ interface makes life easier for the user. One typical task of the OS is the management of \_\_\_\_\_ on secondary storage media.

[2]

- (ii) Identify **ONE** main characteristic of **real time** processing and **ONE** main characteristic of **batch** processing.

Real time: \_\_\_\_\_

\_\_\_\_\_ [1]

Batch: \_\_\_\_\_

\_\_\_\_\_ [1]

- (iii) Mention **ONE application** where real time processing is suitable and another **application** where batch processing would be suitable.

Real time application: \_\_\_\_\_ [1]

Batch application: \_\_\_\_\_ [1]

3. (a) I/O devices form an integral part of any computer system.

- (i) Which **input device** would you use to read and automatically correct multiple choice answer sheets?

\_\_\_\_\_ [1]

- (ii) Two characteristics of a monitor (VDU) are 'colour depth' and 'resolution'.

- State whether a monitor is a **vector** or **raster** device.

\_\_\_\_\_ [1]

DO NOT WRITE ABOVE THIS LINE

- Explain the difference between the **colour depth** and the **resolution** of a monitor.

Colour depth: \_\_\_\_\_

[1]

Resolution: \_\_\_\_\_

[1]

- (iii) A supermarket would like to acquire a new printer to print the customers' receipts and is not sure whether to buy a **dot-matrix** or a **laser printer**.

- Which **printer** would you recommend? **Justify** your answer.

Type of printer: \_\_\_\_\_

[1]

Justification: \_\_\_\_\_

[1]

- Why are printers fitted with their own **memory** (buffer)?

[1]

- (b) A food supplier supplies orders to various retail outlets. The supplier keeps a database containing the following three tables.

CUSTOMER table:

Account No.	Customer	Address
178	Charlie's Cafe	27, Seaside Street, Paola
562	Joe's Confectionery	30, Arches Street, Hamrun
167	Petra's Supermarket	12, Holly Road, Mosta
032	Mary's Grocer	17, Main Road, Zabbar

ORDER table:

Order No.	Account No.	Date	Total Cost (€)
7823	178	10/04/11	14.30
4633	562	10/04/11	17:20
276	167	10/04/11	16.50
1788	032	10/04/11	30.00
3210	167	12/04/11	15.00

ITEMS PURCHASED table:

Order No.	Item	Quantity	Item Price (€)
7823	Danish pastry	25	1.00
7823	Cake	5	1.25
4633	Easter egg	12	2.00
2276	Ginger bread	20	0.95

- (i) Which **field** from the ORDER table would be suitable to retrieve all the orders made by a particular customer?

[1]

- (ii) What **data type** has the Address field in CUSTOMER table, been set to?

[1]

- (iii) The supplier would like to use the CUSTOMER table to list all customers by town/village.

- Explain why this is **not possible** with the given table structure.

\_\_\_\_\_ [1]

- **Redesign** the table's fieldnames so that this task can be performed.

\_\_\_\_\_ [2]

- (iv) Relationships have been created between the three tables. Why are **relationships** an integral part of any database?

\_\_\_\_\_ [1]

- (c) A mobile phone operator can access his clients data either serially or directly.

- (i) Differentiate between **serial** and **direct** access.

Serial access: \_\_\_\_\_ [1]

Direct access: \_\_\_\_\_ [1]

- (ii) Which **type of access** is ideal for the processing of clients' bills?

\_\_\_\_\_ [1]

- (iii) Data (about 6GB) needs to be backed up daily on a removable storage medium. Which **medium** would you recommend? **Justify** your choice.

Medium: \_\_\_\_\_

Justification: \_\_\_\_\_ [1]

4. (a) Two services available on the Internet are eLearning and eCommerce.

- (i) What is **eLearning**?

\_\_\_\_\_ [2]

- (ii) Give TWO **situations** where eLearning may be adopted.

1<sup>st</sup> situation: \_\_\_\_\_ [1]

2<sup>nd</sup> situation: \_\_\_\_\_ [1]

- (iii) What is **eCommerce**?

