

## MARK SCHEME for the May/June 2008 question paper

### **9694 THINKING SKILLS**

**9694/04**

Paper 4 (Applied Reasoning), maximum raw mark 50

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began.

All Examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

Mark schemes must be read in conjunction with the question papers and the report on the examination.

- CIE will not enter into discussions or correspondence in connection with these mark schemes.

CIE is publishing the mark schemes for the May/June 2008 question papers for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level syllabuses and some Ordinary Level syllabuses.

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1 (a)

Answer: 14000

30 x 500 = 15 000 pop. This would require  $1.5 \times 0.75 = 1.125 \text{ km}^2$  of services  
29 x 500 = 14 500 pop. This would require  $1.45 \times 0.75 = 1.0875 \text{ km}^2$  of services  
28 x 500 = 14 000 pop. This would require  $1.4 \times 0.75 = 1.05 \text{ km}^2$  of services

- Award 3 if the answer 14000 clearly indicated.
- If 3 marks is not awarded, award 2 marks if an answer between 13 500 and 15 500 (inclusive) is given.
- If 2 marks is not awarded, award 1 mark if candidates correctly calculate the area of services required for whatever residential area they consider. [for instance if  $0.275 \text{ km}^2 + 0.55 \text{ km}^2$  or  $0.825 \text{ km}^2$  for 22 km<sup>2</sup> of residential]

(b) (i) [1]

Answer : 5.5% [allow 5.5 or 0.055]

$$\begin{aligned} 0.7 \times 1000 &= 700 \\ 0.35 \times 200 &= 70 \\ 770 \div 14000 &= 5.5\% \end{aligned}$$

(ii) [1]

44.5% of 14 000 = 6230 jobs needed: 6.23 km<sup>2</sup> of industrial space needed.  
Allow for follow through marks from (a):  $(0.445 \times \text{their answer to (a)}) \div 1000$

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(c)

Answer : 23 km<sup>2</sup> of residential sites

23 km<sup>2</sup> of residential sites: 11 500 population

0.5 x 1.15 = 0.575 km<sup>2</sup> of municipal sites required. Provides 575 jobs.

0.25 x 1.15 = 0.2875 km<sup>2</sup> of essential retail sites required. Provides 57.5 jobs.

This provides (575+57.5/11500) = 5.5% of the population with employment.

45.5% needed: 5118 jobs needed. 5.12 km<sup>2</sup> of industrial sites.

Altogether this requires 23 + 0.575 + 0.2875 + 5.12 = 29 km<sup>2</sup> of space.

- Award 4 marks if the answer 23 km<sup>2</sup> is clearly indicated, with some supporting working.

If 4 marks is not awarded:

- Award 2 marks if appropriate industrial space calculations have been performed for any given residential space (other than 5 km<sup>2</sup>); or, if industrial space calculations are in any way deficient, award 1 mark for appropriate service space calculations.
- Award 1 mark if the candidate has performed appropriate calculations for two differently sized residential spaces (for instance, for 10 km<sup>2</sup> and 12 km<sup>2</sup>).
- Award 1 mark for a convincing demonstration that their answer is maximal – by calculating the 24 km<sup>2</sup> example, or appealing to differences between each successive example (1.26 km<sup>2</sup> of land needed for each extra km<sup>2</sup> of residential space).

2 (a) Answer: Hyssop, Marjoram and Oregano – award 2 marks.

Rate D does not apply at all to mail involving these three provinces.

Deduct 1 mark for each missing or extra province (minimum 0 marks): for instance the answer “Hyssop, Marjoram and Angelica” would score no marks, because Oregano was omitted (one error of judgement) and Angelica was included (a second error of judgement)

Skill: Extract relevant data.

(b) (i) Answer: 81 cents – award 1 mark.

Weight between 125 and 250 grams, charged at Rate D.

(ii) Answer: 40c + 36c + 5c  
or 30c + 30c + 21c – award 1 mark  
or 45c + 36c

If the answer to (i) is wrong, award 1 mark in (ii) for stamps (maximum three) that add up to the answer given in (i).

Skill: Analyse Complex data and draw conclusions.

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(c) Answer: 270 cents (accept \$2.70) – award 3 marks.

By posting the Sorrel, Hyssop and Borage invitations in Sorrel, Rosemary can save 15 × 8 × 9c and 2 × 9c respectively.

If 3 marks cannot be awarded:

Award 2 marks if \$26.70 is seen.

