



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
General Certificate of Education Advanced Subsidiary and Advanced Level

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THINKING SKILLS

9694/03

Paper 3: Problem Solving and Critical Thinking (Advanced)

May/June 2008

1 hour and 30 minutes

Additional Materials: Answer Booklet/Paper

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READ THESE INSTRUCTIONS FIRST

Write your Centre number, candidate number and name on the Answer Booklet/Paper in the space provided unless this has been done for you.

Write in dark blue or black pen.

Do not use staples, paper clips, highlighters, glue or correction fluid.

DO NOT WRITE ON ANY BARCODES.

Electronic Calculators should be used.

There are **25** questions on this paper. Answer **all** questions. Each question has two parts.

For each part of the question there are five possible answers **A, B, C, D** and **E**. Select the **one** answer you think is correct for that part.

Record your choices in the separate Answer Booklet/Paper.

Start each question on a new line.

INFORMATION FOR CANDIDATES

Each question is worth 2 marks. Marks will not be deducted for wrong answers.

This document consists of **27** printed pages and **1** blank pages.



- 1 (i) Which **one** of the following is an argument?
- (ii) Which **one** of the following is an explanation?
- A** A member of the British Royal Family has complained that photographers took pictures of him and his girlfriend outside a London nightclub.
- B** If the Prince gave up his right to succeed to the throne in due course, got a job and became a private citizen, he would have the same right to privacy as any other citizen.
- C** The costs of a celebrity lifestyle cannot be separated from its privileges. If the Prince and his girlfriend don't want their photographs taken, he should give up his status and become a private citizen.
- D** The Prince is particularly sensitive about photographers, because he blames them for the death of his mother.
- E** The Prince is wrong to think that being photographed when you don't want to be amounts to some kind of a violation.

2 As the world develops economically and more and more people become wealthy, and more people travel, there will be an even greater problem than that already existing as regards the impact of tourism on ancient sites. The pressure of visitor numbers is already having a severe impact on attractions such as the Great Wall of China where damage is being done to the structure by the many feet tramping over it. If we do nothing about this then there is a threat that such sites will become victims of their own success and be destroyed by it. Drastic action could be taken and visitors banned from these sites in order to preserve them. However, arguably much of the point of preserving these sites would be lost if nobody could actually see them. The best course of action will be to severely limit numbers, for instance by allowing people only one visit to a site in their lifetime. It might take many years before people can visit their chosen attraction and some may be unlucky and never get to see it. However at least those who get there would be able to see the original in a preserved and undamaged state.

(i) Which **one** of the following expresses an intermediate conclusion in the above argument?

(ii) Which **one** of the following expresses the main conclusion in the above argument?

- A Ancient sites will increasingly suffer from the impact of tourism.
- B Failure to limit visitor numbers threatens to destroy ancient sites.
- C Much of the point in preserving ancient sites is lost if people cannot visit them.
- D We should severely limit the numbers of people visiting ancient sites.
- E With development, more and more people are able to travel to ancient sites.

3 Almost all of us have fantasised about rising above congestion on a jetpack and floating in the empty skies to our destination. There are, however, too many problems in real life. The first jetpack belt used at the opening of the 1984 Olympics had a maximum flight time of 25 seconds with full tanks. A man nearly died in an accident during testing of his own rocket pack. Furthermore, a large section of a major road was closed when a truck delivering hydrogen peroxide for rocket packs burst into flames. This combination of danger and limited flight time means that jetpacks are only ever going to be the plaything of the few.

(i) Which **one** of the following best expresses the main conclusion of the above argument?

- A Jetpacks are just big boys' toys.
- B Jetpacks are simply too unsafe and impractical.
- C Jetpacks will only be used by a small number of people.
- D Jetpacks will never allow us to escape congestion.
- E Jetpacks will remain purely in the realm of fantasy.

(ii) After hearing the above argument, one listener made the following comment:

'In the 1950s some people thought that only a few people would ever own a personal computer.'

If true, which **one** of the following does the comment do?

- A Give only a little support to the conclusion of the argument.
- B Have no relevance to the argument.
- C Point out a problem with the argument.
- D Seriously undermine the argument.
- E Strongly support the conclusion of the argument.

4 It has been proposed that, instead of mentioning a 'small chance of rain', weather forecasters should say that 'it will be mostly dry'. 'Chilly in places' would be replaced by 'warm for most'. If isolated thunderstorms are on the way, we might simply be told that it will be 'hot and sunny most'. This is idiotic. We need bad weather warnings in order to prepare vegetable plots for an unseasonable frost, or to protect plants before a storm. Trying to present the weather in a positive light will be as sensible as saying that your attempt at building a shed was mostly successful because you still have seven fingers left.

