Victorian Certificate of Education
2007

General Achievement Test

Thursday 14 June 2007

Reading time: 10.00 am to 10.15 am (15 minutes)
Writing time: 10.15 am to 1.15 pm (3 hours)

QUESTION BOOK

Structure of book

Type of questions	Number of questions to be answered	Suggested times (minutes)	Suggested time allocation
Writing Task 1	1	30	10.15 – 10.45
Writing Task 2	1	30	10.45 – 11.15
Multiple-choice questions	70	120	11.15 – 1.15

- Students are permitted to bring into the examination room: pens, pencils, highlighters, erasers, sharpeners, rulers, and an English and/or bilingual dictionary.
- 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 book of 44 pages.
- Answer sheet for multiple-choice questions.
- Script book for **both** Writing Task 1 and Writing Task 2.

Instructions
- Write your **student number** on the script book.
- 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.
- Follow the times suggested for each task.
- You may complete tasks in any order and you may return to any task at any time.
- Do not waste time on one particular multiple-choice question. If you find a question very difficult, return to it later.
- Answer all questions.

- All written responses must be in English.

At the end of the test
- Place the answer sheet for multiple-choice questions inside the front cover of the script book.
- You may keep this question book.

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

Consider the information on these two pages.

Develop a piece of writing presenting the main information in the material. You should **not** present an argument.

Your piece will be judged on:

- how well you organise and present your understanding of the material,
- your ability to communicate the information effectively; and
- how clearly you express yourself.

Key

|	
	Communications
	Hydroponics facility to grow fresh vegetables, provide greenery
	Entrance to sleeping quarters
	Recreation
	16 people can be housed in winter; 52 in summer. Male and female personnel include scientists & support staff such as diesel mechanics, plumbers, carpenters, communications officers, electricians, cooks, medical doctor
	• No children or pets • No dogs since 1992
	Food per person: • supplies based on 780 kilos of food per person per year • 14,700 kilojoules daily (inside work) • 21,000 kilojoules daily (outside work) • major supply delivery: twice a year • emergency supplies: freeze-dried meat, dried soup, dried vegetables
	Modules containing power generators, waste management (rubbish and sewage)
	Scientific programs at Halley Base: atmospheric sciences, geology, glaciology, ozone reduction, atmospheric pollution, climate change, rising sea level studies, geospace research
	Highly insulated shell to withstand temperatures as low as -50°C
	Mechanical steel legs like skis so that modules can be relocated, to avoid buildings being buried by snow
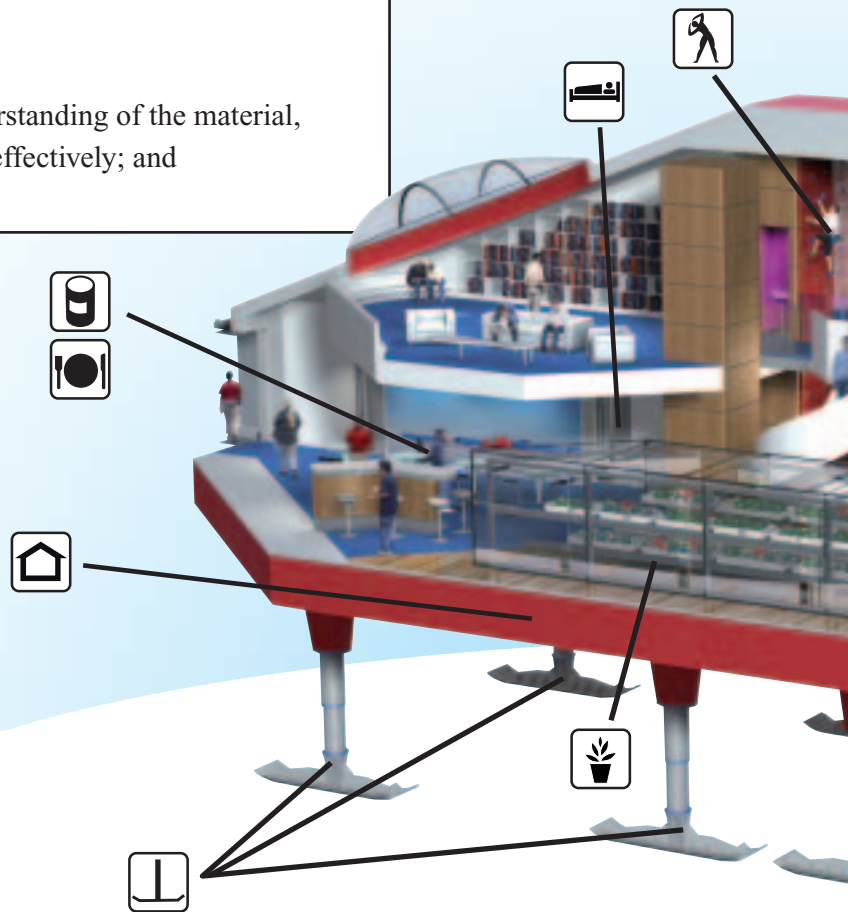
Proposed Halley VI
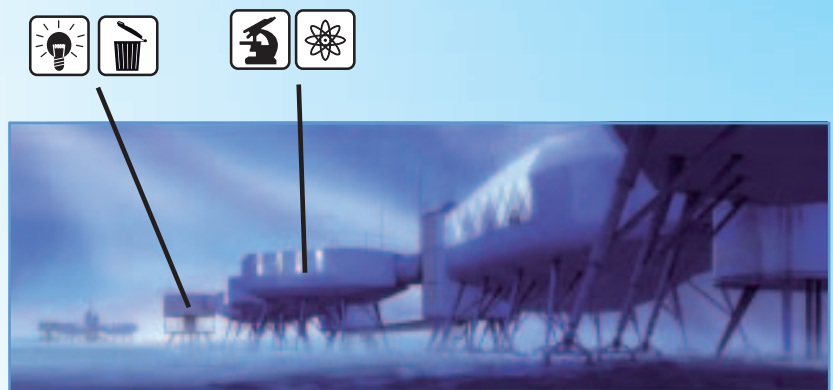
Antarctica is the …