If not, award 1 mark for each for

- Appreciation that Sorrel, Hyssop and Borage should be posted in Sorrel. This may be visible in the candidates' workings as the collection of appropriate costs of stamps (40, 40, 52, 52, 52, 61). References to Marjoram can be benevolently ignored OR
- Appreciation that posting invitations to Sorrel, Hyssop and Borage in Sorrel saves 12c, 9c and 9c respectively per invitation OR
- Appreciation that two out of the three towns have been correctly identified and the savings calculated. These will give the following answers :  
 Sorrel & Hyssop: 252c saved  
 Sorrel & Borage: 198c saved  
 Hyssop & Borage: 90c saved

Skill: Analyse complex data and draw conclusions.

(d) Optimum Answer: withdraw four stamp values (leaving 30c, 21c and 5c)

Marks awarded	Solution
3	withdraw four stamp values (leaving 30c, 21c and 5c), supported by convincing evidence such as the table below OR withdraw any three of the seven values, provided there is convincing evidence that the conditions have been satisfied
2	withdraw any two of the seven values, provided there is convincing evidence that the conditions have been satisfied
1	withdraw any one of the seven values, provided there is convincing evidence that the conditions have been satisfied.

$$40c = 30c + 5c + 5c$$

$$70c = 30c + 30c + 5c + 5c$$

$$52c = 21c + 21c + 5c + 5c$$

$$77c = 30c + 21c + 21c + 5c$$

$$56c = 30c + 21c + 5c$$

$$81c = 30c + 30c + 21c$$

$$61c = 30c + 21c + 5c + 5c$$

$$86c = 30c + 30c + 21c + 5c$$

$$65c = 30c + 30c + 5c$$

$$90c = 30c + 30c + 30c$$

Skill: Analyse complex data and draw conclusions.

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3 (a)

**Main Conclusion:** The solution to saving wild tigers is not tiger farming but enforcing existing laws.

**Reasons:**

- 1 China and India may be planning to legalise tiger trade through innovative tiger farming.
- 2 Raising a captive tiger is so expensive that no amount of tiger farming can bring the price down to level that renders poaching unprofitable.
- 3 Tiger farming would re-ignite demand for tiger products amongst increasingly wealthy consumers.
- 4 **IC1:** Tiger farming will increase poaching and illegal trade in tiger-based products.
- 5 **IC2:** 3000–5000 tigers left in the wild would end up fighting for their existence.
- 6 **CA** – some free market advocates argue that tiger farming can save the tiger – but this is only an unrealistic marketing dream since demand is dying out.
- 7 Chinese businessmen want to make their millions from tiger farming.
- 8 If existing laws were being enforced no one would be proposing tiger farming.

Therefore: 1–8

The solution to saving the tiger is not to introduce tiger farming but **to enforce existing laws**.

**Marks**

Showing recognition of general direction of the argument and some of its main features or simply identifying main conclusion –1.

Conclusion + gist or one reason: 2 marks

Conclusion + 2 or more reasons which include one IC or the CA: 3 marks

Conclusion + 2 or more reasons which include both IC's, or one IC and the CA: 4 marks

The IC's need to not be explicitly identified as such, but they must be precisely stated ; **“tiger farming will increase poaching and illegal trade in tiger-based products”** and **“tigers left in the wild would end up fighting for survival”** or equivalent.

(b)

[6]

The argument's main **strength** lies in the claim that tiger farming can reignite market demands for tiger products. Because the gap in overheads would push the price of tiger products up there will be greater incentives for poaching. These are strong reasons and could follow from plausible market predictions.

But the latter half of the argument is weakened by the **inconsistency** or **contradictions** that emerge i.e. an insistence that there is no longer a feasible market for tiger products juxtaposed with an equal insistence that there is a potential market that needs watching. Other contradictions are e.g. para 4 where it is acknowledged that there are an increasing number of wealthy consumers out there still convinced of the medicinal powers of tiger-bone wine contra the assertion in para 5 that Chinese medicine has moved on to more effective alternatives since the product was banned. The implied **causal connection** between the ban and exploring alternatives to tiger-bone medicines is also unsupported.

The argument is also weakened by **ambiguity**. The correlation between the numbers of wild tigers decreasing while tigers are speed-bred in farms are not explained convincingly in

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terms of the significance for conservation. Tiger farming could well prove to be a viable solution for preventing the extinction of the species, if there are only 3000 to 5000 tigers left in the wild.