(i) Which **one** of the following best expresses the main conclusion of the above argument?

- A Selective weather forecasting is equivalent to telling lies.
- B The plan to present the weather forecast in a positive way is misguided.
- C Warnings of bad weather allow people to prepare for it.
- D Weather presenters are to concentrate on reporting good weather.
- E We need to be given an accurate forecast of the weather.

(ii) What **one** function does the final sentence of the passage have in the structure of the argument?

- A Analogy.
- B Counter example.
- C Explanation.
- D General principle.
- E Intermediate conclusion.

- 5 Too much of the wrong kind of tea can add significantly to the amount of fluoride you get with the tea in just four cups supplying up to one-third of the maximum safe daily amount. 200 million people worldwide actually take in too much fluoride. They are mainly in hot countries where water consumption is high and deep wells have to be bored into fluoride-rich rocks in order to access the water. The result is that they have fluorosis, which makes their teeth brittle and discoloured. Tea plants accumulate fluoride from the soil, and a team of researchers in Sri Lanka has now found that every grade of local tea yielded a drink with more fluoride than the water it was made with. Just four cups of tea a day would contain 1.36 milligrams of fluoride. The World Health Organization's recommended maximum is 4 milligrams.

(i) Which **one** of the following does the first sentence of this report do?

- A Contradict the findings of the report.
- B Draw on additional information not contained in the report.
- C Express the conclusion fairly and accurately.
- D Over-estimate the findings of the report.
- E Under-estimate the findings of the report.

(ii) The report also included the following sentence:

'In places where people ingest too little fluoride, it is added to water supplies to strengthen tooth enamel and prevent cavities.'

Which **one** of the following does the additional information do?

- A Accurately summarise the findings of the report.
- B Contradict the findings of the report.
- C Neither strengthen nor weaken the findings of the report.
- D Strengthen the findings of the report.
- E Weaken the findings of the report.

- 6 The table below shows a study of physical activity levels in men in England.

Maximum intensity level attained in physical activity by men by age in the four weeks before the interview.

Percentages

	Inactive ¹	Light ²	Moderate ³	Vigorous ⁴	All
16-24	2	5	26	67	100
25-34	2	5	41	52	100
35-44	2	9	51	37	100
45-54	5	13	58	25	100
55-64	10	19	59	13	100
65-74	13	17	64	6	100
75 and over	25	27	46	2	100
All men aged 16 or over	7	12	49	32	100

¹ Activities with an energy cost of less than 2 kcal/min.
² Activities with an energy cost of at least 2 kcal/min but less than 5 kcal/min.
³ Activities with an energy cost of at least 5 kcal/min but less than 7.5 kcal/min.
⁴ Activities with an energy cost of at least 7.5 kcal/min.

- (i) What percentage of men aged 45-54 take 'moderate' or 'vigorous' exercise? Select **one** answer.
- A** 33%
B 41%
C 58%
D 81%
E 83%
- (ii) Which **one** of the following conclusions may justifiably be drawn from the data above?
- A** 21% of men who take 'vigorous' exercise are over 55.
B Older men take less 'moderate' or 'vigorous' exercise.
C Few men over 75 are capable of 'vigorous' exercise.
D A quarter of men who are 'inactive' are aged over 75.
E The proportion of men taking 'light' or 'moderate' exercise increases with age.

- 7 Acacia Avenue has identical houses on either side, exactly facing each other. The street name (for postal deliveries and visitors) is that the carpenters had a brainstorm when they put the numbers on the doors. One side is numbered with consecutive odd numbers: 1, 3, 5, 7 etc. The other side is numbered with consecutive even numbers: 2, 4, 6, 8 etc. but starting from the opposite end.

I am visiting my friend Rowan who lives at number 23. Directly opposite his house is number 76.

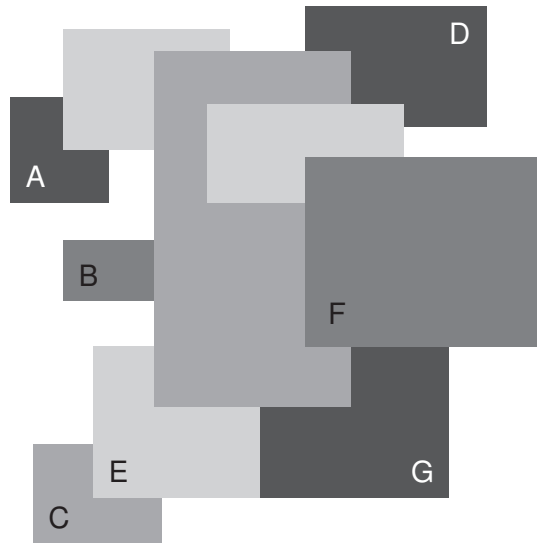
(i) What number is opposite 35? Select **one** answer.