driest - in some places it has not rained for thousands of years
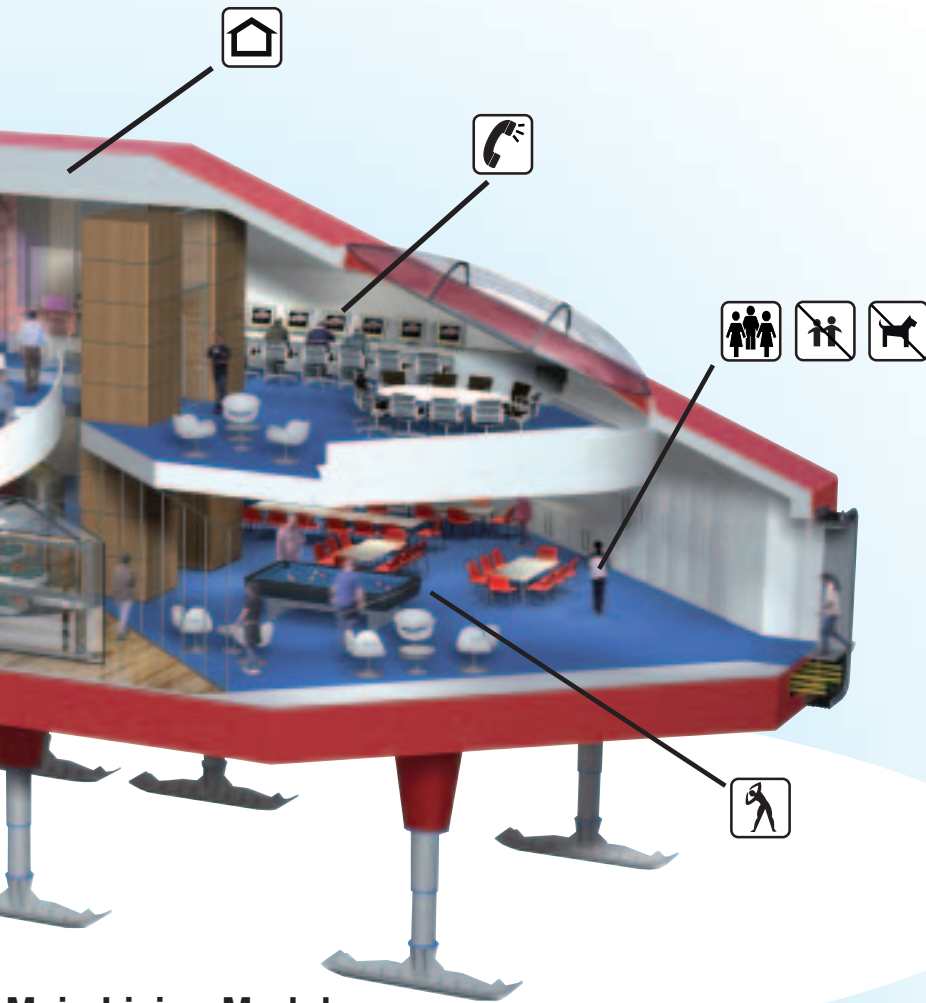
windiest - gusts up to 327 km/hr have been recorded

coldest - inland temperatures range from -70°C in winter to -35°C in summer
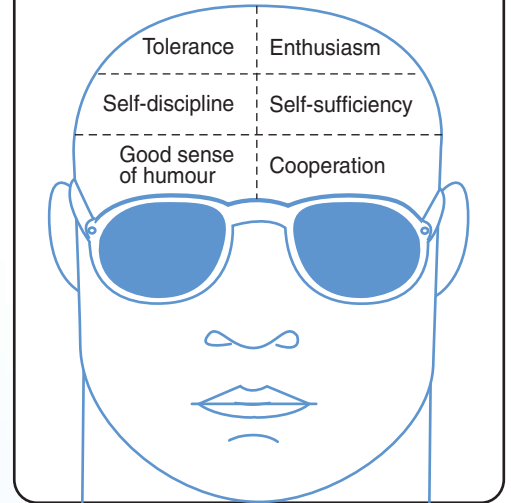
whitest - only 2% of the land is not covered in ice
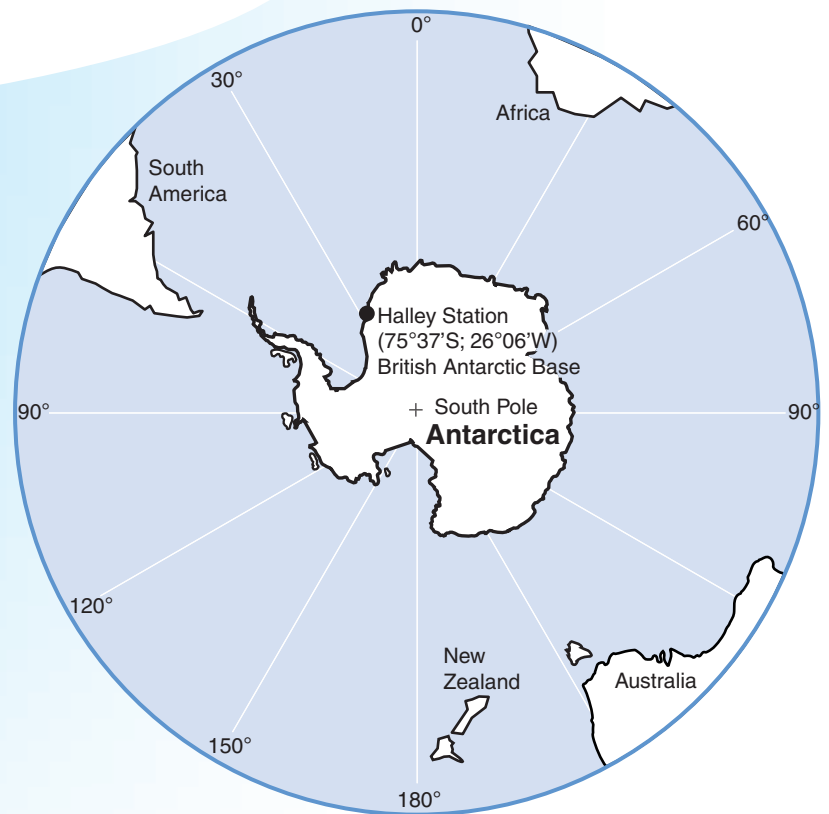
… continent in the world

alley VI Antarctic Station

Personal characteristics needed to live in Antarctica

Tolerance	Enthusiasm
Self-discipline	Self-sufficiency
Good sense of humour	Cooperation

Main Living Module

Pictured: **Halley I Ice Station, 1957–68***

Halley II   1967–73*
Halley III   1973–84*
Halley IV   1984–92*
Halley V   1992–2008
*buried by snow

0°
30°
60°
90°
90°
120°
150°
180°

Africa
South America
New Zealand
Australia

Halley Station
(75°37'S; 26°06'W)
British Antarctic Base

+ South Pole
Antarctica

2005

Mean Monthly Temperatures for Halley

Month	Jan	Feb	March	April	May	June	Jul	Aug	Sep	Oct	Nov	Dec
Temp (°C)	-4.6	-9.2	-16.2	-20.8	-24.7	-26.5	-28.5	-28.3	-26.3	-19.5	-11.6	-5.1

Sun does not appear above the horizon for 105 days per year.

WRITING TASK 2   *To be answered in the script book in pen, not pencil.*
You are advised to allocate 30 minutes to this task.

Consider the statements below.

Based on **one** or **more** of the statements, develop a piece of writing presenting your point of view.

Your piece of writing will be judged on:

*   the extent to which you develop your point of view in a reasonable and convincing way; and

*   how effectively you express yourself.