\_\_\_\_\_ [2]

- (iv) How is **EFT** (electronic funds transfer) related to eCommerce.

\_\_\_\_\_ [1]

(b) The following is an assembly language snippet.

```
repeat: LDA #0011 0011 ; Load the accumulator with 0011 0011
        NOT          ; NOT the contents of the accumulator
        ADD #0000 0001 ; Add 0000 0001 to the contents of accumulator
        JZE repeat    ; Jump to 'repeat' if accumulator contains zero
        HLT          ; Stop program execution
```

(i) From the above snippet, give ONE **example** of each of the following:

Opcode: \_\_\_\_\_

Operand: \_\_\_\_\_

Label: \_\_\_\_\_

Conditional instruction: \_\_\_\_\_ [2]

(ii) Study the first three instructions. What **number format** is the number '0011 0011' being converted to?

\_\_\_\_\_ [1]

(iii) The 'JZE' instruction will never evaluate to **true**. **Why?**

\_\_\_\_\_ [1]

(iv) What would be the **final value** in the accumulator after the program stops execution? Give your answer in both binary and decimal.

Binary: \_\_\_\_\_ Decimal: \_\_\_\_\_ [2]

(c) Programming languages may be classified into generations and/or levels.

(i) **Complete** the following paragraph.

Machine code and \_\_\_\_\_ language are both \_\_\_\_\_ level languages. On the other hand Pascal is a \_\_\_\_\_ generation, \_\_\_\_\_ level language. [2]

(ii) Mention TWO **disadvantages** of programming in machine code rather than in Pascal.

1<sup>st</sup> disadvantage: \_\_\_\_\_ [1]

2<sup>nd</sup> disadvantage: \_\_\_\_\_ [1]

5. (a) Computer programs are designed and written to solve problems.

(i) List the THREE **looping** structures in Pascal.

1<sup>st</sup> loop: \_\_\_\_\_

2<sup>nd</sup> loop: \_\_\_\_\_

3<sup>rd</sup> loop: \_\_\_\_\_ [2]

(ii) Which of the three loops of part a(i) above would be the **most suitable**:

to display the integers from 1 to 20? \_\_\_\_\_ [1]

to display a menu and wait for a valid entry? \_\_\_\_\_ [1]

- (iii) Write a **program** in Pascal to input an integer and display whether the integer is odd or even. [4]
- (b) A systems analyst was asked to computerise the operations of a company. [4]
- (i) Mention **TWO benefits** of computerisation for the company. [1]
- 1<sup>st</sup> benefit: \_\_\_\_\_ [1]
- 2<sup>nd</sup> benefit: \_\_\_\_\_ [1]
- (ii) Name and briefly outline **TWO methods of changeover** procedures. [1]
- 1<sup>st</sup> changeover: \_\_\_\_\_ [1]
- \_\_\_\_\_ [1]
- 2<sup>nd</sup> changeover: \_\_\_\_\_ [1]
- \_\_\_\_\_ [1]
- (iii) List **FOUR major tasks** (besides changeover) that are performed during the systems analysis exercise. [2]
- 1<sup>st</sup> task: \_\_\_\_\_
- 2<sup>nd</sup> task: \_\_\_\_\_
- 3<sup>rd</sup> task: \_\_\_\_\_
- 4<sup>th</sup> task: \_\_\_\_\_ [2]
- (c) CAD software is widely used in modern industries. [1]
- (i) What does the acronym **CAD** stand for? [1]
- \_\_\_\_\_ [1]
- (ii) Mention **TWO advantages** of using CAD when compared to the traditional 'pencil and drawing-board' method. [1]
- 1<sup>st</sup> advantage: \_\_\_\_\_ [1]
- \_\_\_\_\_ [1]
- 2<sup>nd</sup> advantage: \_\_\_\_\_ [1]
- \_\_\_\_\_ [1]



MATRICULATION AND SECONDARY EDUCATION CERTIFICATE EXAMINATIONS BOARD

UNIVERSITY OF MALTA, MSIDA

**SECONDARY EDUCATION CERTIFICATE LEVEL**

**MAY 2012 SESSION**

SUBJECT: **Computer Studies**  
 PAPER NUMBER: IIB  
 DATE: 27<sup>th</sup> April 2012  
 TIME: 9:00 a.m. to 11:00 a.m.