- A 36
- B 50
- C 52
- D 64
- E 88

(ii) How many houses are there in Acacia Avenue? Select **one** answer.

- A 88
- B 98
- C 99
- D 120
- E 129

- 8 A child makes a collage by sticking various coloured **rectangles** onto a sheet of paper.



- (i) Nothing can be determined about the order of placement of one of the labelled rectangles. Which **one** is it?

A
B
C
D
E

- (ii) Which **one** of the labelled rectangles can be determined to have been placed between two of the other labelled rectangles?

A
B
C
D
E

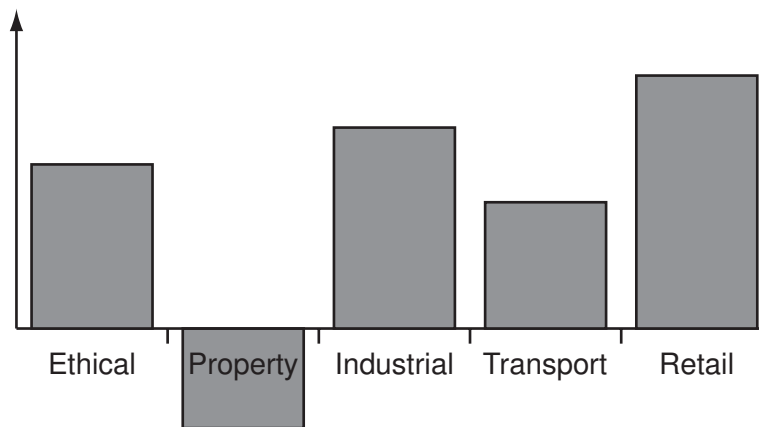
- 9 Morgen set up a shares (stocks) portfolio in September 2005. The total value of each share (in \$) at yearly intervals is shown in the table below.

Investment type	Sep-05	Sep-06	Sep-07
Ethical	5500	5000	5800
Property	7700	7000	6300
Industrial	10000	12000	14400
Transport	4800	4000	4500
Retail	6000	8000	10000
Sum	34000	36000	41000

- (i) Which **one** of the following is the percentage contribution to his total profit from September 2005 to September 2007 of Retail shares?

- A 16%
- B 25%
- C 40%
- D 57%
- E 67%

- (ii) A graph showing the progress of his investments is shown below, but he forgot to give it a title or label the vertical axis.



Which **one** of the following does the graph show?

- A The percentage change in each type of share from September 2005 to September 2006.
- B The percentage change in each type of share from September 2005 to September 2007.
- C The percentage contribution to the total profit of each type of share from September 2005 to September 2007.
- D The percentage change in each type of share from September 2006 to September 2007.
- E The percentage contribution to the total profit of each type of share from September 2006 to September 2007.

- 10 I took a group of children to the cinema for my daughter's birthday and bought each of them a bar of chocolate. They could have any combination they wanted. There were four types available and each type had a different price. The different totals came to:

68c 70c 75c 76c 80c 81c 82c and 87c.

- (i) Which **one** of the following was **not** the price of one of the bars?
- A 34c
 - B 35c
 - C 40c
 - D 41c
 - E 46c
- (ii) If they could have bought three bars each, which **one** of the following **could** have been a total?
- A 113c
 - B 118c
 - C 119c
 - D 128c
 - E 129c

11 A five-year study by the Tyndall Centre for Climate Change Research at the University of East Anglia has found that air travel is the biggest obstacle to cutting CO₂ emissions in line with the Government's own target of a 60% reduction by the middle of the century. Passenger numbers for air travel are predicted to double over the next 20 years. If that growth is allowed to proceed unchecked, the target could be met only if CO₂ emissions from all other sources were cut to zero. It is entirely clear, for example from the go-ahead for a new runway at Stansted Airport, that the Government has no intention of restricting air travel in the foreseeable future. And realistically the emissions from cars, homes and businesses can at best be reduced, not eradicated. But then, of course, the Government will not be around in 2050 to answer for the consequences.

(i) Which **one** of the following is a conclusion that can be drawn from the above passage?

- A The Government's target of a 60% cut in CO₂ emissions by 2050 is too low.
- B Climate change will continue despite the dangers it may bring.
- C It does not really matter to the present Government whether the targets are met or not.
- D The only way the Government could meet its target would be to restrict the growth of air travel.
- E Emissions of CO₂ from air travel are higher than from any other source.

