



2009 Computing Studies

Standard Grade – Credit

Finalised Marking Instructions

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1. PetrolPatrol is a fuel company.

In order to communicate with branches in different countries they use a *Wide Area Network*.



- (a) (i) Name **one** type of *transmission media* which could be used in a Wide Area Network.

One from:

- telephone line
- satellite (Links)
- microwaves
- any type of cable eg fibre optic, copper, twisted (wire) pair, co-axial
NOT “cable” on its own.

- (ii) State the main disadvantage of sending information over a Wide Area Network.

One from:

- any security implications
- data can be corrupted by interference
- failure of communication channels
- internet connection costs
- signal strength decays over distance.

- (b) A monthly management meeting is held using *video conferencing* facilities.

- (i) State **two** advantages **for the company** holding their meetings this way.

Two from:

- no travel expenses to pay out
- no time lost due to employees travelling to meetings
- can share important information with all employees around the world simultaneously
- call an instant meeting.

- (ii) Each video conferencing room contains a *webcam*. State the purpose of the webcam in this situation.

One from:

- to capture images that can be shared across the network
- to allow people (in different parts of the world) to see each other whilst the meeting is in progress.

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- (c) The minutes of the meeting will be sent via e-mail to all the managers. They are highly confidential.

State what should be done to the file before it is sent electronically.

One from:

- **encryption**
- **encoded**
- **password protected.**

- (d) One manager asked that details of the meeting were saved using a *standard file format*.

- (i) Explain why he made this request.

One from:

- **so that the file could be opened up in different applications packages/different platforms**
- **portable**
- **universally recognisable.**

- (ii) One standard file format used for word processed documents is *RTF*.

What does RTF stand for?

Rich Text Format

- (iii) Name another standard file format used for word processed documents.

One from:

- **ASCII**
- **(plain) text**
- **txt.**

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2. (a) Garage Galore have invested a lot of money in an *expert system* to help with diagnosing faults when servicing cars.



- (i) Explain in detail what an expert system is.

Two from the following:

- an expert system is a program /software
- (large database of) knowledge/facts/information
- asks the user questions.

lets you:

- draw conclusions
- make decisions
- offer advice
- plan
- diagnose.

- (ii) State **two** advantages of using an expert system rather than relying on a human expert.

Two from the following:

- cheaper than a human expert
- always available (any time/place)/permanent
- more consistent/reliable/no human error
- more unbiased than a human expert
- can be used for training purposes or second opinions
- combines knowledge of many experts.

- (b) Christabel works in the admin department of Garage Galore. She makes use of information stored about customers to send out individual reminders when their cars are due a service.

- (i) State the process that Christabel will use to allow her to produce personal reminders without doing each one individually.

Mail merge

- (ii) Describe the steps involved in carrying out this process.

Create a **standard** letter (1)

with placeholders /spaces/blanks/gaps (1).

Create a database/datafile (1) (with the required fields to be inserted into the standard letter.)

NOTE: If mail merge is not mentioned in part (i) then worth 1 mark in part (ii)

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- (c) Christabel gave a list of customer details to a car dealer. He wanted to send out promotional leaflets advertising special offers.

State whether Christabel was right to hand over the customers' details and give **one** reason to justify your answer.

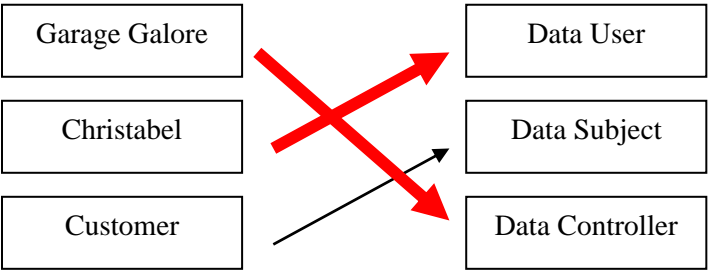
No (1)

and one from the following:

- **she has breached the Data Protection Act**
- **has not asked permission**
- **it's private data**
- **don't have the right to pass on**
- **she has to make sure the information is secure**
- **can only be used for the original purpose.**

NOTE: No as she is breaking the law – only worth 1 mark

- (d) Draw lines to show the correct relationships in the diagram below.



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3. Classy Computers have asked their sales team to sell as many printers as possible this week. To encourage the sales team, they have offered a bonus in their wages if they sell 90 or more.
- The spreadsheet shown below contains the result of the promotion.

