C

KU   PS

Total Marks

0560/403

COMPUTING STUDIES
STANDARD GRADE
Credit Level

Fill in these boxes and read what is printed below.

Full name of centre

Town

Forename(s)

Surname

Date of birth
Day   Month   Year   Scottish candidate number   Number of seat

Read each question carefully.

Attempt **all** questions.

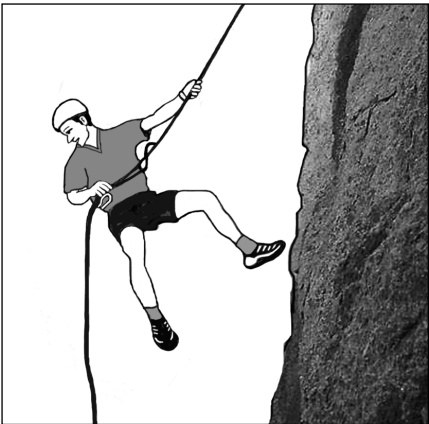Write your answers in the space provided on the question paper.

Write as neatly as possible.

Answer in sentences wherever possible.

Before leaving the examination room you must give this book to the invigilator. If you do not, you may lose all the marks for this paper.

SCOTTISH
QUALIFICATIONS
AUTHORITY

1. Glencoe House is an outdoor centre that provides courses for a wide range of outdoor sports and activities. Details of the courses are found on the centre's website, part of which is shown below.

Rock Climbing

Rock Climbing is one of the most popular activities run by the centre. Click on the links below for more information.

(a) The web page on Rock Climbing includes a series of images as well as an audio voice-over. Some of the images have been *cropped*.

(i) What happens to an image when it is cropped?

_____

_____

1
0

(ii) State **one** method of *capturing images* for a web page.

_____

_____

1
0

(iii) State **one** method of *capturing audio* for a web page.

_____

_____

1
0

1. **(continued)**

(*b*) Access to the Internet is provided by an Internet Service Provider (ISP).

State **two** facilities that the ISP may offer to Glencoe House.

1 _____

_____

2 _____

_____

(*c*) When potential clients contact Glencoe House, the response sometimes includes an *attachment* saved as a *standard file format*.

(i) What is an attachment?

_____

_____

(ii) Name **one** standard file format

_____

(iii) Describe **one** advantage of using standard file formats.

_____

_____

_____

[Turn over

2. When clients make a booking, Mirrah, the centre's secretary, enters their details in a database.

(*a*) Mirrah has poor eyesight. State **two** ways in which her computer's *HCI* could be customised to enable her to carry out this task effectively.

1 _____

_____

2 _____

_____

Part of the database design is shown below.

Field Name	Type	Size	Validation	Sample Record
Client Code	Number	4	>0 and <9999	1342
Surname	Text	20		Astley
Firstname	Text	20		Mike
Address	Text	30		34 Brampton Rd
Town	Text	20		Barnsley
Postcode	Text	8		YK3 7HJ
Sex	Text	6		Male
Date of Birth	Date	6		03/11/78
Course Name	Text	20		Orienteering

(*b*) A *validation* check is shown. Name the type of validation used.

_____

(*c*) Describe the difference between *validation* and *verification*.

_____

_____

_____

_____

2. (continued)

(*d*) The centre's database currently holds information concerning 15,000 clients.

Calculate how many **bytes** will be required to store **all** records. (Show your working.)

_____

_____

_____

2
1
0

(*e*) Mirrah wants to produce a paper copy of all females who have booked the mountain biking course.

  (i) Describe how this could be done.

_____

_____

_____

_____

4
3
2
1
0

  (ii) In this example, is Mirrah a *data subject, data controller* or *data user*?

_____

1
0

  (iii) Describe **two** rights that a data subject has with the *Data Protection Act*.

1 _____

_____

2 _____

_____

2
1
0

(*f*) Many databases make use of *computed fields*. What is a computed field?

_____

_____

1
0

[Turn over

3. Derek Summers is a programmer.

(*a*) Derek's programs have to be translated into *machine code* before processing can take place. This can be done using either an *interpreter* or *compiler*.

Which type of translator would Derek use in the following situations? Explain why.

(i) While developing the program: _____

Reason _____

_____

_____

_____

2
1
0

(ii) When the program is finished: _____

Reason _____

_____

_____

_____

2
1
0

(*b*) Derek always tries to make sure his software is *portable*. Explain why he does this.

_____

_____

_____

1
0

3. **(continued)**

(*c*) Most of Derek's software is *commercial*. Some of it is *shareware*.

(i) What is shareware?

_____

_____

_____

(ii) Why do you think Derek distributes his work as shareware?

_____

_____

_____

(*d*) Some of Derek's customers download his software, while others receive their copies by post.

State **one** reason why Derek may prefer his customers to download his software.

_____

_____

_____

(*e*) All of Derek's software includes *on-line help* and *on-line tutorial* facilities.