**Directions to Candidates**

*Write your index number where indicated at the top of the page.*

*Answer **ALL** questions in the spaces provided. You are not allowed to use extra sheets other than those provided in this booklet.*

*Good English and orderly presentation are important.*

*The use of flowchart templates is permitted. The use of calculators is **NOT** permitted.*

Question Number	1	2	3	4	5	<b>FOR MARKERS' USE</b>
For Markers' use only						Total number of Marks or Grade obtained by candidate
<b>MARKS</b>						

1. (a) A company decides to fully **computerise** its POS and payroll systems.
- (i) Given this context explain what is meant by:
- Off-the-shelf** package: \_\_\_\_\_ [1]  
\_\_\_\_\_
- Tailor-made** package: \_\_\_\_\_ [1]  
\_\_\_\_\_
- (ii) Identify ONE **input device** that may be used to minimise the manual entry of data at the POS and ONE **input device** for the payroll system.
- POS device: \_\_\_\_\_ [1]  
Payroll device: \_\_\_\_\_ [1]
- (iii) Use THREE from the following **terms** to complete the sentence below.  
*e-mail, flyer, network, modem, website*
- The company would benefit by publishing a \_\_\_\_\_ to advertise their products online and by installing a \_\_\_\_\_ for communication over the telephone line so that clients may place orders via \_\_\_\_\_.
- (iv) A network system allows sharing of resources. Besides the telephone line, mention TWO other data communication **media**.
- 1<sup>st</sup> medium: \_\_\_\_\_ 2<sup>nd</sup> medium: \_\_\_\_\_ [1]
- (b) Data **security** and data **integrity** are crucial to any computer system.
- (i) One method of recovering lost data is by keeping the latest three **generations of files**. What are the THREE files called?
1. \_\_\_\_\_ [1]  
2. \_\_\_\_\_  
3. \_\_\_\_\_
- (ii) Give ONE example of how data integrity may be enforced during the **input of data** from a keyboard. [1]  
\_\_\_\_\_
- (c) Data storage and its management are essential features of any system.
- (i) Suggest TWO **reasons** why an external and portable hard disk drive may be more suitable to back up files when compared to a re-writable DVD.
- 1<sup>st</sup> reason: \_\_\_\_\_ [1]  
\_\_\_\_\_
- 2<sup>nd</sup> reason: \_\_\_\_\_ [1]  
\_\_\_\_\_

DO NOT WRITE ABOVE THIS LINE

- (ii) An Operating System (OS) allows the user to manage the files on his/her storage devices. This includes deleting unwanted files.  
Mention TWO other **file management** tasks.

1<sup>st</sup> task: \_\_\_\_\_ [1]

2<sup>nd</sup> task: \_\_\_\_\_ [1]

- (d) List the following six **items** under the correct heading of the table below:

*GPS, PC, Mobile phone, Laptop, Digital thermometer, Auto pilot*

Dedicated computer	General purpose computer

[3]

2. Standard coding is used to enable the exchange of data between various devices.

- (a) The following incomplete table shows part of the **ASCII character coding** system. Complete the table.

Character	ASCII code in decimal
E	101
F	102
	103
H	
I	105
	110

[2]

- (b) The user of a **CAD** package prepares a large file for printing. The command to print the CAD file is immediately followed by another command to print a document. The CAD file is then passed on to the **CAM** department.

Use the above information to complete the following sentences:

- (i) **CAD** is the abbreviation for:

\_\_\_\_\_ [1]

- (ii) **CAM** is the abbreviation for:

\_\_\_\_\_ [1]

- (iii) To print the data in a file, the computer has first to transfer the data into the printer's \_\_\_\_\_.