(ii) Consider the following statement:

'If air travel could be substantially reduced, along with a reduction in CO₂ emissions from cars, homes and businesses, the worst fears about climate change could be prevented from becoming a reality.'

On the basis of the claims made in the passage, which **one** of the following is the best assessment of this statement?

- A A safe inference.
- B A strong probability.
- C An unsupported conclusion.
- D A plausible prediction.
- E A false claim.

12 As recent research reveals, biological differences, such as the way people's eyes move, can explain some cultural differences. Chinese and American people literally see the world differently. Researchers found that American students spend longer looking at the central object in a photograph, while Chinese students' eyes tend to dart around, taking in the background. A similar difference is also noticeable in language acquisition. East Asian children tend to learn verbs first, linking objects, whereas Western children learn nouns first, taking objects in isolation. It seems that Western cultures are more materialistic than Eastern cultures because characteristic Western eye movements lead children to focus on objects.

(i) Which **one** of the following best expresses the main conclusion of the above argument?

- A Concentrating on objects rather than background is what makes Western cultures more materialistic.
- B East Asian and Western people have different visual impressions of the world.
- C East Asians are more observant than Western people.
- D Some cultural differences have a basis in biology.
- E There are differences in the way American and East Asian children learn language.

(ii) Which **one** of the following is an assumption underlying the above argument?

- A Differences in visual and linguistic perception of the world are the result of cultural difference rather than the cause of different cultures.
- B Differences in visual and linguistic perception of the world result from cultural experiences rather than fundamental biological differences.
- C Visual and linguistic differences are not the result of culture and upbringing, such as the way parents interact with children.
- D Western cultures are not concerned with spiritual matters, unlike Eastern cultures.
- E Western students have greater powers of concentration than East Asian students.

13

Sir,

Cyclists complain about busy roads and 'thoughtless' drivers who do not see them. Yet they ride on the footpaths regardless of whether the road is busy and ignore or abuse anyone who objects. And how can the busy-ness of the road excuse cyclists riding on the wrong side of the road, racing through red traffic lights or cycling after dark with no lights? Not to mention the drunken cyclists... Cyclists should stop complaining about other road users until they themselves stop behaving irresponsibly and illegally.

Thomas Alcock

Five cyclists responded on the newspaper's blog to the above argument.

(i) Which **one** of the following responses best expresses a weakness in the original reasoning?

(ii) Which **one** of the following responses is itself flawed?

- A** 'It's not dangerous if cyclists use the pavement or the wrong side of the road. It can be dangerous to get in the way of a speeding motorist.'
- B** 'Lazy, gas-guzzling drivers have no right to tell us how to behave. At least we're looking after our health and the planet.'
- C** 'Motorists also drive dangerously, at high speed and sometimes whilst using a mobile phone. They are more likely to kill us.'
- D** 'Not all cyclists break the law. Most of us do stop at lights, use the right part of the road and use lights. We want to be seen at night, not knocked off our bikes.'
- E** 'Sadly, some cyclists do ride irresponsibly and illegally. All the same, this doesn't mean that none of us has a reason to complain about drivers, who can threaten our lives.'

14 Many people believe that it is possible to see into the future, and they cite prophecies, such as those by Nostradamus, which seem to have come true. However, we do not take prophecies seriously. Humans are extremely good at detecting patterns. This ability is really sensitive so we often detect meaningful patterns where there aren't any, like recognising shapes in the clouds. The problem is that people want to believe that the correlation between their lives and a horoscope (or other prophecy) have a supernatural meaning. This is nonsense. If a prophecy is general enough, a future event will fit it. I might predict war or natural disaster. At some point during the next fifty years, my prophecy will probably come true. I might predict that two players in a football match share a birthday – and probability theory indicates that half the time I would be right. So I wouldn't need to see the future to make that prophecy.

(i) Which **one** of the following best expresses the main conclusion of the argument?

- A It is ridiculous to believe that coincidence has a meaning.
- B Most prophecy is nonsense.
- C People want to believe that coincidences are meaningful.
- D We can predict some future events on the basis of what is probable.
- E We should be sceptical about prophecy.

(ii) 'Some people accept the possibility of things that cannot be perceived by their senses.'

What **one** of the following does this comment do?

- A Give only a little support to the conclusion of the argument.
- B Neither strengthen nor weaken the argument.
- C Seriously undermine the argument.
- D Slightly weaken the support for the conclusion of the argument.
- E Strongly support the conclusion of the argument.

