

X216/13/01

NATIONAL
QUALIFICATIONS 2014

FRIDAY, 2 MAY
09.00 AM – 11.30 AM

INFORMATION
SYSTEMS
ADVANCED HIGHER

Attempt **all** questions in Section I.

Attempt **one** sub-section of Section II.

Part A Information Systems Interfaces

Page 12

Questions 7 to 10

Part B Online Database Systems

Page 22

Questions 11 to 14

For the sub-section chosen, attempt **all** questions.

Read all questions carefully.

Do not write on the question paper.

Write as neatly as possible.

Each section should be answered in a separate answer book.



SECTION I

Marks

Answer ALL questions in this section.

1. Safety of competitors and the public at motor sport events is important. An information system is being considered to keep track of marshals, medical staff, volunteers and safety vehicles.

(a) A *feasibility study* is carried out.

- (i) The study shows that it may be necessary to connect the new information system to the Police Database.

Explain **one** aspect of a feasibility study being considered in this case.

1

- (ii) Describe **one** advantage of carrying out a feasibility study.

1

(b) A *project plan* for the development will be created.

Describe **two** *resources* that will be considered in the project plan.

2

- (c) *Investigative techniques* are used in the development of the system. The views of a large number of marshals, medical staff, volunteers and members of the public were sought in a short period of time.

- (i) State the most suitable investigative technique for this purpose.

1

- (ii) State the stage of the *System Development Life Cycle* at which investigative techniques are used.

1

- (d) Explain why the use of *Rapid Application Development* (RAD) tools may mean a faster and more satisfactory development of the new system.

2

SECTION I (continued)

Marks

2. Morven is developing an information system for use in food outlets at the Commonwealth Games.
- (a) During the *implementation* of the information system, Morven develops the database.
- (i) State **two** additional tasks that will be carried out during the implementation stage of the development. 2
- (ii) Explain why the implementation of an information system is *iterative* in nature. 1
- (b) The *system specification* outlines the functional requirements of the system. Explain the use made of the system specification during *systems testing*. 2
- (c) Select a suitable *conversion technique* for installation of the completed information system. Justify your selection by referring to the purpose of the system. 2
- (d) Morven produces a *user guide* for the information system.
- Describe the contents of the user guide. 2
- (e) The *evaluation* report comments on the system's *ease of use*.
- Describe **two** facilities that Morven could build into the system to ensure that this part of the evaluation report is positive. 2

[Turn over

SECTION I (continued)

Marks

3. The food outlet information system contains details of the products and their suppliers.

(a) Part of the data dictionary for the Product entity is shown below:

Attribute	Type	Size	PK/FK	Unique	Validation/Format	Sample
ProductID	Text	3			Single capital letter, 2 numbers	V12
Description	Text	20				Lasagne
Diet	Text	10			Normal, Vegetarian or Vegan	Normal
Purchase price	Number					£1.00
Selling price	Number					£2.00
SupplierID	Text	7			Lookup from SUPPLIER	ABC1234

- (i) Identify the Primary key and Foreign key in the above table and state the associated value for the Unique column for these keys.

2

- (ii) The purchase price has a minimum value of £0.20.

Name **three** types of *test data* that would be used to **fully** test this attribute and give a reason for each.

3

3. (continued)

(b) The order below is sent to a supplier:

ORDER DETAILS				
To:	Smith	Date: 26/04/2014		
	Adams Lane			
	Langfield LK12 87UH			
Please supply the following items:				
<u>ProductID</u>	<u>Description</u>	<u>Quantity</u>	<u>Price</u>	<u>Cost (£)</u>
A12	Beans	23	0.25	5.75
B34	Cola 1 litre	120	0.34	40.80
C52	Bread 80g	50	0.30	15.00
			Total	£61.55
Yours				
Morven				

The order above is produced using a *report*. Explain how this report would be created stating any formulas that would be necessary.

4

(c) The food outlet has 500 products. Based on the information in the data dictionary, explain why the formatting for the attribute ProductID is suitable.

1

(d) Give **one** reason why *corrective maintenance* may be needed.

1

[Turn over

SECTION I (continued)*Marks*

4. An *Entity-Relationship diagram (ERD)* is used to model a system.

(a) Explain whether an ERD is a *logical* or a *physical design* model.

2

(b) The ERD below shows the relationship between an athletic event and its competitors:



(i) The relationship between EVENT and COMPETITOR is a *many-to-many* relationship.

Resolve this many-to-many relationship, indicating clearly the *nature* of all resulting entities and relationships.

3

(ii) Each competitor is issued with a unique badge. The details of the entity BADGE are provided below:

BADGE(CompetitorID *
 date issued
 expiry date
 issued location
 checked by)

Notes:

1. Use of underline indicates the primary key
2. Use of * indicates the foreign key

Add the badge entity to the ERD given as your answer to part (b) (i) above. You must indicate the *cardinality* and nature of the relationship between the COMPETITOR and BADGE entities.