[1]

- (iv) Since the user sent the second print job before the first one finished printing, the second file has to be \_\_\_\_\_.

[1]

DO NOT WRITE ABOVE THIS LINE

- (c) (i) Match the following devices with the tasks given below.

*Mouse, Joystick, Graphics tablet, Scanner*

Task	Device
Converting a photo into digital format.	
Moving an object in gaming.	
Sketching a house plan.	
Selecting an option from a menu.	

[2]

- (ii) Explain the difference between
- vector**
- and
- raster**
- graphics, mentioning also a
- hardware device**
- that is typically related to each type of graphics.

Vector graphics: \_\_\_\_\_

[1]

Vector device: \_\_\_\_\_

[1]

Raster graphics: \_\_\_\_\_

[1]

Raster device: \_\_\_\_\_

[1]

- (iii) The following is a list of six computer items.

*LCD projector, CPU, hard disk drive, webcam, trackball, loudspeaker*

In the table below write down the TWO input devices and the TWO output devices found in the list above.

Input devices	Output devices

[1]

[1]

- (iv) One particular device (NOT in the list of part c(iii) above) is both an
- input and output device**
- at the same time. What is it called?

[1]

- (d) Mention ONE typical
- application**
- for each of the following devices.
- The first one has been done as an example.*

Device	Application
Keyboard	Entering the text of an essay.
Optical Mark Reader (OMR)	
Magnetic Ink Character Reader (MICR)	

[1]

[1]

DO NOT WRITE ABOVE THIS LINE

3. (a) (i) What is the **function** of the Arithmetic/Logic Unit (ALU) and the Control Unit within the CPU?.

ALU: \_\_\_\_\_

[1]

Control unit: \_\_\_\_\_

[1]

- (ii) What are the following **TWO registers** inside the CPU, used for?

Program counter: \_\_\_\_\_

[1]

Accumulator: \_\_\_\_\_

[1]

- (iii) Write down the **names** of any **TWO** types of buses found inside a computer system.

1<sup>st</sup> type: \_\_\_\_\_ 2<sup>nd</sup> type: \_\_\_\_\_

[1]

- (b) The Operating System (OS) is the most important software in any computer.

- (i) Where is the OS permanently **stored**?

[1]

- (ii) What is the process of **loading the OS** into memory, called?

[1]

- (iii) The OS on a particular machine is taking long to load into memory and then run. Mention **TWO** items of hardware that could be replaced/upgraded to improve the machine's **performance**.

1<sup>st</sup> item: \_\_\_\_\_

[1]

2<sup>nd</sup> item: \_\_\_\_\_

[1]

- (iv) The OS uses the file extension to associate the file with the corresponding application software. Identify the **software** associated with the following extensions. *The first one has been done as an example.*

File extension	Application software
.doc	Word processing program
.ppt	
.html	

[2]

- (c) Computers nowadays are found in homes, schools and places of work. List **TWO positive** and **TWO negative effects** of computerisation.

Positive effects:

1. \_\_\_\_\_

[1]

2. \_\_\_\_\_

[1]

DO NOT WRITE ABOVE THIS LINE

Negative effects:

1. \_\_\_\_\_ [1]
2. \_\_\_\_\_ [1]

(d) Use the following four computer personnel to complete the statements below:

*system analyst, data entry clerk, web master, computer technician*

- (i) The \_\_\_\_\_ types in the details of all employees.
- (ii) The \_\_\_\_\_ designs the web site of a company.
- (iii) A damaged PC cable is repaired by the \_\_\_\_\_.
- (iv) The changeover from a manual to a computerised system is the responsibility of the \_\_\_\_\_. [2]

4. (a) Computer systems have a extensive range of data storage media.

- (i) List the following **FIVE storage media** such that they are in increasing order of storage capacity. *The first one (with the smallest capacity) has been inserted for you.*

***Hard disk, Pen drive, CD, Floppy disk, DVD***

1. Floppy disk \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_ [2]

- (ii) Mention **ONE** application where data from a medium needs **serial access** and **ONE** other application where data has to be **directly accessed**.

