

HUMAN AND SOCIAL BIOLOGY

Paper 5096/12
Multiple Choice

Question Number	Key	Question Number	Key
1	C	21	D
2	C	22	C
3	D	23	C
4	D	24	B
5	C	25	D
6	A	26	C
7	B	27	C
8	D	28	A
9	D	29	A
10	B	30	C
11	C	31	B
12	A	32	A
13	B	33	A
14	D	34	C
15	B	35	A
16	C	36	D
17	A	37	D
18	A	38	A
19	D	39	B
20	A	40	D

General comments

There was evidence of an improvement in performance. This improvement in standard was shown by **Questions 4, 17, 22 and 40** where candidates performed well. The **Questions 1, 9, 24, 26, 28 and 33** tested straightforward knowledge of syllabus objectives. Candidates performed strongly in **Questions 1, 18, 33, 36 and 38**.

Comments on specific questions

Question 1

This question showed excellent application of the knowledge of the characteristics of organisms to the activities of machines.

Question 4

Most of the candidates obtained the correct answer for this more difficult question, illustrating very high standards in their ability to deduce answers. Application of knowledge of diffusion and osmosis had been applied in an unfamiliar situation, to predict the behaviour of water and glucose molecules.

Question 7

A small number of candidates did not know that carbohydrates are a nutrient that provides roughage (fibre).

Question 17

Candidates needed to know that a person with short height and small body mass would have a smaller vital capacity and would need fewer breaths at rest than a larger person. Many candidates showed excellent skill in interpreting the graphs and using this knowledge to choose the correct answer.

Question 18

The answer to this question repeats all the features of bone as in the syllabus objective. Each distractor gave an unlikely feature of bone, such as it being flexible, containing elastic fibres and being composed of dead tissue. Unexpectedly, both strong and weak candidates performed equally well in this question.

Question 19

The meaning of the terms origin and insertion was not understood by some candidates. Emphasis is needed on these terms, when teaching muscle contraction for movement of the arm.

Question 25

Candidates had to interpret a graph to note the temperature changes in a woman and ascribe that to ovulation. Most candidates correctly interpreted the graph.

Question 27

Some candidates did not deduce that the normal diploid number of chromosomes would not be present in a red blood cell because it lacks a nucleus. Similarly in the sperm, only half the number of chromosomes are present.

Question 31

Some candidates need to be reminded that ringworm is a fungus and thus would be killed by fungi killing ointments.

Question 33

In this question, candidates were required to consider an answer for both cholera and influenza. Incorrect responses such as, destroying houseflies and X-ray diagnosis would reduce influenza infections, or that properly ventilated rooms would reduce cholera infections, were given by some candidates.

Question 36

Candidates needed to know that some microorganisms other than fungi are used to produce antibiotics and that they may only stop the growth of some pathogens, rather than kill them all. With this knowledge, they can make the value judgement needed to select the 'best' definition to answer this question.

Question 38

A number of candidates did not realise the important part played by bacteria digesting the waste in a pit latrine and that this feature allows it to function over a long period of time. Many incorrectly thought that the contents of the latrine drying out and turning solid was a more likely reason.

HUMAN AND SOCIAL BIOLOGY

Paper 5096/13
Multiple Choice

Question Number	Key	Question Number	Key
1	C	21	D
2	D	22	B
3	C	23	C
4	A	24	C
5	C	25	C
6	D	26	D
7	D	27	C
8	B	28	A
9	D	29	B
10	C	30	C
11	B	31	A
12	A	32	A
13	B	33	C
14	A	34	A
15	C	35	D
16	B	36	A
17	D	37	D
18	A	38	B
19	D	39	D
20	A	40	A

General comments

There was evidence of an improvement in performance. This improvement in standard was shown by **Questions 9, 14, 24 and 39** where candidates performed well. The **Questions 1, 6, 22, 25, 28 and 34** tested straightforward knowledge of syllabus objectives. Candidates performed strongly in **Questions 1, 20, 34, 35 and 40**.

Comments on specific questions

Question 1

This question showed excellent application of the knowledge of the characteristics of organisms to the activities of machines.

Question 8

A small number of candidates did not know that carbohydrates are a nutrient that provides roughage (fibre).

