



ADVANCED GCE
CRITICAL THINKING

Unit 4: Critical Reasoning

F494

Candidates answer on the Answer Booklet

OCR Supplied Materials:

- 8 page Answer Booklet
- Answer Sheet
- Resource Booklet

Other Materials Required:

None

Wednesday 27 January 2010
Afternoon

Duration: 1 hour 45 minutes



INSTRUCTIONS TO CANDIDATES

- Write your name clearly in capital letters, your Centre Number and Candidate Number in the spaces provided on the Answer Booklet.
- Use black ink. Pencil may be used for graphs and diagrams only.
- Read each question carefully and make sure that you know what you have to do before starting your answer.
- Answer **all** the questions.
- Section A contains multiple-choice questions which you should answer on the Answer Sheet provided.
- Do **not** write in the bar codes.

INFORMATION FOR CANDIDATES

- The number of marks is given in brackets [] at the end of each question or part question.
- The total number of marks for this paper is **110**.
- You are advised to spend no more than 40 minutes answering Section A.
- You will be awarded marks for the quality of your written communication in Section B.
- This document consists of **12** pages. Any blank pages are indicated.

Section A: Multiple Choice

Answer **all** questions in this section of the paper using the separate answer sheet provided.

You are advised to spend no more than 40 minutes on this section of the paper then move directly on to Section B.

1 Which of the following is an argument?

- A** Before the second world war there was no concept of national foods. People's main concern was getting enough food. Then British people became interested in Indian, Chinese and Italian food.
- B** Ice cream did not exist in Britain until the late nineteenth century, when Italians imported it. The British transformed delicious Italian *gelatto* into solid blocks of white, lard-like coldness.
- C** Indian food has become part of British culture. In India, 'balti' means bucket not dinner. People feel very strongly that food is related to national identity.
- D** Specific dishes shouldn't be considered to have any particular nationality. Any dish has influences from all over the world. Take the example of fish and chips – frying is a Jewish way of cooking fish, and French *pommes frites* were probably around before British chips. **[1]**

2 Which of the following is a valid argument?

- A** All exercise is unhealthy. Walking is exercise. Therefore walking is unhealthy.
- B** Extreme exercise is unhealthy. Watching TV all day is extreme. Therefore watching TV all day is unhealthy.
- C** Health is important. Work is important. Therefore work is healthy.
- D** Some exercise is healthy. Running is exercise. Therefore running is healthy. **[1]**

Questions 3, 4 and 5 refer to the following passage.

Stray dogs are being airlifted from Iraq to the US to accompany US soldiers who have befriended them whilst on duty in Iraq. In some ways this is an excellent idea, as it seems harsh to abandon a dog after rescuing it from abuse and making friends with it. However, the practice of airlifting stray dogs to the US should not be encouraged. The US has limited resources and these should be used to help people rather than animals. Furthermore, Iraq is a dangerous place, and soldiers' lives are put at risk when they transport an animal to the airport.

- 3** Which of the following is the main conclusion of the argument?
- A** In some ways this is an excellent idea.
 - B** Soldiers' lives are put at risk when they transport an animal to the airport.
 - C** Stray dogs are being airlifted from Iraq to the US.
 - D** The practice of airlifting stray dogs to the US should not be encouraged. **[1]**
- 4** Which of the following, if true, most weakens the support for the conclusion?
- A** Almost 50,000 signatures have been gathered in an online petition to save some of these army pets.
 - B** Pets befriended in a war zone often help soldiers to adjust back to normal life.
 - C** Stray Iraqi dogs need a health check and programme of vaccinations on arrival in the US.
 - D** US soldiers have rescued many abused animals while serving in Iraq. **[1]**
- 5** Which of the following is a principle that would counter the argument?
- A** People should put right the harm that people have done to animals.
 - B** People's lives are more important than animals' lives.
 - C** Soldiers are inevitably going to be at risk while they are in a war zone.
 - D** The consequences of abandoning pet dogs should be weighed against the consequences of airlifting them to the US. **[1]**

Questions 6, 7 and 8 refer to the following passage.

New diseases

Although there is a common perception that new diseases are likely to emerge from undeveloped, swampy or jungly land, most new infections will develop in cities in developed countries. Researchers collected reports of new infectious diseases from 1940–2004 and found that most of them were bacterial, with many of them emerging in rich countries. Their study also showed that 60% involved pathogens* that had jumped from animals to people. Density of human population was the strongest predictor of where new infections would emerge, making disease a hidden cost of human economic development.

(adapted from New Scientist 23 February 2008 p4)

*Pathogens are organisms which cause diseases in humans and animals.

- 6 'There is a common perception that new diseases are likely to emerge from undeveloped, swampy or jungly land.'

What is the function of this element in the structure of the argument?

- A Assumption.
- B Conclusion of counter argument.
- C Counter assertion.
- D Example.

[1]

- 7 '60% (of new infectious diseases) involved pathogens that had jumped from animals to people.'