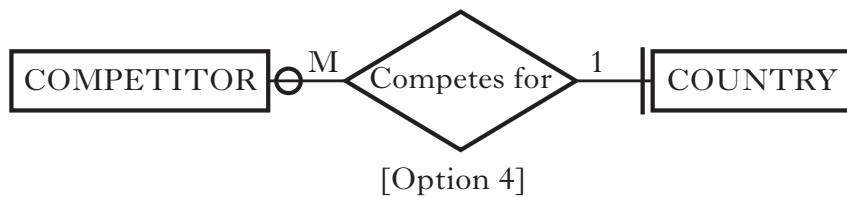
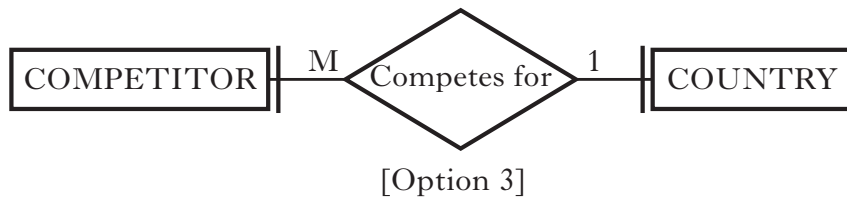
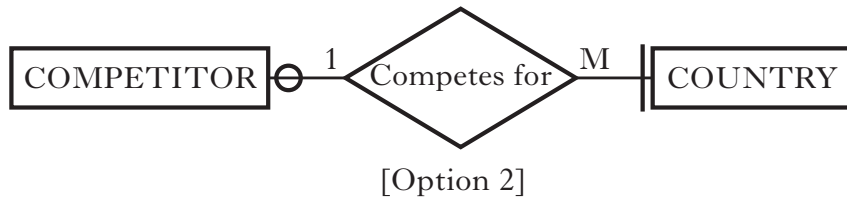
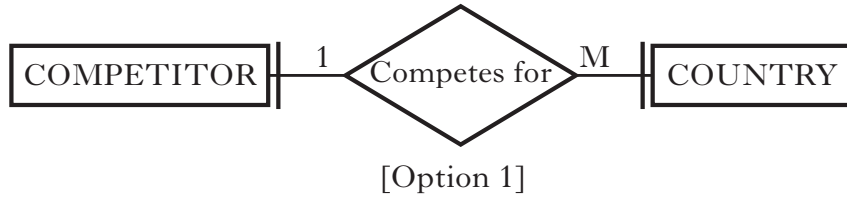
3

SECTION I (continued)

Marks

4. (continued)

- (c) A COUNTRY entity is now to be added to the ERD. The four options below are considered:



State which option you believe to be correct.

Explain why you made this choice, giving **two** reasons to support your answer.

2

[Turn over

SECTION I (continued)

Marks

5. In the Commonwealth Games, Scotland's Team Support Services provide physiotherapy sessions for athletes. A partially completed *Entity Event Matrix* for the physiotherapy appointment system is shown below. Note that numbers have been substituted for some items:

Entity Event	Athlete	Appointment	1	Treatment	Physiotherapist
New athlete books appointment	C	C			R
Existing athlete books appointment	2	C			R
Physiotherapist records treatment(s)	R	R	3	R	R
4	R	M			R
Athlete cancels appointment		D			
New treatment available				C	
Old treatment removed				D	
5		D			

Details of the physiotherapy appointment system is described below:

- When a new athlete books an appointment for the first time, her/his details are saved in the Athlete file, and a new Appointment is made. A physiotherapist is chosen from the Physiotherapist file and is allocated to the appointment.
- Athletes already on the system can also book appointments.
- At each appointment, the physiotherapist gives one or more treatments selected from the file of available Treatments and records treatments used in the Session file.
- Athletes may reschedule the same appointment more than once.
- Athletes sometimes cancel appointments.
- New treatments may be added to the Treatment file.
- Older unused treatments may be removed from the system.
- At the end of each month, all appointments are archived.

- (a) Using the description above and the incomplete Entity Event Matrix, state suitable entries for the shaded boxes labelled 1, 2, 3, 4 and 5.

