

STUDENT NUMBER Letter

INFORMATION TECHNOLOGY: IT APPLICATIONS

Written examination

Friday 7 November 2014

Reading time: 11.45 am to 12.00 noon (15 minutes)

Writing time: 12.00 noon to 2.00 pm (2 hours)

QUESTION AND ANSWER BOOK

Structure of book

| <i>Section</i> | <i>Number of questions</i> | <i>Number of questions to be answered</i> | <i>Number of marks</i> |
|----------------|----------------------------|---|------------------------|
| A | 20 | 20 | 20 |
| B | 11 | 11 | 70 |
| | | | Total 90 |

- Students are permitted to bring into the examination room: pens, pencils, highlighters, erasers, sharpeners and rulers.
- Students are NOT permitted to bring into the examination room: blank sheets of paper and/or white out liquid/tape.
- No calculator is allowed in this examination.

Materials supplied

- Question and answer book of 21 pages.
- Answer sheet for multiple-choice questions.

Instructions

- Write your **student number** in the space provided above on this page.
- Check that your **name** and **student number** as printed on your answer sheet for multiple-choice questions are correct, **and** sign your name in the space provided to verify this.
- All written responses must be in English.

At the end of the examination

- Place the answer sheet for multiple-choice questions inside the front cover of this book.

Students are NOT permitted to bring mobile phones and/or any other unauthorised electronic devices into the examination room.

SECTION A – Multiple-choice questions**Instructions for Section A**

Answer **all** questions in pencil on the answer sheet provided for multiple-choice questions.

Choose the response that is **correct** or that **best answers** the question.

A correct answer scores 1, an incorrect answer scores 0.

Marks will **not** be deducted for incorrect answers.

No marks will be given if more than one answer is completed for any question.

Question 1

The best design tool to represent the sequence of scenes in an online video game is a

- A. storyboard.
- B. layout diagram.
- C. hierarchy chart.
- D. annotated mock-up.

Question 2

During which stage of the problem-solving methodology are criteria determined for evaluating the extent to which a solution meets an organisation's needs?

- A. design
- B. analysis
- C. evaluation
- D. development

Question 3

The president of a sporting club wants to create a blog on the club's website to inform authorised committee members of progress in the construction of a new clubhouse.

The blog would best be described as

- A. open social.
- B. closed social.
- C. open work-based.
- D. closed project-based.

Question 4

To evaluate the efficiency of a new online sales form, an organisation could monitor

- A. errors in delivery address details recorded.
- B. incomplete records added to the customer data file.
- C. savings in the costs associated with recording customer data.
- D. the number of orders accepted when stock is no longer available.

Question 5

Which one of the following logic statements can be used to design a search for red powerboats owned by a person possibly called Smith or Summers?

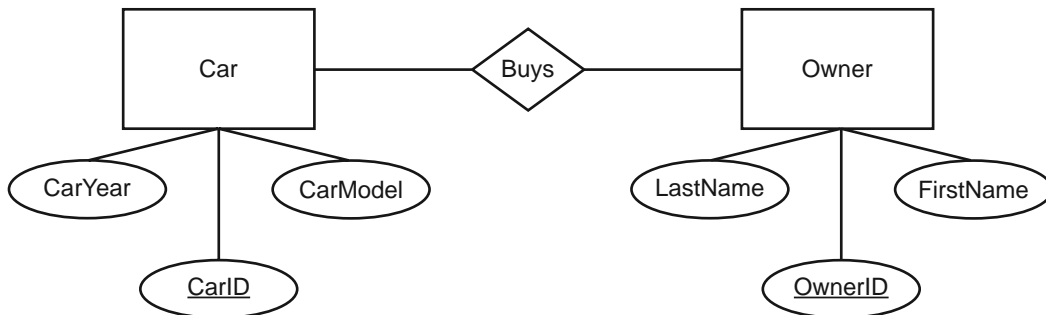
- A. (PowerBoatColour = red OR LastName = Smith) OR LastName = Summers
- B. PowerBoatColour = red OR (LastName = Smith AND LastName = Summers)
- C. PowerBoatColour = red AND (LastName = Smith OR LastName = Summers)
- D. (PowerBoatColour = red AND LastName = Smith) AND LastName = Summers

Use the following information to answer Questions 6 and 7.