What is the function of this element in the structure of the argument?

- A Evidence.
- B Example.
- C Intermediate conclusion.
- D Reason.

[1]

- 8** Which of the following explain why the conclusion, that ‘most new infections will develop in cities in developed countries’ is not fully supported by the evidence?
- (i) Just because many new infectious diseases in the past have emerged in rich countries does not imply that most new infectious diseases in the future will emerge in rich countries.
 - (ii) Less developed countries may well have cities in which people live both in high density and closer to their animals and are therefore more likely to catch diseases from their animals.
- A** (i)
- B** (i) and (ii)
- C** (ii) only
- D** Neither (i) nor (ii) **[1]**

- 9** If I buy that magazine, I won’t have enough money to buy my friend’s birthday present. It is important to buy my friend a birthday present. So I shouldn’t buy the magazine.

Which of the following most closely parallels the reasoning used in the argument?

- A** If I do my homework now, I won’t have to do it later. I want to go out later, so I should do my homework now.
- B** If I eat my cake now, I won’t have it for later. I want it later, so I shouldn’t eat it now.
- C** If I go to the cinema, I won’t be in when my Uncle comes round. That’s a shame, but he’ll still be here when I get back, so I’ll go anyway.
- D** If I take the dog for a long walk, I won’t be able to watch my favourite programme on TV. But I really fancy a long walk, so I’ll watch my programme on the iPlayer. **[1]**

Questions 10 and 11 refer to the following passage.

In tough economic times, governments are always tempted to reduce the funding for scientific research. This is because they need to deal with a national shortage of cash, so must make savings somewhere. They believe they are less likely to lose votes by cutting the funding for science than if they cut the funding for health care or education. However, it would be a mistake to make savings in this way as it would endanger the nation's long term economic health. Government support and funding for scientific research over the past half century have had a major influence on the economy and therefore also on our standard of living. For example, government support for satellite technology led to modern mobile phones, GPS and satellite TV. All these areas create jobs and incomes as well as making our lives comfortable.

- 10** 'It would be a mistake to make savings in this way as it would endanger the nation's long term economic health.'

What is the function of this sentence in the structure of the argument?

- A** A reason supporting an intermediate conclusion.
- B** An intermediate conclusion supporting a further intermediate conclusion.
- C** An intermediate conclusion supporting the main conclusion.
- D** Evidence supporting a reason.

[1]

- 11** Which of the following is an assumption underlying the argument?

- A** Future investment in scientific research is likely to have positive effects on the economy.
- B** Science is a fundamental part of our economy.
- C** Science is more important than health care or education.
- D** There is enough money to invest in scientific research even in tough economic times.

[1]

12 Women prefer brains to brawn

A team of researchers filmed 15 male university students performing a series of tasks, such as reading the news and catching a frisbee. 200 female university students watched the films and then rated the men's intelligence, looks and relationship appeal. The men also took an intelligence test. The intelligence scores the women predicted for each man generally matched his test result, showing that the women were good judges of intelligence. Researchers also found a correlation between the men's intelligence and their relationship appeal to the women.

Which of the following is a reason why the headline does not follow from the evidence in the passage?

- A Frisbee catching is not representative of normal male activity.
- B It is possible that men might be both good looking and good partners.
- C Intelligence does not necessarily mean that a man will be a good partner.
- D We have no information about how looks and relationship appeal were correlated. [1]

- 13 The Templeton Foundation asked leading scientists and Christians to answer the question, 'does science make God obsolete?' This question does not make sense. It is like asking, 'do cars make houses obsolete?'

This analogy

- A Highlights the overlap between scientific understanding and religious understanding.
- B Highlights the similarities between scientific understanding and religious understanding.
- C Suggests that neither scientific understanding nor religious understanding is useful to people at all.
- D Suggests that scientific understanding and religious understanding are useful to people in different ways.

[1]

Questions 14, 15 and 16 refer to the following passage.

Academic freedom

Today, new scientific ideas must go through a rigorous process of peer review, in which leading scientists decide whether new ideas are scientifically valid and whether they should receive funding. This process of peer review is killing creative science. A small number of top scientists in the twentieth century – including Einstein, Planck, Fleming, Franklin, Crick and Watson – thrived in the academic freedom of their time. They developed theories which disagreed with the opinions of leading scientists of the time. These theories also did not seem useful. However, they led to lasers, nuclear power, biotechnology, computers and telecoms. If today's rigid peer reviewing and funding policies had been in force these top scientists' key ideas would not have been funded. Peer review works for the mainstream but excludes radical research. We must therefore allow future top scientists to bypass the peer review process in order to ensure that they have the academic freedom to be creative.