15 Natural disasters are often referred to as 'acts of God', especially by insurance companies, who have built exclusion clauses against such happenings into their policies. They class an act of God as 'a sudden and destructive natural event that could not have been foreseen or prevented'. What makes it destructive exactly? It is not the act or event itself. The scale of a disaster is determined in large part by the way in which humans have developed an area: the density of the population, the positioning of buildings, the suitability of construction, and so on. If the right precautions have not been taken, the consequences can be catastrophic. Conversely, even a massive earthquake or eruption or flood in an unpopulated area, with no casualties or economic or environmental losses, is not a disaster at all. It may rearrange the landscape, but that is as much as can be said. The impact of an act of God is really down to us.

(i) The argument depends most heavily on our understanding of which **one** of the following words?

- A natural
- B destructive
- C act
- D event
- E foreseen

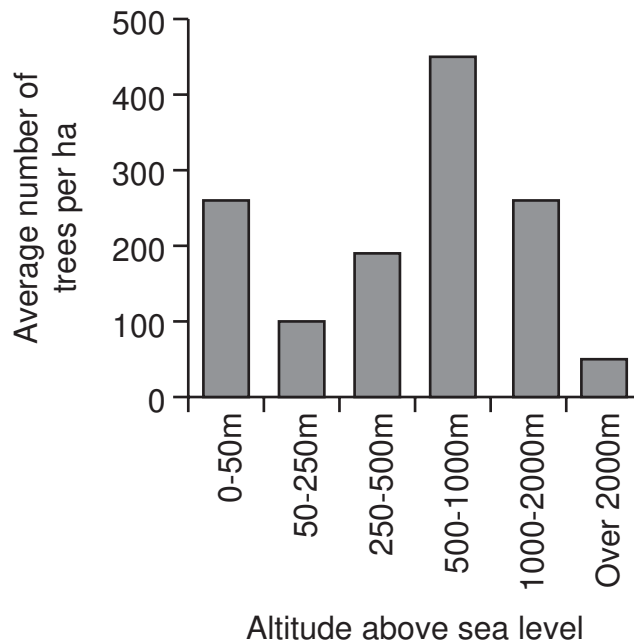
(ii) Which **one** of the following, if true, would most weaken the above argument?

- A A major rearrangement of the landscape is by definition an environmental disaster.
- B If natural disasters were foreseeable they would be much more avoidable.
- C Sometimes a natural disaster has no serious consequences other than a change of scenery.
- D With the right forward planning many natural catastrophes could be prevented.
- E The worst disasters inevitably occur in the most densely populated places.

16 Pierre is flying from Arcadia to Clementis, with a change of planes at Boland City.

- (i) It is possible to determine his time in the air from four of following pieces of information. Which **one** of the following pieces of information does he **not** need to determine his time in the air?
- A His departure time (local) from Arcadia.
 - B His arrival time (local) at Boland City
 - C His time on the ground at Boland City.
 - D His arrival time (local) at Clementis.
 - E The time zone difference between Arcadia and Clementis.
- (ii) Which **one** additional piece of information would be sufficient to determine his departure time from Boland City expressed in Arcadia local time?
- A His departure time from Arcadia expressed in Clementis local time.
 - B His total journey time.
 - C The time he arrives in Clementis expressed in Arcadia local time.
 - D His flight time from Arcadia to Boland City.
 - E His total time in the air.