A car sales business uses a relational database management system (RDBMS) to meet its information needs. Two important factors that influence the design of the RDBMS are:

- cars can have only one owner and an owner can have many cars
- when a car is advertised for sale, its age is calculated by subtracting the CarYear from the current year.

The entity-relationship diagram below shows these design influences.



Question 6

The relationship that owners have to cars is

- A. one to one.
- B. one to many.
- C. many to one.
- D. many to many.

Question 7

Which one of the following represents the database design shown in the entity-relationship diagram?

- A.**

B.

C.

D.

Question 8

Selling products to customers online will improve efficiency for a business because

- A. price changes can be updated quickly and overhead costs reduced.
- B. direct data entry by customers will reduce delivery address errors.
- C. order totals will be more accurate as they are calculated automatically.
- D. complete product details can be displayed clearly and images can be used to enhance appearance.

Question 9

The most efficient function to identify the best-selling item in a table containing the last 100 000 products sold is a

- A. count applied to the total sales of all products.
- B. sort of all products by product ID, in descending order.
- C. sort of each product by the total sold, in ascending order.
- D. sort of each product by the total sold, in descending order.

Question 10

A business owner wants to evaluate the effectiveness of the daily backup procedures followed by the managers in four branch offices.

An appropriate criterion to measure this is the

- A. ease of backing up files.
- B. operational cost of backing up.
- C. currency of the files after a backup.
- D. time taken to carry out the procedures.

Question 11

Wireless is the best communication technology for a

- A. small local network requiring high security.
- B. small local network with multiple roaming users.
- C. network with remote users who require high security.
- D. network with users from remote sites who download large files.

Question 12

Three researchers make hundreds of video recordings of nesting birds in remote mountainous locations around the world.

Which one of the following is the best portable backup media for this purpose?

- A. magnetic tape
- B. cloud storage
- C. dual-layer DVD
- D. SDHC (Secure Digital High Capacity) USB card

Question 13

A file directory is an efficient tool because it

- A. is a widely recognised format.
- B. shows all the folders at each level.
- C. has clear navigation pathways, providing a complete view at each folder level.
- D. allows users to find files with minimal effort when they have been categorised into subfolders.

Question 14

Laws restricting website designers from including a copy of a computer game on a website are examples of a

- A. technical constraint.
- B. functional constraint.
- C. social online protocol.
- D. non-technical constraint.

Question 15

A disaster simulation, where employees are not pre-warned, allows an organisation to

- A. document the procedures for managing risk to the company's data and employees.
- B. practise the procedures for shutting down the computer system and recovering data.
- C. identify the information technology services that must be restored first and a secondary site where data can be processed.
- D. list the people who are responsible for gathering the backup resources and for transporting them to a secondary storage location.

Question 16

Which one of the following data sets would best test the sort function of listing suburbs in ascending order?

- A. Barnley, Burnley, Barnley
- B. Ashburton, Burnley, Carlton
- C. Burnley, Carlton, Ashburton
- D. CARLTON, Carlton, CARLTON

Question 17

The *Spam Act 2003* aims to protect people from receiving unsolicited emails sent by

- A. a registered charity requesting money and sending it overseas.
- B. the Australian Tax Office advising taxpayers of changes to the tax law.
- C. a movie studio advertising reduced prices for a movie star's video clip.
- D. a local council promoting a picnic to raise money for repairs to the town hall.

Question 18

The coaches who run training sessions on three playing fields at the local sports centre want to login to the centre's local area network (LAN) so that they can update team lists and check secure medical records during training sessions. The sports centre chooses wireless communication to solve the problem.

One criterion for evaluating if the solution meets the coaches' needs would be to ask

- A. can team lists be accessed by authorised users from all parts of the sports centre's three playing fields?
- B. can secure medical records be accessed from all parts of the sports centre's three playing fields except for black spots?
- C. can team lists and secure medical records be accessed only by authorised users from all parts of the sports centre's three playing fields?
- D. can team lists and secure medical records be accessed by authorised users from all parts of the sports centre's three playing fields except for black spots?

Use the following information to answer Questions 19 and 20.