The Internet gives shy or socially isolated people greater confidence in communicating with others.

Online communication carries a risk as some people invent identities in order to attract a partner — identities which mask their true intentions.

One advantage in developing a relationship on the Internet is that it allows people to get to know someone before meeting them in person.

Human interaction via the Internet represents a new and exciting chapter in human evolution. It will take time for us to develop appropriate codes of conduct.

4

MULTIPLE-CHOICE QUESTIONS

To be answered on the Answer Sheet for
Multiple-Choice Questions.

You are advised to allocate 2 hours to this task.

Choose the response that is **correct**, or that **best answers the question**, and shade the square on the answer sheet for multiple-choice questions according to the instructions on that sheet.

A correct answer is worth 1 mark, an incorrect answer is worth 0 marks. No marks will be given if more than one answer is shown for any question. Marks will **not** be deducted for incorrect answers.

UNIT 1

Questions 1 and 2

"He's just doing that to get attention."

Question 1

Which advice about children's misbehaviour is the mother in the cartoon most likely to be following?

Children's misbehaviour needs to be

A   ignored.
B   indulged.
C   punished.
D   investigated.

Question 2

In the cartoon, the cartoonist is most likely expressing criticism of

A   children's desire for recognition.
B   children's independence.
C   modern parenting styles.
D   modern manners.

UNIT 2

Questions 3 – 5

The Basic Con

Due to copyright restriction,
this material is not supplied.

Lew Welch

Question 3

The poet suggests that the people described in lines 1 and 2 are

A essentially dissatisfied.
B unfavourably represented.
C admirable revolutionaries.
D unfortunately misinformed.

Question 4

In the last two lines of the poem, it is suggested that dying for a cause is

A a reasonable sacrifice.
B a worthy goal.
C humiliating.
D futile.

Question 5

The poem's title is intended to be

A scornful.
B misleading.
C ambiguous.
D light-hearted.

UNIT 3

Questions 6 – 9

Figure 1 gives the percentage of three fat types (*saturated*, *monounsaturated* and *polyunsaturated*) in certain foods.

Two common types of polyunsaturated fat are shown, *linoleic acid* and *alpha-linolenic acid*.

- Fats that are liquid at room temperature are called oils.
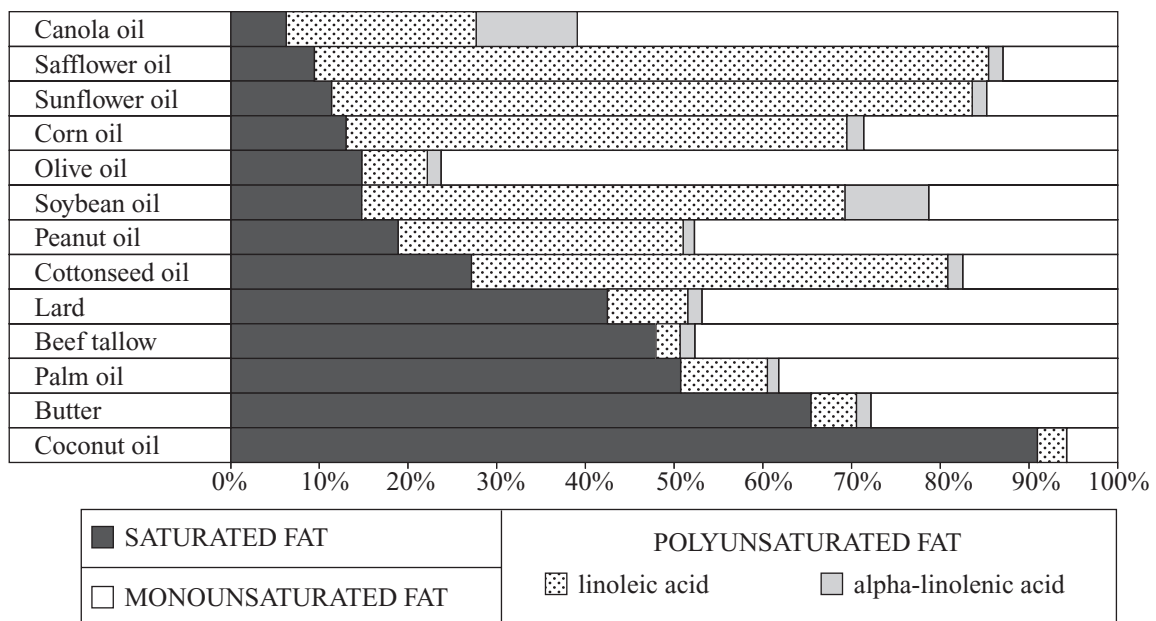
Comparison of dietary fats/oils

Figure 1

Question 6

Which one of the following four oils contains the greatest percentage of polyunsaturated fat?

A   Canola oil
B   Soybean oil
C   Peanut oil
D   Cottonseed oil

Question 7

Which of the following is closest to the composition of Butter?

A   30% saturated fat; 10% polyunsaturated fat; 60% monounsaturated fat
B   40% saturated fat; 5% polyunsaturated fat; 55% monounsaturated fat
C   65% saturated fat; 10% polyunsaturated fat; 25% monounsaturated fat
D   80% saturated fat; 5% polyunsaturated fat; 15% monounsaturated fat

Question 8

Which of the following is the best conclusion according to Figure 1?

Foods high in

A   linoleic acid have high levels of saturated fat.
B   saturated fat have low levels of polyunsaturated fat.
C   linoleic acid have high levels of alpha-linolenic acid.
D   polyunsaturated fats have high levels of monounsaturated fat.

Question 9

Grape seed oil is about 10% saturated fat, 69% linoleic acid, 1% alpha-linolenic acid and 20% monounsaturated fat.

Of the following, Grape seed oil is most like

A   Sunflower oil.
B   Corn oil.
C   Soybean oil.
D   Peanut oil.

UNIT 4

Questions 10 − 13

The passage below is about Satchel arriving at the home of his friend Leroy Piper to say good-bye to him. Leroy is moving from his home in a country town to take up a job in the city.

Leroy was in his bedroom and there was a suitcase flipped open on his bed. His younger brother Miles, with whom he shared the room, was sitting cross-legged on his own bed, and they both gave Satchel a cursory glance. 'Hey,' he said.

'Three hours,' Miles said cheerfully. 'Only three more hours.'

'Shut up.'   *5*

Miles paid his brother no attention. 'Three more hours and this whole room is mine. *Mine*.'

'So what?' spat Leroy. 'You think I won't have my own room where I'm going?'

'Mine, mine,' sang Miles. Leroy snarled at him, and then at Satchel. 'How you   *10*
doing,' he said gruffly.

'You packed?'

Leroy shrugged: the things in the suitcase were jumbled and spilling from the sides and Satchel knew he would get to the city to find he'd left everything behind. And that perhaps he would not care.   *15*

'Take all your junk,' said Miles. 'I don't want any of your stuff in my room.'