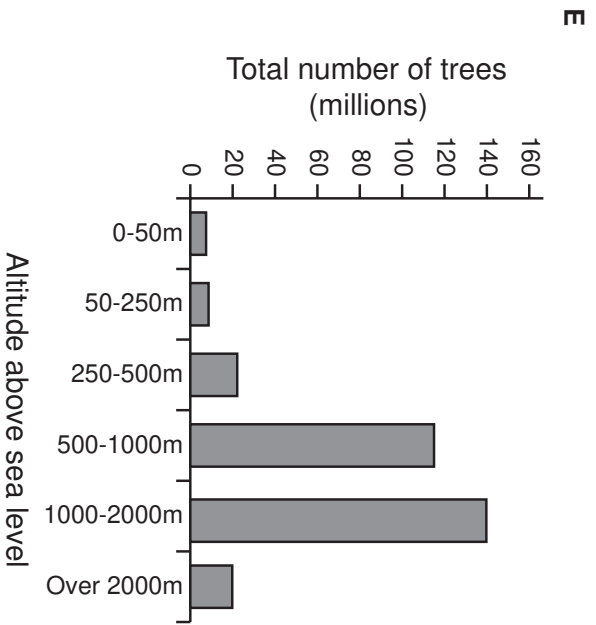
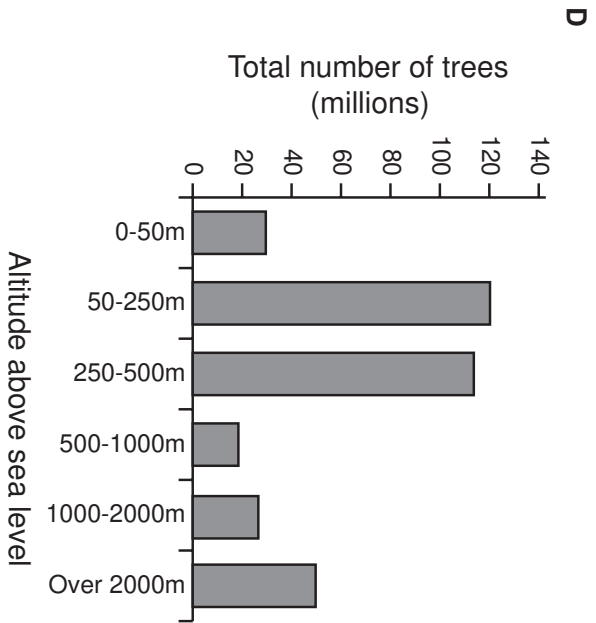
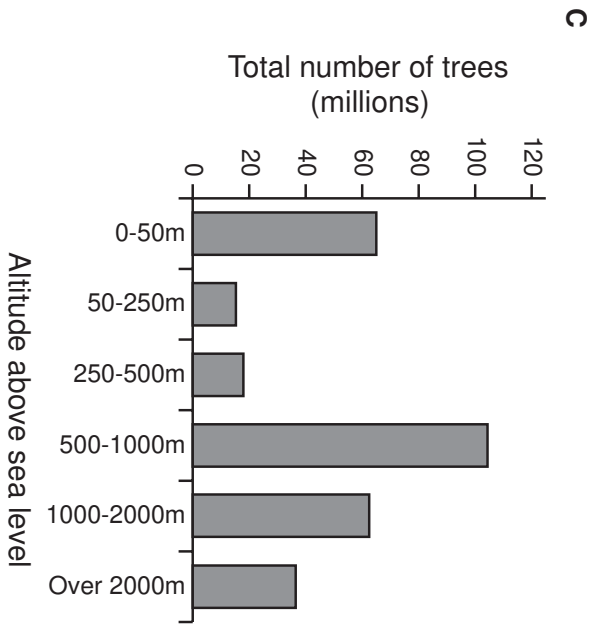
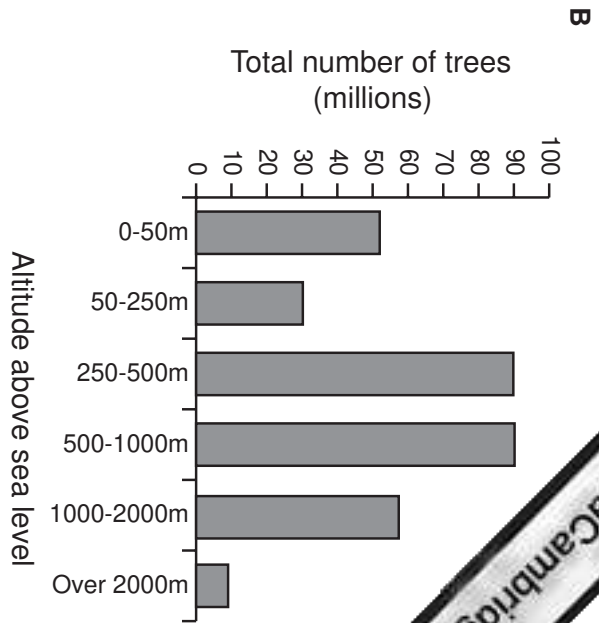
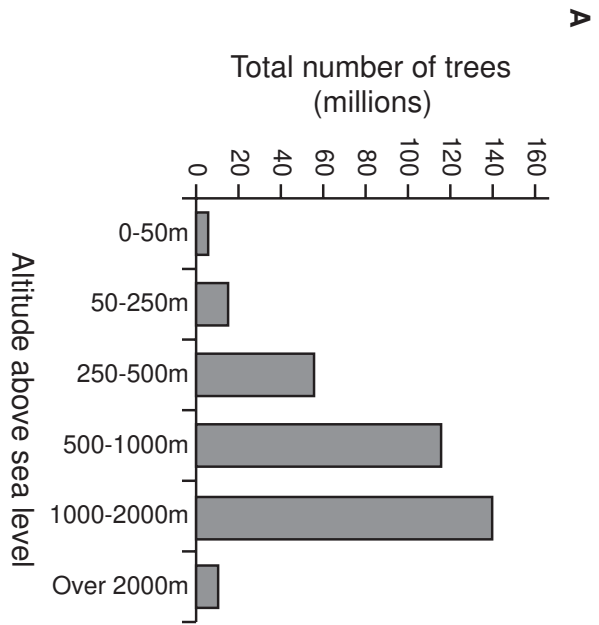
- 17 The graph below shows the average number of trees per hectare (ha) in various altitude ranges on the island of Arboria. The island is quite densely populated and as much of the land as possible is used for arable crops or livestock which feed on grass.