The data table below is used to calculate the discount for travel agency staff when they go on holiday.

| StaffID | StaffLastName | StaffFirstName | YearsOfService | NormalHolidayCost |
|---------|---------------|----------------|----------------|-------------------|
| 345 | Jones | Barry | 4 | 699 |
| 346 | Costa | Steph | 12 | 1476 |
| 347 | Chen | Sam | 8 | 801 |

Question 19

Which one of the following query designs will return the discount if all staff get a base \$50 discount and a further 2% off the NormalHolidayCost for each year of service?

- A. $\text{Discount} = [\text{NormalHolidayCost}] * 0.02 + [\text{YearsOfService}] + 50$
- B. $\text{Discount} = 50 + [\text{YearsOfService}] * [\text{NormalHolidayCost}] * 0.02$
- C. $\text{Discount} = [\text{YearsOfService}] * 50 + [\text{NormalHolidayCost}] * 0.02$
- D. $\text{Discount} = 50 + [\text{YearsOfService}] * 0.02 + [\text{NormalHolidayCost}]$

Question 20

The manager wants to add a calculated field called StaffDiscount to the data table design because he believes it will make the database more effective.

The calculated field

- A. should be included because it would make it easier for users to read the data table.
- B. should not be included because it introduces redundant data into the system.
- C. should not be included because it would make it harder for users to read the data table.
- D. should be included because it allows the manager to sort the field and quickly identify who gets the highest discount.

SECTION B**Instructions for Section B**

Answer **all** questions in the spaces provided.

Question 1 (2 marks)

Quick start guides are one type of onscreen user documentation.

- a. Outline the purpose of a quick start guide.

1 mark

- b. Give **one** disadvantage of a quick start guide.

1 mark

Question 2 (4 marks)

A chat site was initially created for intranet use in a small company. The company has now decided to have an open section with internet access and add a multimedia option so that users can post videos and audio files.

Explain how these **two** actions will affect accessibility.

Question 3 (4 marks)

A secondary college keeps students' reports on the administration network.

In the table below, recommend equipment or a procedure that could be used to address the problems listed. Provide a reason for each recommendation.

| Problem | Equipment or procedure | Reason |
|---|-------------------------------|---------------|
| unauthorised users changing students' reports | | |
| full data loss due to fire in the server room | | |

Question 4 (4 marks)

A business that sells grass seeds has included text boxes in its design for a screen to help the receptionist take phone orders. The screen is shown below.

| | |
|---|--|
| Product list | Order ID <input type="text"/> |
| Quantity (kg) | |
| <input type="text"/> Blue grass \$15.00 | |
| <input type="text"/> Rye grass \$12.00 | |
| <input type="text"/> Buffalo grass \$8.00 | |
| <input type="button" value="New order"/> | <input type="button" value="Close"/> |
| <input type="button" value="Save"/> | <input type="button" value="Proceed to sale"/> |
| <input type="button" value="Total"/> | |

The business limits sales per order to 15 kg per grass seed type.

- a. Recommend an electronic validation technique for the quantity (kg). Justify your answer. 2 marks

- b. Identify and explain a concern that the receptionist may have with the buttons across the bottom of the screen. 2 marks

Question 5 (6 marks)

A small wholesale business currently sells only high-quality umbrellas in two styles called Travel and Business. Orders are placed by phone and sales are restricted to 25 umbrellas per order. The owners intend to introduce online sales and add two extra umbrella styles called Sports and Fashion. They aim to update the database that manages sales and stores the data they collect. A section of the current database that was designed to manage sales is shown below.

| Field | Data type | Description |
|-----------------|-----------|---|
| ProductID | text | unique identifier made up of three characters and a three-digit code such as TRA001 or BUS001 |
| Umbrella_Styles | Boolean | Travel-style or Business-style umbrellas (T or B) |
| Umbrella_Price | decimal | umbrella price per unit in Australian dollars (AUD) |
| Accept | Boolean | user accepts product being left at the door if they are not home (Y or N) |
| Order_Quantity | integer | number of umbrellas sold per order is limited to 25 |

- a. Recommend the appropriate data type for each of the Umbrella_Styles field and the Accept field when the two new styles are introduced. 4 marks

Umbrella_Styles field _____

Accept field _____

- b. Identify **one** testing technique that the business could use on the new online sales system to ensure it works as intended. Justify your answer. 2 marks

Question 6 (6 marks)

Josh and Suzie were a popular singing duo who first wrote and performed songs during their last two years at school. During that time, they produced a CD of all their work together.