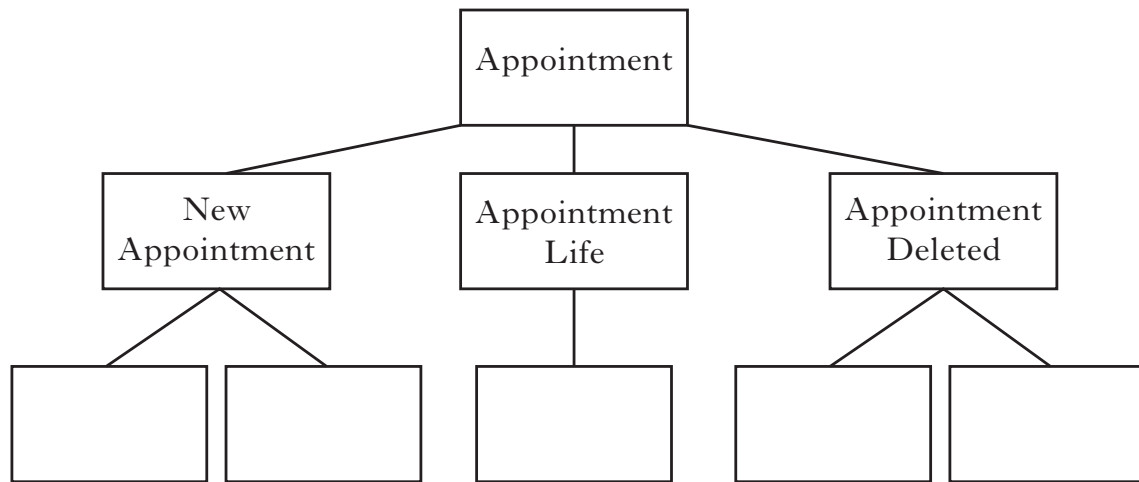
5

SECTION I (continued)

Marks

5. (continued)

- (b) Consider the incomplete *Entity Life History* for the Appointment entity shown below:



Copy this incomplete *Entity Life History Diagram*.

Use the description of the appointment system provided and the entries in the Appointment column of the Entity Event Matrix to complete your Entity Life History diagram.

5

[Turn over

6. The processes of the Mercury Hotel's booking system are described below.

CHECK AVAILABILITY

The customer sends dates required and room type to the hotel. The hotel searches the Booking file for rooms available on the required dates and searches the Room file for rooms which match requirements. A list of matching rooms is sent to the customer.

MAKE BOOKING

The customer chooses a room from the list and sends a booking request to the hotel. The hotel then asks for the customer's details. In response, the customer provides his/her name and address details and a Credit/Debit card number. These details are stored in the Customer file and the booking details (room, date, cost) are added to the Booking file. A confirmation of the booking is sent to the customer.

ADD EXTRAS

Each time the customer makes a purchase or charges a service, the details are added to the Chargeable file.

CALCULATE BILL

When a customer requests their bill, any extra expenses incurred by the customer are read from the Chargeable file and are used, along with the Booking details, to calculate the total bill. The total bill is then printed and presented to the customer.

PAY BILL

The customer hands over payment (credit card, debit card or cash) to settle the bill. The status of the booking on the Booking file is updated to "paid". Using details from the Booking and Customer files, a receipt is printed and passed to the customer.

Create a *Level 1 Data Flow Diagram* (DFD) from the description above.

10

[END OF SECTION I]

SECTION II

Attempt ONE sub-section of Section II

Part A	Information Systems Interfaces	Page 12	Questions 7 to 10
Part B	Online Database Systems	Page 22	Questions 11 to 14

For the sub-section chosen, attempt *all* questions.

SECTION II

Marks

Part A—Information Systems Interfaces

Answer ALL questions in this part.

7. A company is computerising the system that is used to keep track of ticket sales and the events that take place in their sports arenas. Sample data stored in the system is shown in Figure 1 below:

BuyerID:	82621	OrderNumber:	372810
Buyer First Name:	Emma	Order Date:	18/3/14
Buyer Last Name:	Gerrard	Order Time:	20:38
Buyer Address:	21 Park Crescent Ayr		

EventID	Event Category	Event Name	Event Date	Event Time	Ticket Price	Quantity
831	Volleyball	Semi Final	14/4/14	19:00	£45.00	4
147	Athletics	100m Final	16/4/14	16:30	£82.95	2
724	Table Tennis	First Round	2/4/14	09:45	£24.50	4
					Total Cost:	£443.90

Figure 1

The company would also like to store details of the participants in each event. Sample participant data is shown in Figure 2 below:

EventID:	147	Event Date:	16/4/14
Event Name:	100m Final	Event Time:	16:30

ParticipantID	Participant First Name	Participant Last Name
1005	Berham	Girma
1128	Max	Cunningham
1275	Cheng	Wu
2837	Antoni	Nowak
3529	Fraser	Adams
4016	Drew	McFarlane

Figure 2

- (a) Reduce the data in Figure 1 and Figure 2 to *Third Normal Form* (3NF). You should show all stages of the normalisation process and you should note the following:

- BuyerID, EventID, OrderNumber and ParticipantID are unique identifiers.
- Each order, for one or more events, is placed by a single buyer.
- Each individual participant may take part in several different events.

10

SECTION II
Part A—Information Systems Interfaces (continued)

Marks

7. (continued)

- (b) People attending events will be able to purchase tickets at automated ticket kiosks or use them to collect ones already paid for online. The ticket kiosks will also be able to give visitors information about upcoming events.

Two kiosk designs have been identified as being suitable.