'Get out!' Leroy barked. Miles widened his eyes; he hesitated but another glance at his brother was enough to decide him and he climbed from the bed willingly, as though he went because he wanted to.

'No tears,' he said in the doorway. 'No hugging and crying, you two. We've all   *20*
got to be brave.'

Satchel looked at Leroy, who flopped on the only chair and blew air through his teeth.

'I can't wait to get out of here,' he said. 'I can't wait.'

'You don't have to wait much longer.'   *25*

'I still reckon you should come with me.'

Satchel smiled, and leaned against the door. From somewhere in the house came wailing, as one Piper child tormented another.

'Think about it,' continued Leroy. 'We'd have a great time. You and me. We'd rent a place and I could help you find some work.'   *30*

They were words he'd used before, the few words remaining of what had been a grander plan, and Leroy's voice held no real hope or enthusiasm. 'You'll have a good time by yourself,' said Satchel. 'You don't need me there.'

'I know *that*.' Leroy still had the energy to be offended by this reply. 'I mean — you should get out of here.'   *35*

Question 10

In the passage Leroy is

A   agitated and insecure.
B   regretful and reluctant.
C   excited and optimistic.
D   calm and well-prepared.

Question 11

Satchel's observations (lines 13 − 15) suggest that he

A   is happy for Leroy.
B   is concerned for Leroy.
C   does not think Leroy should leave.
D   thinks he should accompany Leroy.

Question 12

Lines 29 − 32 suggest that

A   Satchel agreed to the original plan.
B   Satchel did not know about the original plan.
C   Leroy has opted for a more practical plan.
D   Leroy has had to modify his original plan.

Question 13

The response 'I know *that'* (line 34) is an attempt by Leroy to

A   hurt Satchel.
B   reassure Satchel.
C   end the conversation.
D   assert his independence.

UNIT 5

Questions 14 – 18

One bag of bananas was bought at each of five different shops (**P**, **Q**, **R**, **S** and **T**). Figure 1 indicates the mass (kg) and price ($) of the bag from each shop. The scale on each axis is linear.
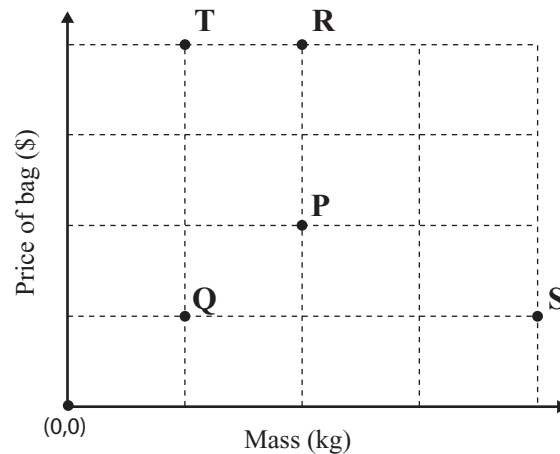
- Assume all bananas are the same in quality.

Figure 1

Question 14

Which shop provided the best value for money per kilogram of bananas?

A   Shop **Q**
B   Shop **R**
C   Shop **S**
D   Shop **T**

Question 15

In which shop would you get half the mass of bananas as at shop **P** for twice the price?

A   Shop **Q**
B   Shop **R**
C   Shop **S**
D   Shop **T**

Question 16

In which two shops was the price per kilogram of bananas the same?

A   Shops **R** and **T**
B   Shops **P** and **Q**
C   Shops **S** and **P**
D   Shops **P** and **R**

Question 17

Suppose bananas were $4 per kilogram at shop **P**.

At which one of the following shops would the cost be $4 for 0.5 kg?

A   Shop **Q**
B   Shop **R**
C   Shop **S**
D   Shop **T**

Question 18

At shop **R**, x kg of bananas cost a total price of $$y$.

How much per kilogram would be paid for the purchase at shop **Q**?

A $$\dfrac{y}{2x}$

B $$\dfrac{8y}{x}$

C $$\dfrac{2y}{x}$

D $$\dfrac{y}{8x}$

UNIT 6

Questions 19 − 21

The statements (Questions 19 − 21) are from a debate about the topic that:

The keeping of animals in zoos should be banned.

For Questions 19 − 21, choose the alternative (**A − D**) that best describes the relationship of the statements to the debate topic above.

The statement:

    A   is most likely part of the debate **for** the topic.
    B   is most likely part of the debate **against** the topic.
    C   could possibly be part of the debate **for or against** the topic.
    D   is **not relevant** to either the debate for or against the topic.

Question 19

Animal products, such as furs and leathers, have no place in today's fashion industry.

Question 20

To promote the idea that animals have rights in the same way as human beings is to misunderstand the concept of rights.

Question 21

Impressionable children can easily form the idea that animals are a form of entertainment.

UNIT 7

Questions 22 – 25

The number of people who contracted influenza in a workplace was recorded, as well as whether or not they had been vaccinated against the disease. The results are shown in Table 1. The letters *a*, *b*, *c* and *d* represent whole numbers.

Table 1

	Contracted influenza	Did not contract influenza
Vaccinated against influenza	*a*	*b*
Not vaccinated against influenza	*c*	*d*

Question 22

How many people who contracted influenza had been vaccinated?

A	*a*	**C**	$a + b$
B	*b*	**D**	$a + c$

Question 23

What proportion of the people in the workplace were **not** vaccinated?

A	$\dfrac{1}{a + b}$	**C**	$\dfrac{c + d}{a + b + c + d}$
B	$\dfrac{1}{ab}$	**D**	$\dfrac{cd}{a + b + c + d}$

Question 24

Of the people in the workplace who were vaccinated, what proportion contracted influenza?

A	$\dfrac{a}{b}$	**C**	$\dfrac{a}{b + c + d}$
B	$\dfrac{a}{a + b}$	**D**	$\dfrac{a}{a + b + c + d}$

Question 25

Suppose 20 people did not contract influenza and 40 people were not vaccinated.

What can be reliably concluded?

A   More than 60 people were in the workplace.
B   Exactly 60 people were in the workplace.
C   Less than 60 people were in the workplace.
D   It is not possible to determine how many people were in the workplace.

UNIT 8

Questions 26 – 29

The following passage is a commentary on the smile.

Passage 1

Of course, the smile is more than a chemical reaction, a series of muscular contractions or a mechanism. It is a highly sophisticated concept, an expression of emotions, a mode of communication, a beacon of desire, a ritual — an occasion, in other words, of intense psychological, anthropological and social interest, the product of acute observation, cognition and interpretation. In the West, the smile is also embedded in the Romantic tradition of poetry. There, it is constantly deployed as an expression of love and celebrated for its capacity to radiate beauty from the face of the wearer. The poets thus endowed it with the power to attract and fascinate, to stimulate desire. Indeed, most adults would have some idea of what Wordsworth meant when he described the smile of his beloved as shining 'through his very heart' as, indeed, they would know something of the distress of having the same familiar smile of love withheld or cut off.