The explicit assumption that no one would be proposing tiger farming as a tool for conservation if existing laws were enforced rests on the **implicit assumption** that enforcement of law would quench debate or relegate it to taboo. This cuts off possible lines of counter argument. The argument that tiger farming can save the tiger is suppressed by attacking the proponents as market dreamers rather than attacking the argument itself (**ad hominem**). In evaluation the relevance of the market dream to the central argument of conservation of the tiger is rather flawed.

Overall the argument is persuasive in pointing out that tiger farming can lead to an increase in poaching; however it has not argued convincingly that tiger farming cannot be an effective tool for conservation of tigers in the wild.

### Marks

For each sound evaluative comment [1 + 1] marks, up to a maximum of 6. Briefly stated comments should be awarded one mark; well-developed comments two.

A whole-piece evaluative comment may also be awarded one mark.

(c)

[20]

Credit will be given for **the judicious use of the resources in the documents**. They should select material from the stimulus sources that both support and counter their own position. E.g. if they are taking the **for** position they could use Doc 2 and draw on the dilemmas highlighted in Doc 3 arising from alternative methods of conservation, whilst reasoning away the objections raised by CATT in doc 1. If they take the **against** position they may be supportive of CATT, but counter the proposals for tiger farming in doc 2 effectively.

Credit will be given for **the assessment and interpretation of evidence**. Candidates may wish to comment on Doc 4 and 5 and their factual accuracy – e.g. 1 for they may attribute it to biased hearsay and state there may be other genuine medicinal properties not listed there. In fact the strength of centuries-old time tested tradition may well be owed some credibility. E.g. 2 they may question the credibility of data given by an unknown source on an unvetted website.

It could be pointed out that eco-warriors from developed countries sometimes fail to understand that wild animals are seen as threats to livelihood or assets to livelihood in poorer countries – the scruples of eking out a meagre living take priority over saving a wild animal, as illustrated in Doc 2. Seen in this light CATT's argument and proposed solutions in Doc 1 would appear rather arbitrary and unworkable.

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Credit will be given for **the critical analysis and evaluation candidates apply to the sources**. E.g. the dangers of exploitative markets that use conservation as a veneer for a market enterprise may be contrasted with genuine conservationist efforts to preserve the tiger. The concern raised in Doc 5 over the loss of tiger habitat and the problems highlighted in Doc 3 about providing safe and natural habitats for tigers are the pros and cons that advocates of natural conservation have to weigh.

Credit will be given for the **inferences candidates draw from the given stimulus sources and from other examples or observations they bring to support their conclusion**. Good arguments for the conclusion may provide other examples of conservation of near-extinct wild life through similar methods which have brought about positive results. Good arguments against the conclusion may point out **other more effective options** than tiger farming that may be considered to stem illegal tiger trade, such as better education that can dispel the notions in Doc 4, as well as offering better economic initiatives for rural peoples near tiger habitats as incentives to foster cooperation with conservationists.

Whichever positions the candidate takes, tiger farming should be considered in terms of its benefits for or detriment to saving the wild tiger i.e. conservation. Arguments that stray from the central debate may be limited to the lowest credit band. For instance arguments about animal rights should be hinged to this central issue and not wander away.

To obtain higher marks, a candidate should consider not only the viability but the problems of farming a dangerous animal as well as consider likely objections to their position.

**Marks** to be allocated to 3 bands as in specification sample (1–6, 7–13, and 14–20). See table below.

Middle band answers may accrete 1/2 marks for individual reasons which are cherry-picked from the sources; 2/3 marks for individual critical points/further argument.

Band	Overall	Within	Score
Top	A critical stance: ideally an <b>evaluation of sources, and explicit consideration of counter-arguments</b> (or conflicting sources). Reference to at least 3 doc's.	Candidates must introduce their own ideas and arguments. They must explicitly address counterarguments.	20 19 18 17
		Occasional explicit critical comments.	16 15 14
Middle	A reasoned stance: a <b>clear conclusion, supported by reasons clearly expressed/cherry-picked from the sources</b> . Some independent reasoning. Reference to at least 2 doc's.	Implicit consideration of counter-arguments. Clear statement of 2/3 reasons in support.	13 12 11 10
		Cherry-picked reasons. Some irrelevance/deviation from the question. May be multiple conclusions with little support for each one.	09 08 07
Bottom	"pub rhetoric" : <b>unclear conclusion, unclear reasoning (substantial irrelevant material)</b>	Reproduced reasoning from (a) and (b). Disorganised.	06 05 04
		Stream of consciousness.	03 02 01