Option 1: Feature Set

- Hi-resolution capacitive touch screen
- Wi-Fi and Bluetooth enabled
- Bar code reader
- Ticket & Receipt Printer
- Cash acceptance facility
- Chip and Pin Card reader
- 3·2 Megapixel digital camera
- Integrated speaker and microphone
- Web browser
- NectarineOS with graphical interface



Option 2: Feature Set

- Trackpad navigation
- Full QWERTY keyboard with predictive text entry
- Wi-Fi and Bluetooth enabled
- Ticket & Receipt Printer
- Cash acceptance facility
- Chip and Pin Card reader
- 6 Megapixel digital camera
- Web browser
- NectarineOS with graphical interface

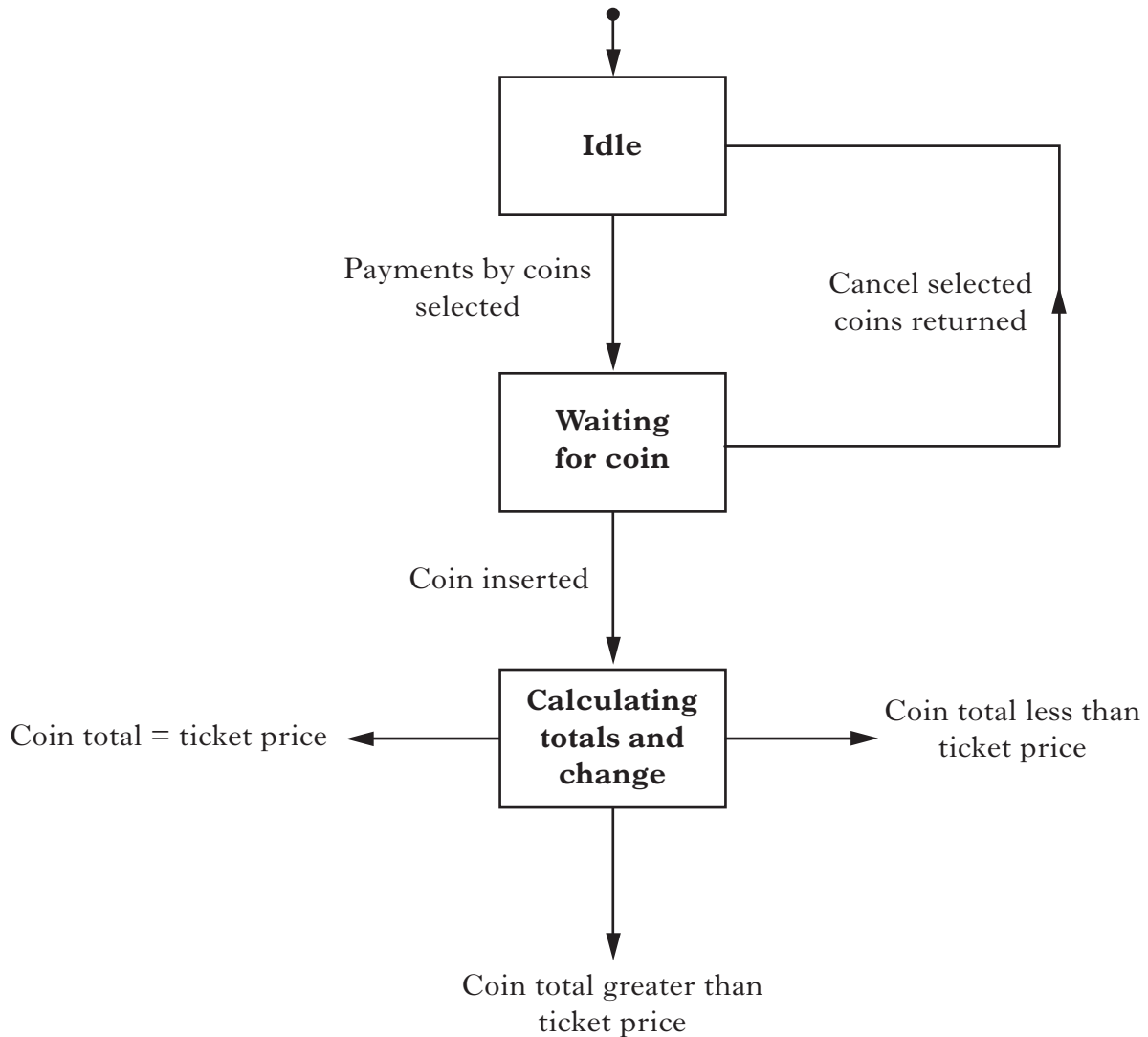
- (i) Identify **one** feature of **each** kiosk above that could support an *intelligent interface*. Justify each feature you select. **2**
- (ii) By comparing the *feature sets* above, choose the kiosk which you would recommend for this application and give **two** reasons for your choice. **2**

SECTION II
Part A—Information Systems Interfaces (continued)

Marks

7. (continued)

- (c) A partially completed *state transition diagram* for one section of the ticket kiosks is shown below. This section deals with ticket payment using coins: coins are accepted until sufficient money has been entered to pay for the ticket. The kiosk will then dispense any change required along with the ticket.



Copy the diagram and complete the three possible transition routes from the CALCULATING TOTALS AND CHANGE state.