Question 26

According to Passage 1, the smile is best understood as

A   a reflex facial expression.
B   an expression that enhances beauty.
C   an expression indicating amusement.
D   a complex expression that conveys meaning.

Question 27

In Passage 1, the writer suggests that interpreting the smile is

A   straightforward.
B   best done by experts.
C   dependent on the context.
D   rarely achieved accurately.

The following passage, by a different writer, is also about the smile.

Passage 2

The easiest way to give permission is to smile. It's the simplest front porch known to man. According to Irving Goffman, the father of social psychology, 'a smile is the number one indicator that conversation is desirable'. And it might sound incredibly obvious, but you'd be amazed how many people don't understand the value of smiling as it pertains to giving permission.

Question 28

Both Passage 1 and Passage 2 agree that the smile is

A   an expression of emotion.
B   a form of communication.
C   an instinctive human reaction.
D   an unavoidable aspect of conversation.

Question 29

Which one of the following pairs of words best describes how the smile is depicted in Passages 1 and 2?

	Passage 1	Passage 2
A	multi-faceted	practical
B	over-used	unnatural
C	automatic	fascinating
D	involuntary	superficial

UNIT 9

Questions 30 – 32

In a suburb, each household is supplied with either two or three waste disposal bins.
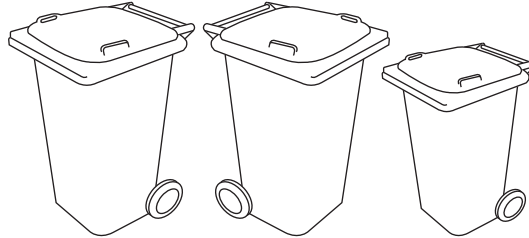
- The *landfill bin*, L, comes in 120 litre capacity only and is collected weekly.

- The *recyclables bin*, R, comes in 120 litre or 240 litre capacities and is collected every second week.

- The *green waste bin*, G, is **optional**, and comes in 240 litre capacity only. The green waste bin is collected once every four weeks and the green waste collection week does **not** coincide with recyclables collection week.

- Bins are collected on Mondays.

- In the questions, assume each bin is **full** to capacity and is put out on its collection day.

Question 30

Suppose a household has all three bins.

In how many weeks of a four-week period does the household put out only one bin?

A   none
B   one
C   two
D   three

Question 31

What is the greatest volume of waste that could be put out for collection by one household in one week?

A   600 litres
B   480 litres
C   360 litres
D   240 litres

Question 32

In a particular year, the landfill and green waste bins are collected on Monday, 2nd August.

What is the maximum volume of all waste that could be collected from a household during August (which has 31 days)?

A   1800 litres
B   1680 litres
C   1560 litres
D   1440 litres

UNIT 10

Questions 33 − 35

The Johari Window, named after the psychologists who devised it, is a model that helps people understand how they see themselves and how they are seen by others. It does this by picturing the 'self' as four parts that we and others may or may not see.

	Known to self	Unknown to self
Known to others	**Open**	**Blind**
Unknown to others	**Hidden**	**Unknown**

Figure 1:   A Basic Johari window

Question 33

The Hidden area of the Johari window is concerned with matters that are known

A   to self but not to others.
B   to others but not to self.
C   both to self and to others.
D   neither to self nor to others.

Question 34 refers to the Johari windows in Figure 2 below.

	I			III	
	Known to self	Unknown to self		Known to self	Unknown to self
Known to others	**Open**	**Blind**	Known to others	**Open**	**Blind**
Unknown to others	**Hidden**	**Unknown**	Unknown to others	**Hidden**	**Unknown**

	II			IV	
	Known to self	Unknown to self		Known to self	Unknown to self
Known to others	**Open**	**Blind**	Known to others	**Open**	**Blind**
Unknown to others	**Hidden**	**Unknown**	Unknown to others	**Hidden**	**Unknown**

Figure 2:   The Johari windows for four different individuals

Question 34

Which Johari window most likely describes someone who often offends others without realising it?

A   I
B   II
C   III
D   IV

Question 35 is about Figures 3 and 4.

Figures 3 and 4 show two Johari windows describing Tim.

Tim and Stefano know each other very well. They decide to use a Johari window to describe Tim. Tim draws a Johari window describing himself (Figure 3). Stefano also draws a Johari window to describe Tim (Figure 4).

	Known to self	Unknown to self
Known to others	**Open**	**Blind**
Unknown to others	**Hidden**	**Unknown**

Figure 3: Tim's window describing himself

	Known to self	Unknown to self
Known to others	**Open**	**Blind**
Unknown to others	**Hidden**	**Unknown**

Figure 4: Stefano's window describing Tim

Question 35

Compared to the way Tim sees himself, Stefano sees Tim as

A   less secretive.
B   more self-aware.
C   less communicative.
D   more ignorant about himself.

UNIT 11

Question 36

The shape in Figure 1 folds to make a cubic box with a butterfly on top, as shown.
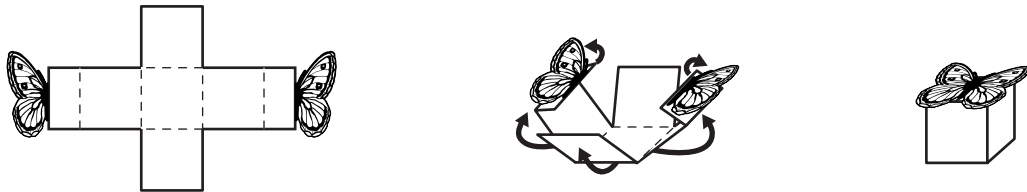
Figure 1

Which one of the following shapes will also fold to make the box in Figure 1?

A

C

B

D
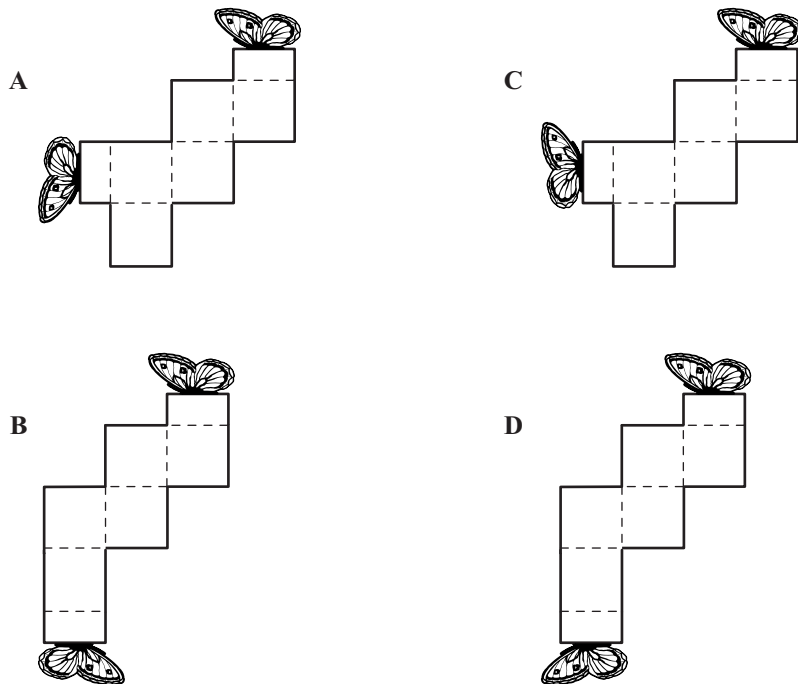
UNIT 12

Questions 37 – 39

The following is from an Internet website:

If you think you're reading the news, be warned that this story — and any other on the web — will barely be read by anyone 36 hours after it was first posted. Most news becomes old within a day-and-a-half of being posted. This is what a group of researchers have determined by applying a mathematical 'power law'[1], and they believe it is a finding that could help website designers or people trying to understand how information gets transferred in biological cells or social networks.

5

The researchers were interested in studying the World Wide Web because it is an example of a 'complex network', with a topology[2] that changes as new documents and links are continually added. Researchers picture a typical news website as a series of nodes each of which corresponds to an individual news story, with a line joining each node if the two stories are connected. The node's size is proportional to the number of visits to each document.

10

This model reveals that a typical news website has a relatively stable 'skeleton' — corresponding to the overall organisation of the site — along with the nodes (actual news stories) that are only temporarily linked to the main structure before being deleted from the site or not linked any more. In this sense, the network resembles a biological cell's network whose 'wiring' can change rapidly during a cell cycle. It is also like a social network: we each have a stable core network of friends and acquaintances but the number of people we interact with can vary drastically from one day to the next.

15

20

[1] *power law*: a relationship between two things such that one is proportional to a power of the other
[2] *topology*: the shape and features of a network

Figure 1:   A diagram of a news web portal showing nodes and links

Question 37

According to the passage, the news website is similar to a biological cell in that it is a

A dynamic entity.
B continuous cycle.
C predictable process.
D natural phenomenon.

Question 38

According to the passage, news stories on the web are often

A popular.
B fleeting.
C complex.
D accessible.

Question 39

In the passage, the World Wide Web is referred to as 'complex' (line 8) because it

A resembles a biological cell.
B contains many different websites.
C resembles a constantly shifting landscape.
D can only be understood through a 'power law'.

UNIT 13

Questions 40 – 43

A solution that has a pH value below 7 is acidic while a solution that has a pH value above 7 is basic. The pH of a solution can be determined by an *indicator* that changes colour with pH.

Figure 1 shows the colours of four indicators at different pH values. For example, the indicator *methyl yellow* will be red in solutions with a pH below 4, and yellow in solutions with a pH above 4.

Assume that:

- when two indicators are in a solution:

    if one indicator produces a red colour and another a yellow colour, the solution will be an orange colour;
    if one indicator produces a blue colour and another a yellow colour, the solution will be a green colour;

- there are no chemical interactions between the indicators;

- the indicators themselves do not affect the pH of the solution;

- the solutions are colourless except for the effect of the indicator.

pH	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Indicator															
methyl red	red							yellow							
methyl yellow	red				yellow										
phenolphthalein	colourless									red					
thymolphthalein	colourless											blue			

Figure 1

Question 40

A solution with a pH of 5 will be coloured

A   red with both methyl red and methyl yellow.
B   yellow with both methyl red and methyl yellow.
C   red with methyl red and yellow with methyl yellow.
D   yellow with methyl red and red with methyl yellow.

Question 41

A solution of unknown pH is yellow with both methyl red and methyl yellow, and colourless with both phenolphthalein and thymolphthalein.

What is the pH of the unknown solution?

A   in the range pH 4−8
B   in the range pH 6−8
C   in the range pH 4−10
D   It cannot be determined.

Question 42

Reyna mixed some of the indicators in Figure 1 to make an indicator mixture.

Reyna's indicator mixture was red in solutions of pH up to 4, orange in solutions of pH 4−6, yellow in solutions of pH 6−10 and green in solutions of pH over 10.

Reyna's indicator mixture consisted of

A   all four indicators.
B   just methyl red and thymolphthalein.
C   just methyl yellow and thymolphthalein.
D   just methyl red, methyl yellow and thymolphthalein.

Question 43

The labels have fallen off the bottles of five solutions (V, W, X, Y, Z).

The pH of each of the solutions is shown in this table.

Solution	pH
V	1.5
W	3
X	7
Y	9
Z	11

Using the four indicators in Figure 1, at most how many of the five solutions can be correctly matched to their labels?

A   none
B   one
C   two
D   three

UNIT 14

Questions 44 − 47

It May Be Necessary To Apply A Second Coat

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Lesley Rigg

Question 44

The young man, in the first verse of the poem, is

A a stranger to himself.
B only pretending to rebel.
C trying to distinguish himself from his parents.
D pretending to be someone he is not.

Question 45

In the poem, the main contrast is between the

A   father's attitude in the first verse and the mother's attitude in the first verse.

B   fear of the young man in the first verse and his confidence in the second verse.

C   resistance of the young man in the first verse and his compliance in the second verse.

D   mother's attitude of hope in the first verse and her attitude of doubt in the second verse.

Question 46

The word 'improved' is contained in quotation marks in order to emphasise that the

A   poet questions the nature of the change in the young man.

B   poet endorses the nature of the change in the young man.

C   parents believe the change in the young man is temporary.

D   parents believe that the change in the young man is permanent.

Question 47

The poet uses the lawn-mower (line 19) as a symbol of

A   maturity.

B   conformity.

C   opportunity.

D   individuality.

UNIT 15

Questions 48 – 50

Figure 1 is a side view of three steps between two floor levels. Steps are 18 cm high and 24 cm deep (except for the top step which joins the upper level).
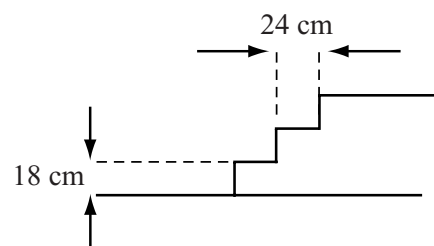
Figure 1

Question 48

How many steps of this design are required between two floor levels which are 360 cm vertically apart?