Josh and Suzie have now gone their separate ways. Josh is starting a small business and is currently creating a website based on his particular music style. He plans to use songs from the CD, and images of Suzie and himself to showcase a series of future concerts.

- a.** What would be the consequences if Josh decided to follow his plan without consulting Suzie? 2 marks

- b.** Explain **one** responsibility that Josh may have to Suzie. 2 marks

- c.** Recommend a solution for resolving the tension between the consequences stated in **part a.** and the responsibility stated in **part b.** 2 marks

Question 7 (9 marks)

Celeste is the manager of a youth organisation that plans to create a website called ‘Seven Degrees Youth Club’. The website will allow members of the organisation to participate in a social network. Celeste wants members to enter their contact list of friends and join interest groups so they can chat about common interests. A sample of the records and the data table from the website is shown below.

User and friendship data table

| userName | fullName | interestGroups | contactList |
|-----------------|-----------------|--|--|
| fancy_cat | Francine Ulas | love_planes classOf2014 cooking_rox | paperclip55 panic_disco starwarsfan melanie_franks WalterEllison27 |
| panic_disco | Winston Pantera | manic_music classOf2014 bird_watchers gleeclubfans | paperclip55 khanh_tran maryElizabeth WalterEllison27 MrNumber1AFLFan |
| maryElizabeth | Mary Jacobs | model_builders howstuffworks explain_everything cooking_rox | khanh_tran DrVet fancy_cat starwarsfan |
| paperclip55 | Mary Jacobs | manic_music mangafan cooking_rox love_planes | starwarsfan panic_disco vegeburger PieCakePan |

- a. Normalise the table above so that it is in first normal form (1NF). Include only **one** set of sample records in your answer.

3 marks

- b.** What benefits will normalisation provide when searching for members of interest groups? 2 marks

- c.** Celeste has hired a website development company to create the relational database management system (RDBMS) and website.

Once the development has been completed, what techniques should Celeste use to complete user acceptance of the new website?

2 marks

- d.** Celeste wants to use cloud computing for the storage of data in the RDBMS. She is not sure that when members of the Seven Degrees Youth Club decide to leave the network their data will be disposed of safely.

Explain one advantage and one disadvantage of cloud storage for the safe disposal of data.