	A	B	C	D	E	F
1		Models of Printer				
2						
3		Z331	Z361	Z391	Total	Bonus
4						
5	Y Pavlova	34	21	17	72	No
6	K Rice	25	45	20	90	Yes
7	J Hirtzel	30	39	22	91	Yes
8	H Scott	26	36	20	82	No
9	A Stewart	35	42	25	102	Yes
10						
11						
12	No. of printers sold to qualify for bonus				90	

- (a) Complete the formula that would be used in cell F5.

1 mark for each item underlined

=IF(E5 >= \$E\$12, "Yes", "No") or **=IF(E5 < \$E\$12, "No", "Yes")**

NOTE:

- 1 mark only for Yes, No with no inverted commas
- single quotes acceptable
- accept => if used instead of >=

- (b) The formula in cell F5 was replicated down into cells F6 to F9. Both *absolute* and *relative referencing* were used.

Explain carefully why this was necessary.

Relative referencing was used for E5 so that it would change to E6, E7, E8 and E9 as you move down the rows. (1)

Absolute referencing was used for \$E\$12 so that cell E12 would be referred to constantly and not change as you move down the rows. (1)

NOTE: candidate must clearly state which type of referencing is used in each case

- (c) The sales team were often asked by customers to recommend a printer that they should buy.

Apart from cost, state **two** factors that the customers should consider when buying a new printer.

Two from:

- **Is colour necessary?/colour depth**
- **Speed of printing required (ppm)**
- **Buffer size of printer**
- **Print quality/Resolution (dpi)**
- **Type of interface**
- **Size of paper**
- **Additional features (scanning).**

NOT:

- **Printer quality**
- **References to running costs**
- **References to types of ink/paper**
- **Speed/printer speed.**

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KU	PS
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4. Charlie would like to help his daughter with her Computing homework. He decides to attend college in the evenings to learn about writing programs.

At the first class the tutor explains that there are a wide variety of *high level languages*.

(a) High level languages need to be translated before they can be executed. State what they are translated into.

One from:

- machine code
- binary
- 1s and 0s.

(b) State **two** other features of a high level language.

Two from:

- contains English words/English like
- problem oriented
- one high level language instruction represents several machine code instructions
- portable.

NOTE: do not accept “written in English” or descriptions of advantages e.g. easy to edit, can be read by humans

(c) *Interpreters* and *compilers* are two examples of translator programs.

Read the following statements and write either **interpreter** or **compiler** in the box at the right hand side to match the description.

A translator that points out your mistakes as you enter your program.	interpreter
A translator that lets you run your program as fast as possible.	compiler
A translator that lets you edit your mistakes easily.	interpreter
A translator that doesn't need to remain in memory when you run your program.	compiler

(d) Translator programs are an example of *systems software*.

State **one** other example of systems software.

One from:

- **operating system**
- **utility programs eg device drivers, anti-virus software, disk defragmenters, etc.**

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	KU	PS
<p>5. The Senior pupils at TreeView Academy are planning to stage six coffee mornings throughout the year. They decide to create a poster giving the details.</p> <p>(a) One pupil suggests they use a <i>freeware</i> program to design the coffee cup.</p> <p>State what is meant by the term freeware.</p> <p>Freeware is software which is free to download/freely available</p> <p>and one from:</p> <ul style="list-style-type: none"> • can be distributed/used on as many different computers as you wish • used without time limit. 	2	
<p>(b) Another pupil suggests they start by creating a <i>template</i>.</p> <p>(i) State what is meant by a template.</p> <p>A template is a ready made/saved document</p> <p>and one from:</p> <ul style="list-style-type: none"> • with the formatting structure already in place • with fonts and styles already in place • with text and graphic markers already in place. <p>(ii) State one advantage of using a template.</p> <p>One from:</p> <ul style="list-style-type: none"> • saves time when creating a similar document • helps keep a consistent layout if producing a series of articles • can give a more professional looking layout. 	2	
<p>(c) They decide to use a photograph of the school from an old magazine.</p> <p>State how they can include the photograph in the poster.</p> <p>One from:</p> <ul style="list-style-type: none"> • scan the photograph • use a digital camera (and import the image). 		1
<p>(d) Once the photograph has been inserted they realise it is necessary to <i>crop</i> and <i>scale</i> it.</p> <p>(i) State what it means to crop the photograph.</p> <p>To cut away/hide the unwanted or unnecessary part of the photograph.</p>	1	