14 Which of the following can be inferred from the argument?

- A** If peer review had been in force for scientists like Einstein, we would not now have lasers, nuclear power, biotechnology, computers or telecoms.
- B** It would have been better if peer review had prevented the development of dangerous technologies such as nuclear power and biotechnology.
- C** No leading scientist has the imagination to understand and support creative new ideas which might lead to technologies as important as computers or lasers.
- D** Peer review may be preventing the development of new ideas as important as those which led to lasers, nuclear power, biotechnology, computers and telecoms. **[1]**

15 Which of the following is an assumption underlying the argument?

- (i)** It is possible to know who will be the top scientists of the future.
- (ii)** The peer review process does not support new ideas.
- A** (i) only
- B** (i) and (ii)
- C** (ii) only
- D** Neither (i) nor (ii) **[1]**

16 According to this author, academic freedom is:

- A** Necessary and sufficient for creative scientific advance.
- B** Necessary but not sufficient for creative scientific advance.
- C** Neither necessary nor sufficient for creative scientific advance.
- D** Sufficient but not necessary for creative scientific advance. **[1]**

- 17** If a chimp sees an actor turn on a light switch with his forehead even though his hands are free, the chimp is likely to use its own forehead to turn the switch. Yet if the actor uses his forehead to turn the switch only because his hands are full, the chimp imitates the task by using its hands and not its forehead.

(New Scientist 2 February 2008 p8 extract)

‘This shows that chimps are able to make rational inferences, just like people.’

This is

- A** A claim which can reasonably be drawn as a conclusion from the evidence.
- B** A claim which cannot be drawn as a conclusion from the evidence because it is irrelevant.
- C** A claim which is too strong to be drawn as a conclusion from the evidence.
- D** A claim which is too weak to be drawn as a conclusion from the evidence. **[1]**

- 18** Lemons are fruit. Ripe fruit is yellow. Therefore ripe lemons are yellow.

Which one of the following is the most accurate evaluation of this argument?

- A** The argument is not valid and one of the reasons is false therefore the conclusion is false.
- B** The argument is valid and both reasons are true therefore the conclusion is true.
- C** The argument is valid and one of the reasons is false therefore the conclusion is false.
- D** The argument is valid and one of the reasons is false but the conclusion is true. **[1]**

Questions 19 and 20 refer to the following passage.

Although most people assume that the world is exactly as they perceive it to be, what we actually hear when we listen to music is not reality. First one part of the brain extracts basic features such as pitch and spatial location. Then another part of the brain integrates these basic features into a perceptual whole. However, different sounds can give rise to the same patterns on the eardrum, and parts of the sound may be lost or masked by other noise. So the brain has to fill the gaps with a calculated guess, or inference. We also have to include our expectations about what comes next in the music and our memories of what has gone before. So the music we ‘hear’ is based on a breakdown of sounds we actually hear and our expectations of what we think we should be hearing. Therefore it is a mental representation constructed by the brain.

(Adapted from New Scientist 23 February 2008 p35–36 Daniel Levitin)

19 Which of the following is the main conclusion of the argument?

- A** Most people assume that the world is exactly as they perceive it to be.
- B** The brain has to fill the gaps with a calculated guess, or inference.
- C** The music we ‘hear’ is based on a breakdown of sounds we actually hear and our expectations of what we think we should be hearing.
- D** What we actually hear when we listen to music is not reality. **[1]**

20 Which of the following is an assumption underlying the argument?

- A** Calculated guesses are not normally accurate.
- B** Ideas are the same as mental representations.
- C** Mental representations are not real.
- D** None of us constructs the same mental representations. **[1]**

Section B: Analysing and evaluating argument

Read the article in the Resource Booklet and answer questions 21–24.

Bunting's conclusion is, 'We need scientists to help to identify what they are looking for and why, rather than pouring scorn indiscriminately on the whole field and on the relations between belief, mind and body, of which science still has such a fragmentary understanding.'

Analyse

21 Name the following elements and briefly explain their function in the structure of the argument:

- (a) Even the hand of a stranger reduces anxiety and that of someone with whom one has a close relationship is even more significant. (paragraph 7) [2]
- (b) 'You had to see Sykes's footage of hypnotism helping a woman to have teeth extracted without anaesthetic to believe it.' (paragraph 9) [2]

22 Analyse in detail the structure of the reasoning in paragraph 8 by identifying elements of argument such as reasons, intermediate conclusions etc and showing their relationships to each other. [13]

Evaluate

23 'We need scientists to help to identify what they are looking for and why, rather than pouring scorn indiscriminately on the whole field and on the relations between belief, mind and body, of which science still has such a fragmentary understanding.' (paragraph 10)

Evaluate the support given to this claim, which is the main conclusion of the argument, by the reasoning throughout the whole article. [13]

You should **selectively** refer to key strengths and weaknesses which may include:

- Flaws in the reasoning **and** their impact on the strength of the reasoning.
- Assumptions which must be made **and** their impact on the reasoning.
- The effectiveness of the use of evidence and examples.
- How effectively reasons support intermediate and main conclusions.

Develop your own reasoning

24 'It is dangerous to view science as the only way of understanding the world.'

Write your own argument to support or challenge this claim. [18]

Total marks for Section B [65] marks

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