Question 9

Most of the candidates obtained the correct answer for this more difficult question, illustrating very high standards in their ability to deduce answers. Application of knowledge of diffusion and osmosis had to be applied in an unfamiliar situation, to predict the behaviour of water and glucose molecules.

Question 14

Candidates needed to know that a person with short height and small body mass would have a smaller vital capacity and would need fewer breaths at rest than a larger person. These two features then need to be distinguished on the four graphs. Many candidates showed excellent skill in interpreting the graphs and using this knowledge to choose the correct answer.

Question 20

The answer to this question repeats all the features of bone as in the syllabus objective. Each distractor gave an unlikely feature of bone, such as it being flexible, containing elastic fibres and being composed of dead tissue. Unexpectedly, both strong and weak candidates performed equally well in this question.

Question 21

The meaning of the terms origin and insertion was not understood by some candidates. Emphasis is needed on these terms, when teaching muscle contraction for movement of the arm.

Question 26

Candidates had to interpret a graph to note the temperature changes in a woman and ascribe that to ovulation. Most candidates correctly interpreted the graph.

Question 27

Some candidates did not deduce that the normal diploid number of chromosomes would not be present in a red blood cell because it lacks a nucleus. Similarly in the sperm, only half the number of chromosomes are present.

Question 29

Some candidates need to be reminded that ringworm is a fungus and thus would be killed by fungi killing ointments.

Question 34

In this question, candidates were required to consider an answer for both cholera and influenza. Incorrect responses such as, destroying houseflies and X-ray diagnosis would reduce influenza infections, or that properly ventilated rooms would reduce cholera infections, were given by some candidates.

Question 35

Candidates needed to know that some microorganisms other than fungi are used to produce antibiotics and that they may only stop the growth of some pathogens, rather than kill them all. With this knowledge, they can make the value judgement needed to select the 'best' definition to answer this question.

Question 40

A number of candidates did not realise the important part played by bacteria digesting the waste in a pit latrine and that this feature allows it to function over a long period of time. Many incorrectly thought that the contents of the latrine drying out and turning solid was a more likely reason.

HUMAN AND SOCIAL BIOLOGY

Paper 5096/22

Theory

Key Messages

Candidates are reminded to read the questions carefully, to check that they are answering the question as asked and to follow any instructions (rubric) given.

General Comments

Most candidates were able to complete all sections in the time allowed.

A very small number of candidates did not follow the rubric for **Section C** and answered both **Question 9** and **Question 10**. Almost all candidates answered both **Questions 7** and **8**.

Comments on Specific Questions

Section A

Question 1

- (a) Candidates were required to identify structures in the heart. Many correctly labelled these three structures. Some confused the bi and tricuspid valves. Others labelled the tendons as the valves.
- (b)(i) Calculation of stroke volume was not well done by candidates. Many multiplied 5.6×7 instead of dividing 5.6 by 7 to get 0.08 dm^3 . Some candidates were unable to gain full credit because they units were omitted.
- (ii) The idea of increasing the number of beats per minute/the heart beating faster to increase the volume of blood pumped out was stated by many candidates but only the most able candidates gave an answer of increasing the stroke volume per beat.
- (c)(i) Most candidates used the data given to correctly answer this question.
- (ii) Many candidates correctly described the place of the blood in the process of respiration but this did not gain any credit as respiration takes place all the time. The most able candidates wrote that more blood is needed during exercise and more energy is needed so that more respiration takes place; therefore the blood brings more oxygen and glucose to the muscles and takes away more carbon dioxide.
- (iii) Some candidates gained full credit, but many could not calculate this percentage correctly. A common incorrect answer was 300%.
- (iv) As in part (ii) the idea of increase was missed. Some candidates wrote incorrectly about blood vessels moving nearer the surface or arteries or veins dilating.
- (v) The question needed a comparison between the blood flows to the two structures. The answers were mainly about the digestive system.

Question 2

- (a) (i) Once the candidates understood this was an osmosis question they answered it well. There was some confusion if the answer was in terms of concentrated and dilute solutions. Those who answered in terms of water potential usually gained full credit.
- (ii) A common error here was not to state that chip **E** absorbed more water than chip **D**. Some referred to length only instead of surface area.
- (b) Most candidates gave the correct answer of haemoglobin.
- (c) Candidates were unable to explain that these cells would burst because of water moving in by osmosis and that there was no cell membrane to prevent bursting. This released the pigment into the water.