A   15
B   19
C   20
D   21

30

Questions 49 and 50 refer to the following additional information:

Steps in a staircase can be either rectangular or triangular in shape, as illustrated in Figure 2 (viewed from above). In the figure, one rectangular step and two triangular steps are shown.
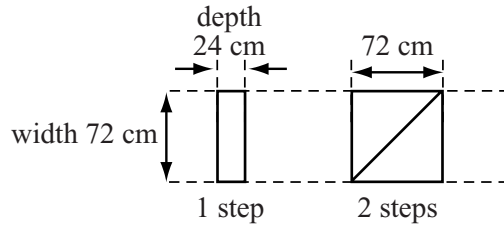
Figure 2

For Questions 49 and 50:

- steps have the dimensions indicated in Figures 1 and 2;
- two triangular steps are used to change direction by 90°;
- staircases are shown as viewed from above;
- only triangular steps are individually outlined and sets of rectangular steps are indicated by a larger rectangle;
- staircases are not drawn to scale.

A staircase is to be built between floor levels which are 252 cm vertically apart. The following designs (not drawn to scale) are being considered.
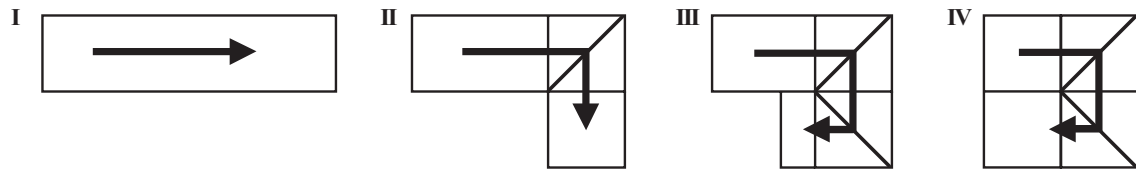
Question 49

Which design requires the fewest number of rectangular steps?

A   Design II and III equally

B   Design III only

C   Design III and IV equally

D   Design IV only

Question 50

How many rectangular steps are needed for Design IV?

A   nine

B   ten

C   eleven

D   twelve

UNIT 16

Questions 51 – 54

The following is a commentary on pacifism.

Pacifism is the opposition to war or violence as a means of settling disputes. Pacifism covers a spectrum of views ranging from the belief that international disputes can and should be peacefully resolved, to absolute opposition to the use of violence, or even force, under any circumstances.

Pacifism may be based on principle or on pragmatism. Principled pacifism is based on beliefs that war, deliberate lethal force, violence and any force or coercion are morally wrong. Pragmatic (or Consequential) pacifism does not hold to such an absolute principle but considers there are better ways of resolving a dispute than war, or considers the benefits of a war are outweighed by the costs.   *5*

In some cases, it is possible that committing an act of violence might actually prevent further acts of violence (and reduce something like a 'net-sum' of violence). For example, invading a country might bring an end to a dictator's violent oppression and save millions of lives, even if many thousands die in the war. However, most pacifists would be against taking such violent action. Some think situations like these provide an argument against pacifism.   *10*

15

Ward Churchill has argued that the social and political advancements cited by pacifists as examples of non-violent action at work have always been made possible by concurrent violent struggles.

Jan Narveson has argued that pacifism is a self-contradictory doctrine. He claims that everyone has rights and corresponding responsibilities not to violate others' rights. Narveson claims that 'the prevention of infractions of that right is precisely what one has a right to when one has a right at all'. Narveson sees rational persuasion as a good but often inadequate method of discouraging an aggressor. He considers that everyone has the right to use any means necessary to prevent deprivation of their civil liberties, and force could be necessary.   *20*

25

Question 51

Principled pacifism (line 5) is best described as

A   relative.
B   realistic.
C   cumulative.
D   unconditional.

Question 52

Pragmatic pacifism (line 7) is best described as

A   circumstantial.
B   absolute.
C   amoral.
D   moral.

Question 53

According to Ward Churchill (lines 16 − 18), pacifism

A   does not work by itself.
B   provokes violence.
C   does not work.
D   is progressive.

Question 54

According to Jan Narveson (lines 19 − 25)

A   pacifism is a duty but not a right.
B   pacifism is a duty rather than a right.
C   one has a right to protect one's rights.
D   one has a duty to protect one's rights.

UNIT 17

Questions 55 – 58

Figure 1 (a) graphs the fuel consumption against speed of a family car in three situations:

I   air conditioner off, windows closed;
II   air conditioner off, windows open;
III air conditioner on, windows closed.

Figure 1 (b) gives the same information for an SUV (four-wheel-drive vehicle).
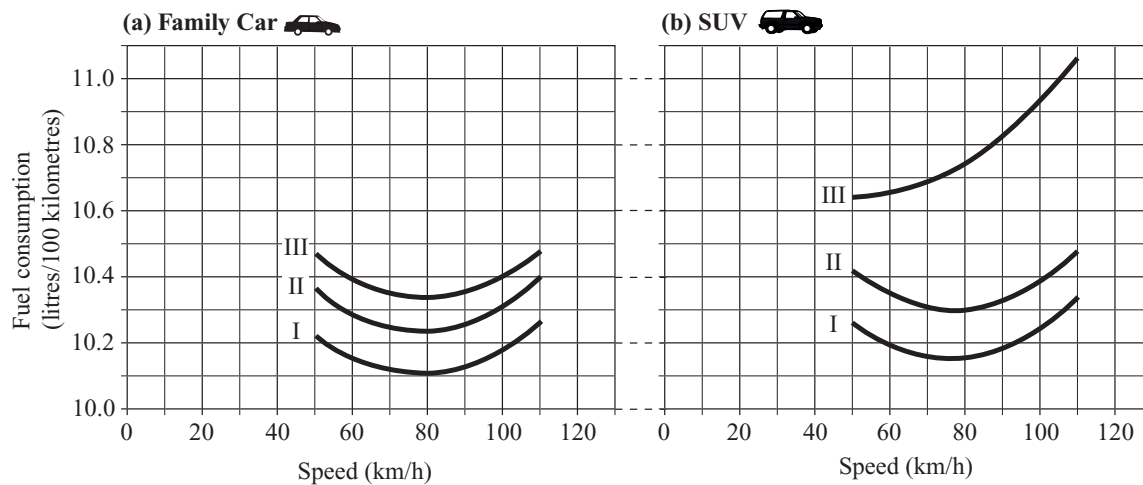
Figure 1 (a)   **Figure 1 (b)**

Note:

- litres/100 kilometres is L/100 km;
- the more litres/100 kilometres, the higher the fuel consumption;
- answer just according to the information in Figures 1 (a) and 1 (b).

Question 55

Of the following, which is the best advice with respect to reducing fuel consumption (within speed limits)?

A   travel as fast as possible
B   travel as slowly as possible
C   travel at 50 km/h, air conditioner off, windows closed
D   travel at 80 km/h, air conditioner off, windows closed

Question 56

Consider an SUV with windows closed, air conditioning off and travelling at 50 km/h.

Fuel consumption would be lower for this SUV travelling at 80 km/h only if the windows are

A   open and the air conditioner is on.
B   open and the air conditioner is off.
C   closed and the air conditioner is on.
D   closed and the air conditioner is off.

Question 57

With windows closed, what is the effect of turning on the air conditioning of an SUV travelling at 50 km/h?