- (i) Which **one** of the following would **not** contribute to the shape of this graph?
- A** Low land on Arboria is subject to flooding when the tides are high.
- B** The island has a steep escarpment above which is a plateau. Grass does not grow well on the escarpment.
- C** Trees grow more slowly at higher altitudes.
- D** Crops grow best below 250m.
- E** Trees do not grow above a certain altitude.
- (ii) The following table shows the amount of land in each altitude range.

Altitude range	0-50m	50-250m	250-500m	500-1000m	1000-2000m	Over 2000m
ha land	200,000	300,000	500,000	200,000	200,000	100,000

Which **one** of the graphs opposite shows the total number of trees in each altitude range?



- 18 10% of the residents of Patagonia have Ankylosing Spondylitis. Of those with the disease, 90% have a blood group HBLA27. In the whole Patagonian population this blood group is found in 19%.
- (i) Someone chosen at random is tested and found to be in the HBLA27 blood group. What is the chance that they have Ankylosing Spondylitis? Select **one** answer.
- A 1/10
 - B 19/100
 - C 19/90
 - D 9/19
 - E 9/10
- (ii) Someone else finds that they do not have Ankylosing Spondylitis. What is the chance that they do **not** have HBLA27? Select **one** answer.
- A 1/10
 - B 10/81
 - C 81/100
 - D 80/90
 - E 80/81

- 20 Where the same currency is used in more than one country, the coins from one country are often found in change given in another country. One might expect over time that the distribution of coins would even out so that the same proportion from each country would be found everywhere, despite the fact that countries issue different amounts. This does not happen because some proportion of coins in circulation in a country are melted down and recycled, but each country only issues its own coins, so local coins will always have a greater proportion than they would in a uniform distribution, even if they don't form the majority of coins used locally.

Three of us have each accumulated a large number of coins from a recent trip to the same country.

Country:	Yksistan	Kaksistan	Kolmestan	Neljastan	Viisistan	Other
Tom's coins	14	17	6	14	10	9
Dick's coins	17	16	20	6	3	3
Harry's coins	9	19	4	10	7	11
Proportion of total coins issued	26%	25%	15%	12%	10%	12%

- (i) What country does this suggest we went to? Select **one** answer.
- (ii) In the country we went to, the largest proportion of coins melted down are most likely to come from which country? Select **one** answer.
- A** Yksistan
- B** Kaksistan
- C** Kolmestan
- D** Neljastan
- E** Viisistan

21 For about 300 years the material of choice for people who wanted to wear something was cotton. However people who participate in physical activities such as skiing and hiking, are likely to make them sweat, now prefer garments made of man-made fibres such as polypropylene. This is because these materials have a so-called high 'wicking' ability meaning they draw moisture from the skin and dry quickly. Garments made from these materials are more expensive than those made of cotton. However the serious skier or hiker would be well advised to invest in clothing made of these materials. They will feel more comfortable when pursuing their chosen activity if they do.

(i) Which **one** of the following is a statement of the intermediate conclusion in the above argument?

(ii) Which **one** of the following is a further conclusion that can be drawn from the above argument?

- A Man-made fibres draw moisture from the skin more effectively than cotton.
- B It is advisable for serious skiers and hikers to buy garments made of man-made fibres.
- C Occasional skiers or hikers might think it extravagant to buy man-made fibre garments.
- D Only the serious skier or hiker should consider buying man-made fibre garments.
- E Skiers and hikers will feel more comfortable if they wear man-made fibre garments.

22 Audiences for concerts of classical music are decreasing in numbers and increasing in age. The cause of this worrying trend is that programmes consist almost entirely of music by dead composers. No other art form lives in the past like this. Go into a bookshop and almost every book on display is by a living author. With theatre it is similar and most films on release are new. Art galleries, too, focus on new work. The reason why orchestras are so reluctant to perform new works is that they receive so many complaints when they do. They must not lose their nerve. Audiences will never learn to appreciate contemporary music unless they are repeatedly exposed to it. Orchestras which want to survive in the current harsh economic context must face this challenge.