4

SECTION II
Part A—Information Systems Interfaces (continued)

Marks

7. (continued)

- (d) The ticketing system is extended by adding a customer rating sub-system that allows customers to rate the operation of the ticket collection kiosks using 1—5 stars. As each customer votes, a script recalculates the average rating. The *structured English* for the script of this sub-system is provided below:

1. get new star rating between 1 and 5
2. . . . *update number of customer ratings*
3. . . . *update ratings total*
4. average rating = ratings total/number of customer ratings
5. display average rating

★ ★ ★ ★ ★ Rating: 3·5

Write out the structured English for steps 2 and 3 giving detail of how the two items would be calculated.

2

- (e) Name **one** alternative technique that could be used instead of structured English to design the script to recalculate the average rating.

1

[Turn over

SECTION II
Part A—Information Systems Interfaces (continued)

Marks

8. An app that can be used to view video highlights of the 2014 Commonwealth Games is being developed. The app will run on Android smartphones.

(a) A *low fidelity prototype* of the app interface is produced. Sample screens of the interface are shown below:



Sports Selection Screen



Play Video Screen

- (i) Describe **one** benefit of a low fidelity prototype over a *storyboard* for the design of the app interface. 2
- (ii) State whether the prototype shown above is an example of a *horizontal* or *vertical* prototype. Justify your answer. 2
- (b) The interface of the app must take account of the needs of all users. Explain how the presence of *novice* and *expert* users will increase the complexity of the development task. 2
- (c) The developers chose to use the *question-asking protocol* rather than the *co-discovery method* as a means of performing *usability testing*.
- (i) Comment on the appropriateness of this decision. 2
- (ii) Describe how the results of the usability testing would be used by the development team to improve the interface of the app. 2

SECTION II
Part A—Information Systems Interfaces (continued)

Marks

8. (continued)

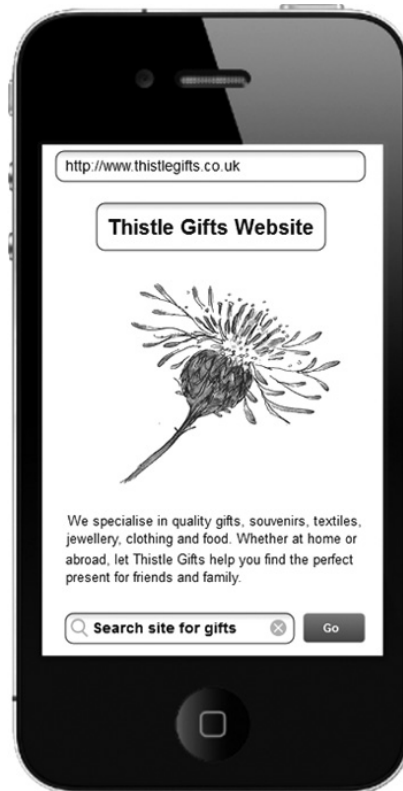
- (d) To ensure that the new app runs on all Android smartphones, the developers have selected a range of *quality inspection methods* to evaluate the interface of the app.
- (i) Explain how a *consistency inspection* would be used to evaluate the app interface. **1**
 - (ii) Describe how *adherence to standards* would apply to the interface of the new app. **2**
- (e) *Acceptance testing* and *systems testing* are two types of testing that are carried out.
- (i) Name **one** other type of testing. **1**
 - (ii) Explain the purpose of acceptance testing. **1**

[Turn over

SECTION II
Part A—Information Systems Interfaces (continued)

Marks

9. The website of Thistle Gifts has been designed to allow efficient use on a variety of devices. A prototype of one screen is shown below:



- (a) (i) Name the stage of the *LUCID methodology* at which this prototype would be created. 1
- (ii) Name the stage of the *systems analysis and design life cycle* during which *envision* and *discovery* take place. 1
- (b) The Thistle Gifts website allows users to search for gifts.
- (i) Explain how the *syntax* of searching for a gift may differ between a desktop computer and a smart phone. 2
- (ii) Although the syntax for carrying out a particular operation may be different for *novice* and *expert* users, the *semantics* will be the same. Explain the term semantics. 1
- (c) The designers wish to test the *usability* of the website.
- (i) Describe how *thinking aloud protocol* would be used for this purpose. 1
- (ii) Describe how *subjective user satisfaction* would be used for this purpose. 1
- (d) To *inspect the quality* of the website, the designers carry out a *walkthrough*. Describe this procedure. 1

SECTION II
Part A—Information Systems Interfaces (continued)

Marks

9. (continued)

- (e) The web-site incorporates Fiona, an automated online assistant. The assistant provides responses to user enquiries by searching the company's information system.