Which of these facilities should new customers use when they first receive the software? State **one** reason for your answer.

Facility _____

Reason _____

_____

_____

[Turn over

4. Derek enjoys river kayaking in his spare time. He is keen to extend his skills and has enrolled on a course of sea kayaking at Glencoe House.

(a) A week before the course is due to begin, he receives a *standard letter* confirming his place on the course.

(i) What is a standard letter?

_____

_____

_____

_____

(ii) Apart from a word processor, what other application is usually involved in the creation of standard letters?

_____

(iii) State the name of the process that inserts information from this application into the word processed document.

_____

(b) On arrival at the centre, Derek is given a *magnetic stripe card* to access his accommodation. To enter his room, he must pass the card through a special piece of hardware.

What is this hardware called?

_____

(c) Derek finds an *expert system* providing advice on activities, particularly useful.

Describe **two** advantages of using expert systems.

1 _____

_____

2 _____

_____

2
1
0

1
0

1
0

1
0

2
1
0

4. **(continued)**

(*d*) The centre has a *client-server* network.

(i) State **two** advantages for the centre of using a client-server network.

1 _____

_____

2 _____

_____

(ii) What piece of hardware will have to be installed in each computer to allow access to the client-server network?

_____

(*e*) The centre is considering installing a *wireless* network. State **one** disadvantage of a wireless network in this situation.

_____

_____

_____

(*f*) The manager of the centre used to travel to Glasgow to attend a meeting with other outdoor centre managers. They now use *video conferencing* instead.

(i) State **one** input device required to use video conferencing.

_____

(ii) State **one** advantage to the managers of using video conferencing instead of attending their monthly meeting.

_____

[Turn over

5. Before heading out on his first sea kayaking activity, Derek uses a *virtual reality simulation* to practise the techniques.

(*a*) Apart from practising new techniques, suggest **two** other reasons why simulators are used by learners.

1 _____

_____

2 _____

_____

(*b*) When he uses the kayak simulator, sensors on the paddle detect the direction of movement and force used. This information is processed and a large *TFT* monitor displays the results of Derek's efforts.

(i) What type of converter will be needed **before processing** of the information can take place? Tick (✓) **one** box only.

D to A converter ☐   A to D converter ☐

5.   (*b*) (continued)

(ii) The program controlling the kayak is stored on *ROM*. State **two** advantages of storing software on ROM.

1 _____

_____

2 _____

_____

(iii) What does TFT stand for?

T _____ **F** _____ **T** _____

(iv) State **one** other example of an output device that could be used specifically in a virtual reality system.

_____

[Turn over

6. At the end of the course. Derek prepares to depart.

(*a*) During the activity, several black and white photographs were taken of Derek and the other clients. He wishes to take copies of them home using his *USB flash drive*.

(i) He has only 3 Mb of storage space left on his flash drive. Each photograph measures 800 × 800 pixels. How many photographs can be stored on his flash drive?
(Show all working.)

_____

_____

_____

_____

3
2
1
0

(ii) The *operating system* is involved in transferring the images from the computer to the flash drive. State **two** functions of an operating system.

_____

_____

_____

2
1
0

(*b*) Derek pays for his course by *Electronic Funds Transfer* (*EFT*) using his *smart card*.

(i) Describe **one** advantage of using a smart card.

_____

_____

1
0

(ii) What are the main stages involved in EFT?

_____

_____

_____

_____

3
2
1
0

7. The centre uses a spreadsheet to keep track of its clients' accounts. Part of the spreadsheet is shown below.

	A	B	C	D	E
1	**Name**	**Total Cost**	**Discount**	**Amount Paid**	**Money Due**
2	Dino Mancini	520	52	300	168
3	Isla Sutherland	800	80	700	20
4	Sparky Douglas	280	0	200	80
5	Jack Valman	350	0	350	0

(*a*) Cell C2 contains a *function* that determines any discount due to the client. If a client spends £500 or more on a course, then a discount of 10% is given, otherwise they receive no discount.

Part of the function is shown below. Complete the function.

= _____ (B2>=500, _____, 0)

(*b*) This function has been replicated from cell C2 into cells C3 to C5. What type of reference has been used?

Type of reference _____

Explain your answer _____

_____

_____

(*c*) At the end of each month, course directors receive a word processed report containing bar charts showing the number of clients completing their courses and the amount of money due. This information changes from month to month.

What type of linkage has taken place between the word processor and the spreadsheet applications?

Type of linkage _____

Explain your answer _____

_____

_____

[Turn over

7. **(continued)**

(*d*) The client bookings database is a *multi-user* database. It is password protected in an attempt to prevent unauthorised access and hacking.

   (i) What piece of legislation makes this activity an offence?

   _____

   (ii) What other activity is outlawed in this legislation?

   _____

   (iii) What type of access would be suitable in this situation – *random* or *sequential*?

   Type of access _____

   Explain your answer _____

   _____

   _____

[*END OF QUESTION PAPER*]

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