Two students commented on this argument.

- (i) Germaine said, 'If audiences do not like contemporary music, programming more of it will not solve the problem of falling attendances.'
- (ii) Mandy said, 'The selection of music for concerts should not be influenced by what audiences say they want.'

Select **one** answer for each part. State whether each of these comments:

- A** Is irrelevant to the argument.
- B** Offers an alternative solution to the problem.
- C** Provides further support for the argument.
- D** Re-expresses a key point from the argument.
- E** Reveals the main flaw in the argument.

23 Should we use higher primates – chimpanzees, orang-utans and gorillas – to help develop medicines for our benefit? There are good reasons for opposing testing on higher primates. An adult gorilla has the same ability to use language, the same complex emotions, and the same capacity to feel pain as a three year old human child. So we should only use that gorilla in an experiment if we would also use a three year old child. But there is indeed an incredible amount of medical progress we could reap from higher primates if we experimented on them. We cannot make this progress if we abandon experiments on them. It's a terrible choice.

(i) Which **one** of the following best expresses the main conclusion of the passage?

- A Higher primates should only be tested on in circumstances where we would also be happy to test on a three year old child.
- B It is difficult to have to choose between accepting the suffering of higher primates, or losing the benefits of new medicines.
- C It is important to discuss whether we should test on higher primates for human medicines.
- D It is wrong to test on higher primates for human medicines.
- E We could gain a lot of new medical insight if we tested on higher primates.

(ii) Which **one** of the following is an assumption underlying the argument?

- A Ability to use language, feel emotions and experience pain are more significant than the differences between humans and gorillas.
- B Experiments which inflict pain are more significant in curing diseases than experiments which do not inflict pain.
- C It would be unacceptable to conduct most scientific tests on a three year old human child.
- D Only some of this medical progress could be made by other means such as computer modelling.
- E The progress that can be made for human medicine justifies inflicting some pain on some animals.

24 It has long been common practice for anglers to release small fish and prize the biggest. However, this may need to change as the biggest fish are crucial for saving fish populations. The biggest fish are more fertile, producing 200 times as many eggs as small fish. Furthermore, the offspring of large fish grow faster and to a greater size than the offspring of small fish. Taking the largest individuals also appears to give an evolutionary advantage to smaller individuals.

(i) What **one** function does the following phrase have in the structure of the above argument?

'...the biggest fish are crucial for saving fish populations.'

- A Alternative explanation.
- B Counter argument.
- C Intermediate conclusion.
- D Main conclusion.
- E Pre-supposition.

(ii) Which **one** of the following, if true, most weakens the above argument?

- A Anglers will not want to take the smaller fish.
- B If anglers leave the smaller fish they will grow into big fish.
- C Over-fishing is by far the biggest danger to species at risk.
- D Protected marine areas can help to prevent over-fishing.
- E Some eggs fail to develop into adult fish.

25 The main reason why China has overtaken the United States as the world's leading producer of cement is its insatiable appetite for cement. There appears to be no solution to this problem. Cement is a vital ingredient in concrete, which is required in huge quantities by the vast Chinese infrastructure programme. The process for manufacturing cement involves burning large amounts of cheap coal and breaking down limestone, a process which produces carbon dioxide as a by-product. No one holds out the prospect of developing new methods of manufacture which would avoid this large-scale pollution. Companies in some parts of the world have managed to improve their methods of production so as to reduce the environmental cost to a small extent, but these minor reductions are more than outweighed by the increase in the amount of cement being produced. The European Union has tried to address this problem by limiting the amount of cement that each country will produce, but in view of the amount of pollution which the most developed countries have caused in the past, there is no moral basis for asking China to hold back its economic growth by accepting similar restrictions.

(i) Which **one** of the following expresses the main conclusion of this argument?

- A China cannot be expected to limit its production of cement for the sake of the environment.
- B For the sake of the environment, China must stop producing so much cement.
- C New methods of manufacturing cement must be found.
- D The manufacture of cement is a vital ingredient in China's economic progress.
- E There can be no solution to the problem of increased pollution caused by cement production.

(ii) Which **one** of the following phrases most accurately expresses the meaning of the expression 'moral basis' in the last sentence of this argument?

- A An appeal based on bribery or threats.
- B An appeal based on duty.
- C An appeal based on fairness.
- D Proof that a reduction would produce the greatest good for the greatest number.
- E Proof that China is behaving badly.