- (i) Identify the form of *predictive* and *adaptive interface* illustrated. **1**
- (ii) Explain why the provision of *natural language querying* can lead to slower or less precise results from the system. **1**

[Turn over

SECTION II
Part A—Information Systems Interfaces (continued)

Marks

10. A computer game to celebrate the 2014 Commonwealth Games is being developed. The game will run on the new GamePlay console. Features of the console include:

- Quad-core processor
- 5-inch touchscreen
- Two analogue stick controls
- Four-way direction pad
- Front and rear-facing cameras
- Six axis motion sensor
- Touch-sensitive trackpad on rear
- Memory card slot with 4GB memory card
- Cross platform play
- Battery life of 5 hours
- Built-in GPS
- Built-in web browser with WiFi, 3G and Bluetooth connectivity
- 3.5mm headphone port with built-in speakers and microphone



- (a) Describe **one** *economic factor* and **one** *social factor* that have led to the development of the new games console. 2
- (b) Describe the console in terms of:
- (i) *Mode*. 1
 - (ii) *Physical constraints*. 1
- (c) Explain how *eye-tracking* could be used during usability testing to improve the interface of the GamePlay console. 2
- (d) The developers claim that the intuitive interface of the GamePlay console will enable keen gamers to move rapidly from novice to expert users of the console.
- Name a *quantitative measurement technique* that could be used to determine the extent to which this claim is true. 1
- (e) Describe the setup of a usability test that could be used to measure *speed of task performance* fairly. 2
- (f) One commonly accepted user interface design guideline is that the interface should provide the user with informative feedback. State **two** additional user interface design guidelines that would be applied to the GamePlay console. 2

SECTION II
Part A—Information Systems Interfaces (continued)

Marks

10. (continued)

(g) The developers of the game chose to make use of *self reporting logs* rather than *user performance data logging* as a method of inquiry.

(i) Explain why gamers may be reluctant to allow user performance data logging to take place. **2**

(ii) Explain why gamers may be reluctant to complete self reporting logs. **1**

[END OF SECTION II — PART A]

[Turn over

Part B—Online Database Systems**Answer ALL questions in this part.**

11. A company is computerising the system that is used to keep track of tickets sales and the events that take place in their sports arenas. Sample data stored in the system is shown in Figure 1 below:

BuyerID:		82621			OrderNumber:	372810
Buyer First Name:		Emma			Order Date:	18/3/14
Buyer Last Name:		Gerrard			Order Time:	20:38
Buyer Address:		21 Park Crescent Ayr				
EventID	Event Category	Event Name	Event Date	Event Time	Ticket Price	Quantity
831	Volleyball	Semi Final	14/4/14	19:00	£45.00	4
147	Athletics	100m Final	16/4/14	16:30	£82.95	2
724	Table Tennis	First Round	2/4/14	09:45	£24.50	4
					Total Cost:	£443.90

Figure 1

The company would also like to store details of the participants in each event. Sample participant data is shown in Figure 2 below:

EventID:	147	Event Date:	16/4/14
Event Name:	100m Final	Event Time:	16.30
ParticipantID	Participant First Name	Participant Last Name	
1005	Berham	Girma	
1128	Max	Cunningham	
1275	Cheng	Wu	
2837	Antoni	Nowak	
3529	Fraser	Adams	
4016	Drew	McFarlane	

Figure 2

- (a) Reduce the data in Figure1 and Figure 2 to *Third Normal Form* (3NF). You should show all stages of the normalisation process and you should note the following:

- BuyerID, EventID, OrderNumber and ParticipantID are unique identifiers.
- Each order, for one or more events, is placed by a single buyer.
- Each individual participant may take part in several different events.

SECTION II
Part B—Online Database Systems (continued)

Marks

11. (continued)

- (b) The system will enable customers to book tickets from home via the Internet and then collect them from the kiosks at each venue.

Customers must enter their details into an online form as shown here:

First name:

Last name:

Address:

Some of the HTML code for this form is provided below:

```
1 <form name="customer_data" method="post">
2 .....
3 .....
4 <p>Address: <textarea rows="4" cols="30" name ="address" > </textarea></p>
5 <button type="submit"> submit</button>
6 </form>
```

- (i) State what is missing from line 1 of the code above. **1**
- (ii) The `textarea` element is used for obtaining the customer's address. Explain why an `input` element would not be suitable. **1**
- (iii) Change the code for line 5 so that a button labelled '**SEND**' is produced.

1

[Turn over

SECTION II
Part B—Online Database Systems (continued)

Marks

11. (continued)