Fuel consumption increases by closest to

A   0.1 L/100 km.
B   0.2 L/100 km.
C   0.4 L/100 km.
D   0.8 L/100 km.

Question 58

Assume that the effects on fuel consumption of opening windows and turning on air conditioning can be simply added together.

Consider a family car travelling at 50 km/h with its air conditioner off and windows closed.

If the car air conditioner is turned on and the windows are open, the increase in fuel consumption would be closest to

A   0.4 L/100 km.
B   0.6 L/100 km.
C   0.8 L/100 km.
D   1.0 L/100 km.

UNIT 18

Question 59

Tomorrow is the busiest day of the year.

Spanish Proverb

The most accurate interpretation of the proverb is that

A   things that cannot be done today can be done tomorrow.
B   we only become conscious of time when we need it.
C   many things often have to be done at the same time.
D   things are often put off until tomorrow.

UNIT 19

Questions 60 and 61

The combination of a safe has five different digits and it is known that:

* 0 is not one of the digits;

* the third digit is the largest number;

* the second digit is twice the fourth digit;

* the first digit is odd and the fifth digit is even;

* the fifth digit is bigger than the first digit and is $\frac{1}{3}$ of the second digit.

Question 60

Which of the following is true?

With the clues given it is possible to determine

A   the exact combination.
B   two of the five digits only.
C   three of the five digits only.
D   four of the five digits only.

Question 61

What is the smallest possible value of the third digit?

A   5
B   6
C   7
D   8

UNIT 20

Questions 62 − 65

Alexandra wants to grow plants in pots. She has heard it is important to use a potting mix in the pot instead of ordinary garden soil and to add slow-release fertiliser. She decides to run trials with some fast-growing seedlings to test the effectiveness of a slow-release fertiliser and different potting mixes.

   She sets up the following six pots with identical seedlings in each.
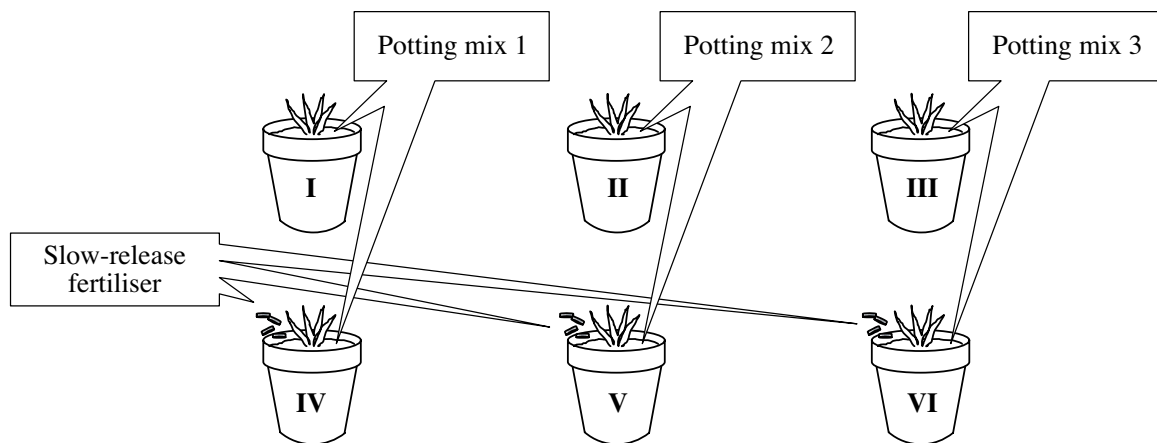
Figure 1

- In the following, growth refers to increase in plant size.

- Assume all plants in an individual pot survive and grow equally.

- The six pots and their growing conditions are as identical as possible.

Question 62

The effectiveness of the fertiliser would be best tested by comparing the growth in pots

A   **I** and **II**.
B   **I** and **IV**.
C   **I** and **V**.
D   **I** and **VI**.

Question 63

If Alexandra used only pots **III** and **VI**, it would be possible for her to determine the effectiveness of

A   two different potting mixes.
B   a potting mix and the fertiliser.
C   neither a potting mix nor the fertiliser.
D   the fertiliser but none of the potting mixes.

Question 64

Suppose growth was related to potting mix type but not fertiliser.

In which of the pots would the plants grow best?

A   **I**, **II** and **III** equally
B   **IV**, **V** and **VI** equally
C   **I** and **IV** equally, or **II** and **V** equally, or **III** and **VI** equally
D   one of **I**, **II** or **III** but not any of **IV**, **V** or **VI**

Question 65

If Alexandra used only pots **II** and **VI**, she could test properly the effectiveness of

A   the fertiliser but not the potting mix.
B   the potting mix but not the fertiliser.
C   both the potting mix and the fertiliser.
D   neither the potting mix nor the fertiliser.

UNIT 21

Question 66

"Very good, Gary: 'A hero is a celebrity who did something real.'"

This cartoon is a joke about

A celebrities.
B students.
C teachers.
D heroes.

UNIT 22

Question 67

Fred is making a cordial drink. The recipe recommends adding one part of the cordial concentrate to four parts of water to make the mixture.

How much concentrate should Fred add to the water to make 6 litres of mixture with the recommended concentration?

A 1.0 litre
B 1.2 litres
C 1.4 litres
D 1.6 litres

UNIT 23

Questions 68 − 70

Born on 25th October 1881, Pablo Picasso was a Spanish painter and sculptor. He has become one of the most recognised figures in 20th century art and is known as the co-founder of an abstract style of art known as cubism. Below are two anecdotes about Picasso and his painting of Lee Miller.

(i) | It is said that a man once criticised Picasso for creating unrealistic art. Picasso asked him: 'Can you show me some realistic art?' The man showed him a photograph of his wife. Picasso observed: 'So your wife is two inches tall, two-dimensional, with no arms and no legs, and no colour but only shades of grey?'

(ii) | Pablo Picasso, *Lee Miller,* 1937, Gallery of Scotland

(iii) | The image above is of Lee Miller, an American photographer famous for her beauty and charm. Picasso made five paintings of Miller, all of which were done from memory and sketches. It is said that when this image was shown to Miller's two year old son for the first time, his instant cry of delight was 'Mummy, Mummy'.

Question 68

The conversation in (i) suggests Picasso believed that

A   photography is as unrealistic as painting.
B   photography is a poor form of art.
C   the man's wife is small, plain and colourless.
D   the photograph is a realistic likeness of the wife.

Question 69

In *Lee Miller* (ii), Picasso appeared most interested in

A   capturing the beauty of the sitter.
B   creating an accurate and recognisable portrait.
C   capturing the character of the sitter.
D   creating an unrecognisable and challenging image of the sitter.

Question 70

The child's response (iii) to the painting demonstrates that

A   portraits depend upon realism.
B   realism is not essential to portraits.
C   realistic art is easy to understand and appreciate.
D   unrealistic art is difficult to understand and appreciate.

END OF QUESTION BOOK