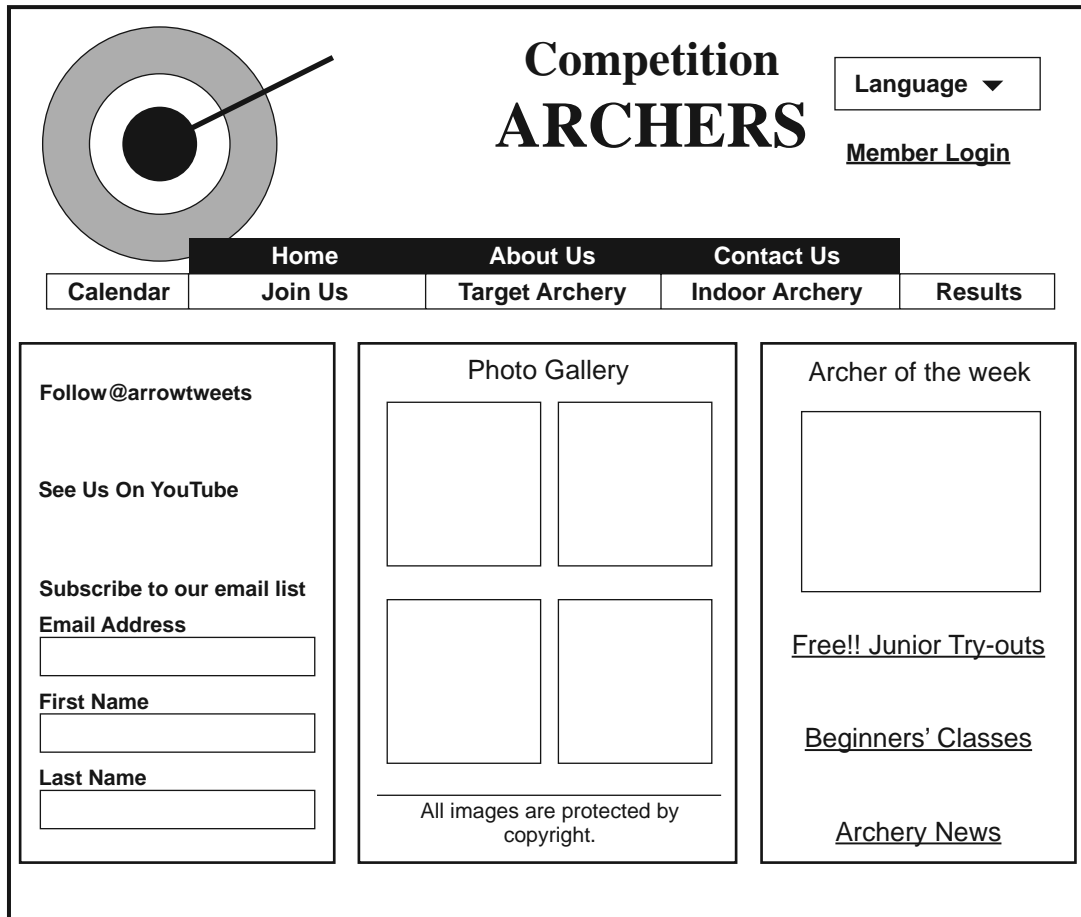
2 marks

Advantage _____

Disadvantage _____

Question 8 (10 marks)

Competition Archers is a club that promotes safe archery. Experienced archers participate in monthly tournaments and also provide instructions for beginners. The club’s website aims to provide a collective identity for archers who like to compete. It has a section where members can chat and discuss topics of interest to archers. Below is a representation of the Competition Archers home page.



- a. State **one** online social protocol that should be followed when participating in the chat section. Explain its purpose. 2 marks

- b. Explain how each of the design elements listed in the table below is applied on the home page to achieve the purpose stated in the table.

8 marks

| Design element | Purpose | Explanation |
|-----------------------|---|--------------------|
| consistency | to enhance the appearance of the website | |
| contrast | to attract new members | |
| usability | to support the functionality of the website | |
| navigation | to encourage youth participation in the sport | |

Question 9 (7 marks)

a. Complete the design of a registration page for a members-only website called 'Great Movies'.

The members' registration page needs to obtain:

- the user's contact details (email, phone number, first name, last name)
- a username, and a password with a minimum of six characters
- the user's age group, to a maximum of 65 plus.

3 marks

| | |
|------|--|
| Logo | GREAT MOVIES Registration page |
| | |

- b. Great Movies has been advised by a business analyst that fake reviews are often submitted under false names.

Recommend **two** security measures that Great Movies could put into place to ensure reviews are genuine.

4 marks

Question 10 (6 marks)

The data table below is used to record data for an after-school program.

| Field1 | Field2 | Field3 | Field4 | Field5 | Field6 |
|----------|---------|--------|-----------|--------|--------|
| Griffith | Sally | Year 8 | Chess | Tues | 3:30pm |
| O'Grady | Ralph | Year 7 | Gym | Mon | 15:00 |
| McKinnon | Barbara | Year 7 | Gardening | Wed | 1600 |
| Rankine | Howard | Year 9 | Chess | Tu | 15:30 |

- a. Recommend a more effective set of field names for the data table.

3 marks

Field 1 _____

Field 2 _____

Field 3 _____

Field 4 _____

Field 5 _____

Field 6 _____

- b.** Describe **one** convention used in the field names that you have recommended. 1 mark

- c.** Recommend a data format for **one** field that would improve the clarity of the information. Justify your answer. 2 marks

