Centre No.						Paper Reference							Surname	Initial(s)
Candidate No.						7	0	4	2	/	0	2	Signature	

Paper Reference(s)

7042/02

Examiner's use only

Team Leader's use only

London Examinations GCE

Human Biology

Ordinary Level

Paper 2

Thursday 20 January 2011 – Morning

Time: 2 hours

Materials required for examination
Nil

Items included with question papers
Nil

Question Number	Leave Blank
1	
2	
3	
4	
5	
6	
7	
8	
9	
Total	

Instructions to Candidates

In the boxes above, write your centre number, candidate number, your surname, initial(s) and signature.
Answer FIVE questions, THREE from Section A and TWO from Section B.
Indicate which question you are answering by marking the box (☒). If you change your mind, put a line through the box (~~☒~~) and then indicate your new question with a cross (☒).
Write your answers in the spaces provided in this question paper.

Information for Candidates

The total mark for this paper is 100. All questions carry equal marks.
Marks for parts of questions are shown in round brackets: e.g. **(2)**.
This paper has 9 questions.
Any blank pages are indicated.

Advice to Candidates

Write your answers neatly and in good English.
Draw labelled diagrams where these will make the answers clearer. Facts explained in a labelled diagram need not be repeated in the written answer.

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SECTION A

Answer any THREE questions in this section.

If you answer Question 1, put a cross in this box ☒.

1. (a) Draw a large labelled diagram of an animal cell as seen using an electron microscope.

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(b) Describe the process of respiration that occurs in the mitochondria and what happens to the products from this process.

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(c) Describe protein synthesis in a cell.

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(d) Describe the role of the cell membrane in the activities of a cell.

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Q1

(Total 20 marks)

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If you answer Question 2, put a cross in this box ☒ .

2. A student uses two slices of bread, some butter and a slice of meat to make a sandwich.

(a) (i) List the main groups of nutrients found in this sandwich.

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(ii) Describe the role of the teeth and the tongue in preparing the sandwich for swallowing.

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(b) In each of the following regions of the gut, describe the events that bring about the chemical digestion of the nutrients in the sandwich so that they can be absorbed.

(i) The mouth

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(ii) The stomach

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(iii) The small intestine (duodenum and ileum)

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(c) The hepatic portal vein carries many products of digestion of the sandwich to the liver. Describe what happens to these substances when they reach the liver.

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(4)

Q2

(Total 20 marks)

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If you answer Question 3, put a cross in this box ☒ .

3. Hormones help to control the growth and development of a child.

(a) Explain what is meant by the term **hormone**.

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(b) Describe the roles of hormones, produced by each of the following glands, that help to bring about the growth and development of a child up to puberty.

(i) The pituitary and thyroid glands

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(ii) The gonads (testes and ovaries)

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(c) (i) Describe the stages in the growth and development of a child from birth to maturity.

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(ii) Explain how these stages may be affected if the child lacks protein in the diet.

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Q3

(Total 20 marks)

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If you answer Question 4, put a cross in this box ☒ .

4. An alarm produces a loud noise and a flashing red light when it comes on.

(a) (i) Describe how the sound is transmitted to the part of the inner ear where it is detected.

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(ii) Describe how the information from the inner ear is transmitted to, and interpreted by, the brain.

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(b) Red-green colour blindness is a recessive, sex-linked condition. People who suffer from red-green colour blindness are able to see the flashing light of the alarm but do not recognise its colour.

(i) Explain what is meant by a 'sex-linked' condition and why sex-linked conditions appear more commonly in males than in females.

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(ii) Explain why it is possible, but relatively rare, for the children of a colour-blind man to be colour-blind.

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Q4

(Total 20 marks)

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If you answer Question 5, put a cross in this box ☒ .

5. Explain the importance of each of the following processes.

(a) (i) Meiosis during gamete formation

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(ii) A woman changing her normal diet during pregnancy

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(iii) Breast feeding a baby during the first few months of its life

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(b) Describe the function of each of the following during pregnancy.

(i) The placenta

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(ii) The amnion

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Q5

(Total 20 marks)

TOTAL FOR SECTION A: 60 MARKS

Leave blank

SECTION B

Answer any TWO questions in this section.

If you answer Question 6, put a cross in this box ☒.

6. (a) Typhoid is caused by *Salmonella typhi*. The symptoms include a severe fever, diarrhoea and vomiting and if not treated can lead to death.

(i) Explain why a high fever, diarrhoea and vomiting may lead to death if the person does not have treatment.

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(ii) Some people carry *Salmonella typhi* in their body but show no symptoms of the disease. Why could it be especially dangerous if such a person worked in a hotel kitchen?

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(iii) List **four** precautions that can be taken to prevent typhoid being transmitted from one person to another. For each precaution, explain how it prevents the transmission of typhoid.

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(b) Several micro-organisms cause food poisoning. Describe and explain **two** precautions which should be taken during the preparation of food to ensure that the food is safe to eat.

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Q6

(Total 20 marks)

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If you answer Question 7, put a cross in this box ☒ .

7. Bleeding occurred when a person cut their hand with a dirty garden tool.

(a) (i) Explain the value, to the person, of bleeding and why it is important that this does not go on for too long.

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(ii) Describe how the process of clotting is brought about and the events that lead up to the formation of new skin over the wound.

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(b) (i) Bacteria may have entered the wound before it was sealed. Describe the roles of the white blood cells in dealing with these bacteria.

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(ii) The bacteria that cause tetanus are often present in garden soil. Tetanus can be a fatal disease. Explain why a doctor may give the patient an injection of tetanus antibodies after treating a deep wound.

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Q7

(Total 20 marks)

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If you answer Question 8, put a cross in this box ☒ .

8. (a) A young boy appeared to have an infection between his toes. When material from the infected area was examined under the microscope it could be seen that both bacteria and fungi are present.

(i) Describe **two** ways in which the bacteria would differ from the fungi.

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(ii) The fungus is believed to be athlete's foot (*Tinea*). Describe how this disease is treated and describe the precautions that should be taken to prevent its spread to other children.

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(b) Some infections can be treated by the use of antibiotics. What are antibiotics and how are they useful to humans?

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(c) Describe methods of nutrition used by fungi and explain how some of these are beneficial and some are harmful to humans.

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Q8

(Total 20 marks)

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If you answer Question 9, put a cross in this box ☒ .

9. (a) Explain why lakes often become contaminated with excess nitrates. Describe the effects that this can have on the living organisms in the lakes.

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(b) Large amounts of sulphur dioxide are released into the air when fossil fuels are burnt to generate electricity. Describe the effect this can have on plants and animals and their environment.

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(c) Damage to the ozone layer may allow more ionising radiation to reach the surface of the Earth. Explain the effects this radiation may have on humans.

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Q9

(Total 20 marks)

TOTAL FOR SECTION B: 40 MARKS

TOTAL FOR PAPER: 100 MARKS

END