Question 3

- (a) The bar chart was completed well by many candidates, however a significant number were careless when constructing the bars and consequently did not gain all of the available credit. Those who did not follow rubric and label the y-axis were unable to gain full credit.
- (b) Most candidates gained partial credit for outlining that the smaller the body mass was, the shorter the gestation period would be.

Question 4

- (a) Many candidates did not realise that there was no digestion of fats by enzymes in the mouth. Some gave lengthy descriptions of digestion by amylase. The idea of physical digestion and an increase in surface area of the food was needed.
- (b) (i) Emulsification by bile was well known.
- (ii) Candidates realised that natural fat would be digested by lipase into fatty acids and glycerol (both needed) and that lipoleum would not.
- (iii) The question asks for advantages of including lipoleum in the diet and not the function of fat. Reduced risk of several diseases was one means of answering. The other was reduction of obesity or weight loss.

Question 5

Many candidates gained full credit for their answers. Some candidates did not follow through their symbols from genotype to gametes to F_1 genotypes. Others did not write words for the sexes in the F_1 phenotypes.

Question 6

- (a) (i) The importance of repeating the test and obtaining a mean result was to make the results reliable, reduce the effect of random, experimental errors and individual variation. Many candidates did not gain credit as they wrote about fair tests and accuracy.
- (ii) The question needed answers about variation between candidates or a comment about the variation being very small.
- (b) (i) Candidates did not answer this question well. The idea that the larger bodies meant nerve fibres had to be longer and impulses would take more time was not appreciated by many.
- (ii) Many incorrectly wrote about the idea that males were bigger and faster than females.

Question 7

- (a) As a comparison was asked for here, both sides of the comparison should have been given. Sometimes a good idea to draw a table so that it is clear which answers are which.
- (b) The question needed answers about how hormones control the menstrual cycle. These answers should have included what happens to the lining of the uterus (not the wall) and why; also how they affect the hormone secretion of the pituitary gland.
- (c) Only the most able candidates were able to describe what happens at each stage of birth. There were a significant number of answers that described the process of fertilisation and pregnancy rather than birth.

Question 8

- (a) (i) Many candidates knew that *Plasmodium* is the pathogen that causes malaria. Common incorrect answers included protozoan and mosquito.
- (ii) The description of how the pathogen enters the human body was not always explained well. It was generally known that it was a mosquito that was involved but only some knew that it was the female. There were some good descriptions of the mosquito picking up the pathogen whilst biting a person and then passing it to an uninfected person later.
- (b) The question asked for five ways in which the spread of malaria could be controlled and how they work. These needed to be different in their action to gain full credit.

Question 9

- (a) This question required a comparison between inspired and expired air. When a comparison is asked for, both sides of the comparison should be given. Differences in oxygen and carbon dioxide concentration, temperature and water vapour content all gained credit.
- (b) A description and explanation of expiration was needed here. It should have included what happens to the intercostal muscles, ribs, diaphragm, volume and pressure in the thorax and direction of air movement.
- (c) The question did not ask for how smoking affects the respiratory system which is what some candidates wrote about, and were therefore unable to gain credit. It was very specific in which candidates were to comment on nicotine and the arterial system. Answers should have included relevant comments about the heart rate, blood vessels, blood pressure, atherosclerosis, arteriosclerosis, clot formation and thrombosis.

Question 10

- (a) As a comparison was asked for here, both sides of the comparison should have been given. The answers should have included detail of structural differences and how these differences relate to the function of that blood vessel in order to maximise awarded credit.
- (b) This part was not answered well by candidates.
- (c) (i) To gain credit in this part, candidates needed to state that the function of tissue fluid is to bathe the cells, to provide substances that the cell requires and to take away substances that the cell does not need.
- (ii) Answering 'returning to the blood' was not enough to explain what happens to the tissue fluid. The passage of lymph through the lymphatic system was required to gain credit.

HUMAN AND SOCIAL BIOLOGY

Paper 5096/23

Theory

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General Comments

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