Serial access: \_\_\_\_\_ [1]

Direct access: \_\_\_\_\_ [1]

(b) (i) Work out in binary the **addition** of the following two numbers.1 0 1 1 0 1 0 0<sub>2</sub>1 1 1 1 1 1 1 1<sub>2</sub>

Result: \_\_\_\_\_ [1]

- (ii) What **term** is used to describe the situation that arises if the result of part b(i) above were to be stored in an 8-bit register?

\_\_\_\_\_ [1]

- (iii) A particular computer system has a 64-bit wordlength. Explain why this computer is **faster** than a 32-bit system.

\_\_\_\_\_  
\_\_\_\_\_ [1]

- (c) (i) List the **outputs** of the following logic gates.

AND gate		
Inputs		Output
0	0	
0	1	
1	0	
1	1	

OR gate		
Inputs		Output
0	0	
0	1	
1	0	
1	1	

NOT gate	
Input	Output
0	
1	

[3]

- (ii) A logic circuit with inputs X, Y and Z is required to produce an output (F) of '1' only if any two inputs are '1'. Construct the **truth table** for such a circuit.

X	Y	Z	F

[4]

- (d) Write down the **term** that is used for each of the following:

- (i) The illegal and unauthorised copying of software.

[1]

- (ii) The jumbling up of data to make it meaningless during its transfer over a network.

[1]

- (iii) A computer program that may cause the computer to malfunction.

[1]

5. (a) A database may be the main source of information in an organisation.

- (i) Mention **TWO data types** that may be set when creating a database.

1<sup>st</sup> type: \_\_\_\_\_ 2<sup>nd</sup> type: \_\_\_\_\_ [1]

- (ii) Write down **FOUR important field names** that you expect to find in the database of a DVD lending library.

1<sup>st</sup> field: \_\_\_\_\_ 2<sup>nd</sup> field: \_\_\_\_\_  
 3<sup>rd</sup> field: \_\_\_\_\_ 4<sup>th</sup> field: \_\_\_\_\_ [2]

- (iii) What is a **query** in the context of databases?

[1]

- (iv) One **relational** (comparison) operator used when constructing a query is the '=' symbol. List another **TWO relational operators**.

1<sup>st</sup> operator: \_\_\_\_\_ 2<sup>nd</sup> operator: \_\_\_\_\_ [1]

- (b) Study the following program and then answer the questions set on it.

```

Program Test;
Var
  Counter, Price, Cost, Total, Quantity : integer;
Begin
  Counter := 0;
  Total := 0;
  Repeat
    Counter := Counter+1;
    Writeln('Enter Item Price in Euro');
    Readln(Price);
    Writeln('Enter Item quantity');
    Readln(Quantity);
    Cost := Price*Quantity;
    Total := Total + Cost;
  Until Counter = 5;
  Writeln(Total);
End.

```

- (i) From the program above, write down ONE **example** of:
- a variable identifier: \_\_\_\_\_ [1]
- a keyword (reserved word): \_\_\_\_\_ [1]
- a data input statement: \_\_\_\_\_ [1]
- an initialisation statement: \_\_\_\_\_ [1]
- an arithmetic statement: \_\_\_\_\_ [1]
- (ii) Why is 'integer' an **inappropriate** data type for Price, Total and Cost?  
What **new data type** should these have been set to?
- Inappropriate: \_\_\_\_\_ [1]
- New data type: \_\_\_\_\_ [1]
- (iii) Name the other TWO **looping structures** that may be used instead of the Repeat ... Until.
- 1<sup>st</sup> loop structure: \_\_\_\_\_ [1]
- 2<sup>nd</sup> loop structure: \_\_\_\_\_ [1]
- (iv) Complete the following **conditional instruction** so that a discount of €2 is to be given to bills with a total of €20 or more
- If \_\_\_\_\_ then \_\_\_\_\_; [2]
- (v) State whether the program above is 'source code' or 'executable code'.
- \_\_\_\_\_ [1]