- (ii) State what it means to scale the photograph.
- To change the size of the photograph (but still keep it in proportion).**
- (e) One of the photographs used was *37 kilobytes*.
- How many *bits* are in 37 kilobytes?
- Show all your working.
- 37 kilobytes = 37 * 1024 bytes = 37888 bytes**
- (1) for multiplying by 1024 if only done once**
- 37888 bytes = 37888*8 bits = 303104 bits**
- (1) for multiplying by 8**
- NOTE: candidate gets 2 marks if correct answer irrespective of working**

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KU	PS
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	1
	1
	1

6. Nu4Old is a large insurance company that deals with both house and car insurance. It is necessary for them to store details about their clients.

Some of the details for each client are shown below.

Customer Number	Name	Street
2356497289	Alison MacRae	26 Upper Green Street
Town	Postcode	Telephone
Hillytown	HT4 6HM	01536328776
Insurance Type		
House		

- (a) Explain why each customer is allocated a customer number.

One from:

- **a unique way to identify each customer**
- **idea of primary key**
- **in case customers have the same name.**

- (b) All telephone numbers have 11 digits. State the type of check carried out to ensure this number is entered correctly.

One from:

- **length check**
- **double entry.**

- (c) Nu4Old have over ten million customers. There is a huge amount of information to be processed and stored very quickly.

State the type of computer most likely to be used.

One from:

- **mainframe**
- **super computer.**

- (d) Nu4Old require a random/direct access backing storage medium to store the details about all the customers.

- (i) Name a suitable backing storage medium.

Hard disk (drive), NOT hard drive

- (ii) Explain why random/direct access would be required.

One from:

- necessary to go straight to individual client's details
- fast access to details
- sequential access is too slow.

- (e) This database of customer details can be accessed by many people at the same time.
State what type of database this is.

Multi User (Database)

- (f) Kyrre is an employee of Nu4Old. He changed the details of his friend's car to get him a cheaper deal for his car insurance.

- (i) Name the Act Kyrre has breached.

Computer Misuse (Act)

- (ii) State **one** other breach of the Act.

One from:

- **hacking**
- **spreading of viruses**
- **(description of) identity theft.**

NOTE: if part(i) is incorrect but part(ii) is correct based on the incorrect answer then award the mark

KU	PS
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KU	PS
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7. Fabien has been storing information about his travels using a database package.

The format of a record in his database is shown on the right.

Field Name	Sample Data
Country	Belgium
Capital	Brussels
Area (km ²)	30528
Population (millions)	10.5
Last visited	12/05/07
Population Density	334

(a) Name **two** different data types stored in this record.

Two from:

- **Text**
- **Numeric/Number**
- **Date**
- **Alphanumeric**

(b) Fabien decides to add another field to his database. The new field will contain a picture of each country's flag.

State the data type of this new field.

One from:

- **Graphic**
- **Image**
- **OLE object**

(c) Fabien wants to find out how many countries he has visited in the year 2000 which have a population of more than 5 million. He realises that he will need to carry out a *complex search* to produce this list.

(i) Explain what is meant by a complex search.

One from the following:

- **is on more than one field**
- **has two or more conditions**
- **uses AND or OR.**

(ii) Describe the steps he should take to produce this list.

- **Last Visited field**
- **>= 01/01/(20)00 AND <= 31/12/(20)00 OR *(20)00 (any implication of a wildcard e.g. - / - / (20)00)**
- **(AND) on the Population field for >5**

- (d) Fabien has used a *computed field* to calculate the population density.

Explain what is meant by a computed field.

Contains a calculation/formula.

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8. Factories often use *mobile robots* to carry heavy components from one place to another
- (a) (i) Describe **two** different methods of guiding these mobile robots along their routes.
- Method 1**
- Robot**
- has a light sensor
 - follows a (white) line painted on a floor.
- Method 2**
- Robot**
- has a magnetic sensor
 - follows cables/wires that are under the floor.
- One mark for each bullet point**
- (ii) Give **one** advantage for each of the methods you have described.
- Advantage for Light Guidance**
- It will be easier/cheaper to change or extend the route the robot would follow.
- Advantage for Magnetic Guidance**
- There won't be a problem with dirt or litter on the floor obscuring the route.
- NOTE: A valid advantage for any incorrect answer given in part(i) is acceptable eg programming via an internal map being easy to change.**

KU	PS
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