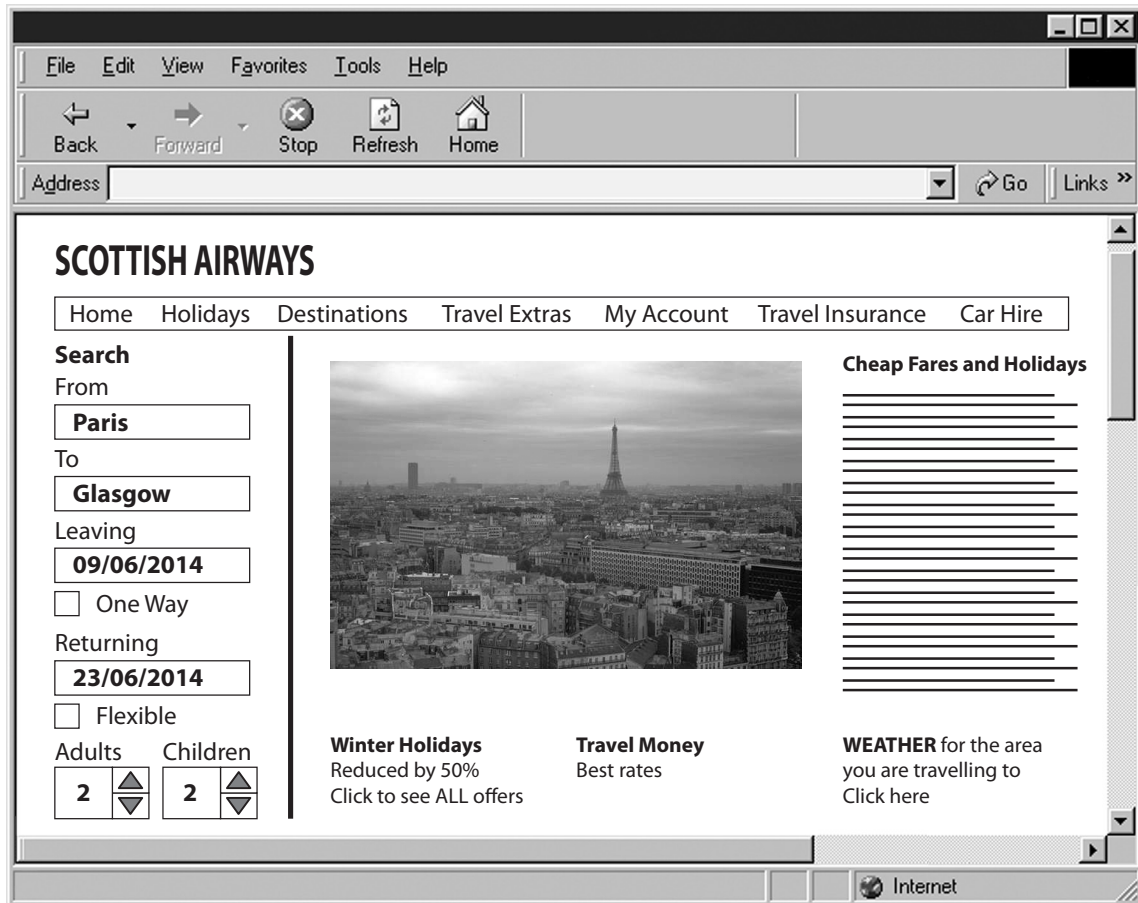
- (c) *Server Based Management Tools* will be used to manage the database.
- (i) Other than username and password, name the **two** additional items needed to connect to the ticketing database. **2**
 - (ii) Describe **one** task that could be carried out using server based management tools. **1**
 - (iii) Explain **one** advantage of using server based management tools. **1**
- (d) The company intends to purchase *Customer Relationship Management (CRM)* software.
- (i) Explain how this software will help them run a customer loyalty program to reward customers who use their services regularly. **2**
 - (ii) Describe **two** other ways CRM software could improve this company's sales. **2**
- (e) The ticketing system is extended by adding a customer rating sub-system that allows customers to rate the operation of the ticket collection kiosks using 1—5 stars. As each customer votes, a script recalculates the average rating. The *structured English* for the script of this sub-system is provided below:
- 1. get new star rating between 1 and 5
 - 2. . . . *update number of customer ratings*
 - 3. . . . *update ratings total*
 - 4. average rating = ratings total/number of customer ratings
 - 5. display average rating
- ★★★★★ Rating: 3.5
- Write out the structured English for steps 2 and 3 giving detail of how the two items would be calculated. **2**
- (f) Name **one** alternative technique that could be used instead of structured English to design the script to recalculate the average rating. **1**

[Turn over for Question 12 on *Page twenty-six*

SECTION II
Part B—Online Database Systems (continued)

Marks

12. Scottish Airways uses an *e-commerce platform* to allow passengers to book their flight tickets.



- (a) State **two** features of an e-commerce site. 2
- (b) The e-commerce site is available 24/7, reducing paper usage and time to book.
State **one** additional benefit of using e-commerce for:
- (i) a company. 1
- (ii) an individual. 1
- (c) Data security is important on the web-site, especially when a payment is made.

For the Scottish Airways e-commerce site, explain whether or not *open-source software* would provide the necessary security. Give **two** reasons to justify your answer. 2

SECTION II
Part B—Online Database Systems (continued)

Marks

12. (continued)

- (d) When customers book holidays, they often use the site to buy travel insurance by completing an HTML form. This form is used to insert their details into the CUSTOMER table of the Scottish Airways information system:

Please complete all fields below:

First Name

Last Name

Address

Post Code

Tel No.

Start Date

Duration

Suggest **one** use that could be made of an HTML form to amend data stored in the CUSTOMER table.

1

- (e) Travel insurance is provided by a trading partner. *Electronic Data Interchange (EDI)* is used to exchange this data with the trading partner:

(i) Explain the need for *transaction standardisation* in the transfer of this data.

1

(ii) State whether EDI VAN or EDI INT would be better for Scottish Airways and its trading partners. Give **two** reasons for your choice.