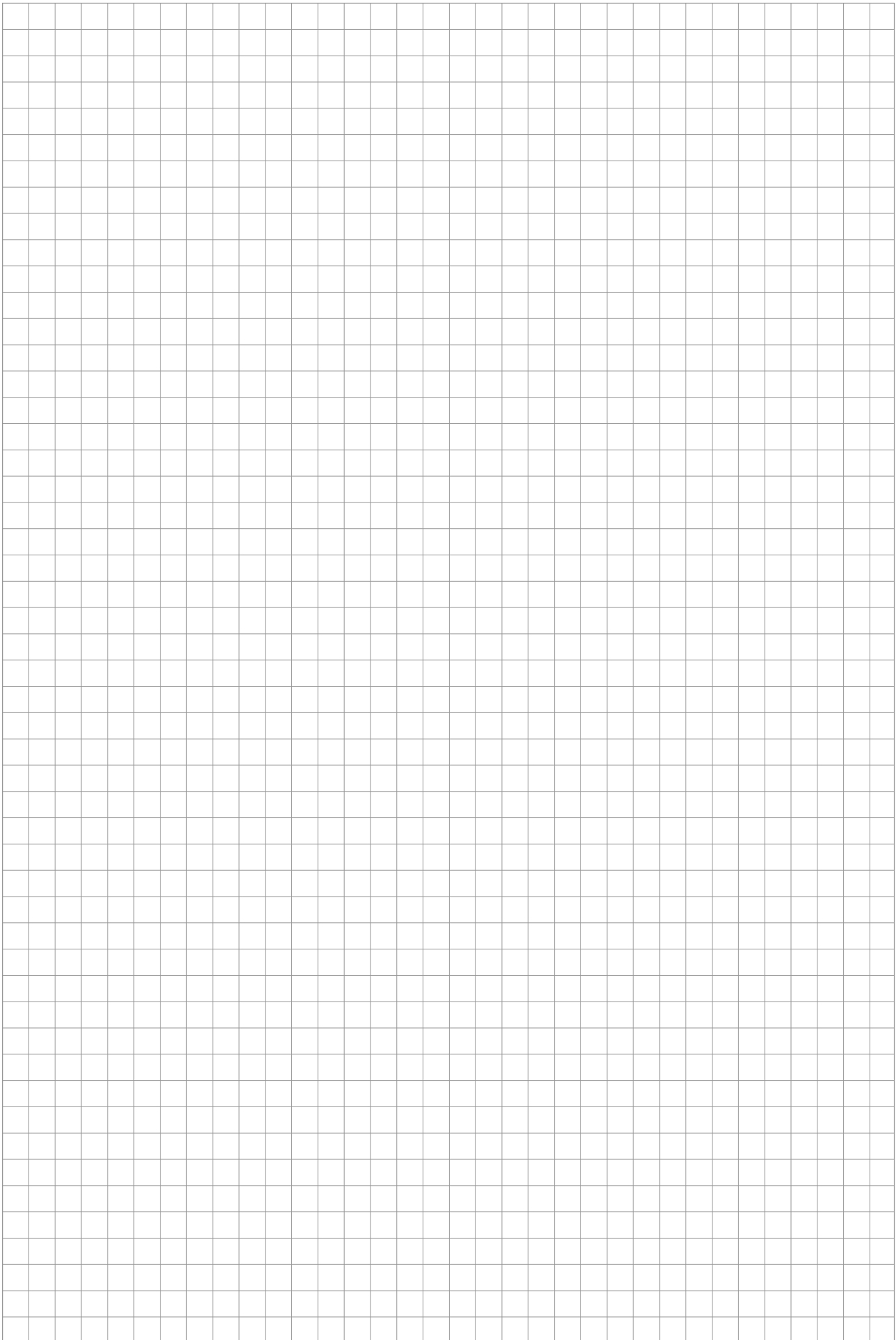
Question 11 (12 marks)

The president of the Big Mountain Football Club wants to find out what club members think about two possible choices for a new club uniform.

You are asked to design the following:

- an online poll to collect the votes of club members
 - a spreadsheet or database table to store the results
- a. i.** Using the grid on page 19, design an easy-to-use online poll that meets the following requirements: 4 marks
- A vote must be placed.
 - Each member knows they are on the correct page to vote.
 - Members have space to make brief (100 characters) additional comments before submitting their vote.
 - There is evidence that the rights of individuals supplying data are being protected.
- ii.** Select **one** of the above requirements and describe how your design meets this requirement. 1 mark

- iii.** Explain how your design could ensure that each member can respond only once. 2 marks



- ii. Explain how you could test that your spreadsheet or database design, if developed, would successfully store the results of the poll. 2 marks