2

- (f) Data received from American customers includes start date in the format mmddyy. The Scottish Airways system needs the data in the form ddmmyyyy.

Explain how this data format would be changed automatically in EDI systems.

2

- (g) State **one** legal restriction which applies when a business uses EDI.

1

- (h) Open-source code is available for the creation of an EDI system.

In terms of *flexibility and adaptability*, state **one** reason why open-source software may be better than *commercial software* when developing an EDI system.

1

SECTION II
Part B—Online Database Systems (continued)

Marks

13. ClydeSports is using a *Content Management System (CMS)* to provide a Commonwealth Games Information System that will instantly send results, athlete information, competition schedules, medal tables and sports records to accredited media, broadcasters, commentators and sports officials.

(a) The CMS allows different levels of access to the contents:

- Administrator
- Editor
- Author
- User
- Guest

- (i) Describe **one** task likely to be completed by an Administrator that would **not** be completed by any of the other users of the system. Justify your answer. 2

- (ii) Sports commentators with Guest access to the system will be able to obtain background information about any of the sports or athletes. If they wish to add a review, they must first register their details. Give **two** reasons why this is necessary. 2

- (b) Describe **two** features of a CMS – other than different levels of access – that will assist with the need to frequently update the results and medal tables. 2

(c) The information system contains the following tables:

ATHLETE(athleteID, firstname, surname, DOB, country)
COUNTRY(country, continent, number of medals)

A sports commentator uses the system to find information about athletes.

- (i) Copy and complete the SQL code below used to display the number of Scottish athletes:

SELECT

FROM

WHERE;

3

- (ii) When the query is submitted, a SQL query is executed using a *server side scripting language*.

Name a server side scripting language with which you are familiar. Write the line(s) of script needed to execute your SQL query. 2

SECTION II
Part B—Online Database Systems (continued)

Marks

13. (continued)

- (d) The CMS used by ClydeSports to develop the Games Information System is open source software.

Explain why it is possible for a community of users to contribute to the on-going development of any open-source software product.

2

- (e) When the Games Information System was first developed, *acceptance* and *systems* testing were carried out.

(i) Name **one** other type of testing.

1

(ii) Explain the purpose of acceptance testing.

1

[Turn over

SECTION II
Part B—Online Database Systems (continued)

Marks

14. A bicycle rental company uses an information system to keep track of its bikes and its rentals.

Some of the tables used to store the data are shown below:

BIKE

BikeID	Make	Model	DailyChargeRate	ManufactureDate	TypeID
A637	Giant	Defy	£25	13/06/2012	101
C456	Trek	Madone	£25	03/02/2013	101
A987	Giant	29ER	£30	15/08/2012	105
R194	Specialized	Stumpjumper	£35	06/05/2013	108

BIKETYPE

TypeID	Description
101	Road
105	Mountain
108	Downhill
113	BMX

RENTAL

BikeID	RenterID	RentalDate	NoOfDays
A637	543176	14/04/2014	2
A637	543180	14/04/2014	2
A987	567291	15/04/2014	10
R194	613876	16/04/2014	1

RENTER

RenterID	FirstName	LastName	Address	PhoneNumber
543176	Sarah	Majid	14 Brown Lane, Farningham	0885378129
543180	Abdul	Majid	14 Brown Lane, Farningham	0885378129
567291	Annie	Masson	781 Main Street, Goldingham	0891456331
613876	William	Smith	14 Dolphin Crescent, Masterton	0892675312

Relationships:

Bike.TypeID : BikeType.TypeID

Bike.BikeID : Rental.BikeID

Renter.RenterID : Rental.RenterID

- (a) Copy and complete the SQL code to list details of all the mountain bikes sorted in order of date of manufacture:

```
SELECT Bike.Make, Bike.Model, Bike.DailyChargeRate,
       BikeType.Description
FROM Bike, BikeType
WHERE .....;
.....;
```

SECTION II
Part B—Online Database Systems (continued)

Marks

14. (continued)

- (b) Copy and complete the SQL code to display the names of people who rented bikes with start dates during the month of April 2014:

```
SELECT Renter.Firstname, Renter.Lastname
FROM   Renter, Rental
WHERE  Rental.RenterID = Renter.RenterID
AND    .....
```

1

- (c) Write the SQL INSERT INTO code used to add the following details to the information system:

```
Bike_ID: S411
Make: Speedwheel
Model: Alpha
Daily Charge Rate: £40
Manufacture Date: 07/05/2014
Type: Road Bike
```

2

- (d) INSERT is one *DML* statement. Write down **one** more DML statement.

1

[END OF SECTION II — PART B]

[END OF QUESTION PAPER]

ACKNOWLEDGEMENTS

Section 2 Question 7(b) – Two images of FRC silver touch screen kiosk (FRC-015).

SQA has made every effort to trace the owners of copyright materials reproduced in this question paper, and seek permissions. We will be happy to incorporate any missing acknowledgements. Please contact Janine.Anderson@sqa.org.uk.