BIOLOGY PAPER – REPLACEMENT QUESTIONS 3, 5, 13 & 14

2010 HIGHER SCHOOL CERTIFICATE TRIAL EXAMINATION

Biology

Section I

Part A – 20 marks
Attempt Questions 1–20
Allow about 35 minutes for this part

Use the Multiple Choice Answer Sheet provided

3 Many useful products are obtained from donated blood.

Choose the line which correctly matches the products with their uses.

	Plasma	Red blood cells	Platelets
(A)	To increase the clotting ability of the blood	To increase the immune response against pathogens	To restore blood volume after injury
(B)	To boost oxygen carrying capacity of the blood	To restore blood volume after injury	To increase the immune response against pathogens
(C)	To restore blood volume after injury	To boost oxygen carrying capacity of the blood	To increase the clotting ability of the blood
(D)	To increase the immune response against pathogens	To increase the clotting ability of the blood	To boost oxygen carrying capacity of the blood

5 Erwin Chargaff was a scientist whose findings were of great importance in developing a model of the structure of DNA.

He put forward Chargaff's rule, which says that while the amounts of the bases differs between sections of DNA, the ratio of Adenine to Thymine is always 1:1, as is the ratio of Cytosine to Guanine.

What aspect of the structure of DNA did this reveal to Watson and Crick?

(A) Its helical shape.

(B) The distance between its two chains.

(C) Its X-ray crystal shape.

(D) The complementary nature of its bases.

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13 Humans produce urea as their main nitrogenous waste.

Which statement below best summarises why it is advantageous for humans to excrete urea, as opposed to any other nitrogenous waste?

(A) Urea requires no energy to produce and no water to excrete.

(B) Urea is highly toxic and requires a lot of water to excrete, but is the 'cheapest' nitrogenous waste to produce in terms of energy.

(C) Urea requires a lot of energy to produce, but very little water to excrete.

(D) Urea requires moderate amounts of energy to produce and moderate amounts of water to excrete.

14 Under which of the following conditions is *pulse oximetry* used?

(A) When pulse rate or blood flow is low, during cardiac failure.

(B) When monitoring oxygenation and pulse rates throughout anaesthesia.

(C) When blood pressure needs to be determined, during surgery.

(D) When levels of energy being used by the patient needs to be determined.

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BIOLOGY PAPER – REPLACEMENT QUESTIONS 29-30

2010 HIGHER SCHOOL CERTIFICATE TRIAL EXAMINATION

Biology

Centre Number

Section I (continued)

Student Number

Part B – 55 marks
Attempt Questions 21–31
Allow about 1 hour and 40 minutes for this part

Show all relevant working in questions involving calculations.

Marks

Question 29 (5 marks)

(a) Define the term *transgenic species*. **1**

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(b) Outline ONE method used to produce a transgenic species. **2**

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(c) Discuss TWO *ethical issues* arising from the development and use of transgenic technology. **2**

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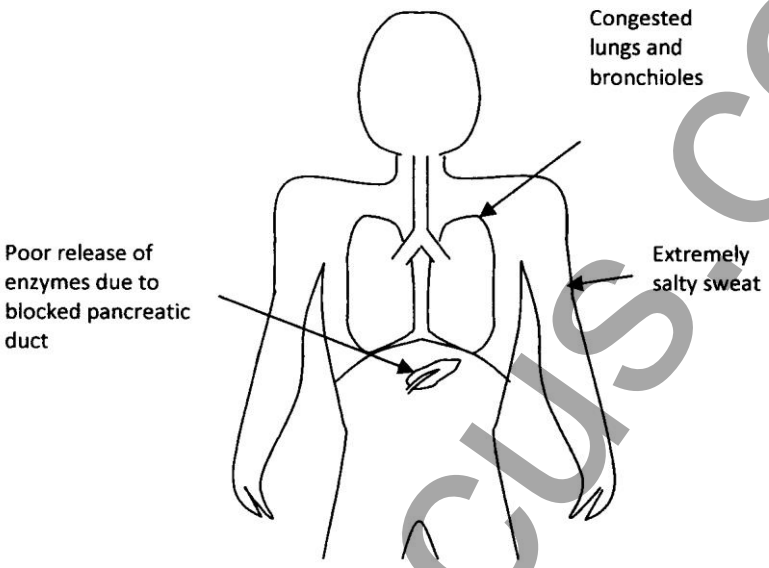
Marks

Question 30 (6 marks)

Cystic fibrosis (CF) is a common inherited disease.

Sufferers are unable to produce an enzyme which has a role in the transport of materials across membranes in the body. This leads to an imbalance of chloride ions across these membranes, resulting in a build up of thick mucus.

Some effects of CF are shown below.



(a) Describe one symptom that CF sufferers might show as a result of one of the effects shown above **1**

……

……

(b) CF sufferers experience an excessive build up of mucus on their mucous membranes. Outline the defensive role of mucus in healthy individuals. **1**

……

……

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Question 30 continues on next page

(c) CF is caused by a recessive allele. Another inherited disorder, Huntington's disease, is caused by a dominant allele and severely affects the nervous system. **4**

Using appropriate diagrams and symbols, explain why these two diseases would have different patterns of inheritance within a family.

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BIOLOGY PAPER – REPLACEMENT QUESTION 32(b)

2010 HIGHER SCHOOL CERTIFICATE TRIAL EXAMINATION

Biology

Centre Number

Section II

Student Number

25 marks
Attempt ONE question from Questions 32 - 36
Allow about 45 minutes for this section

Answer the question in a writing booklet. Extra writing booklets are available

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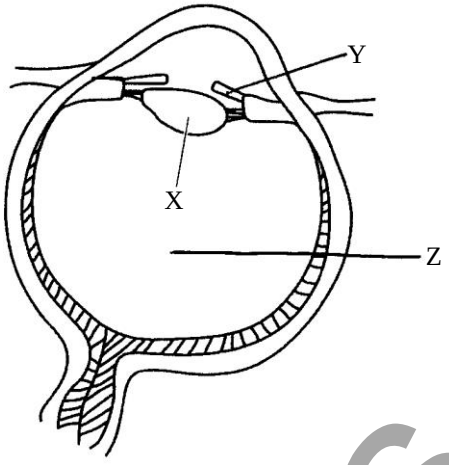
Marks

Question 32 – Communication (6 marks)

(b) (i) Identify the structures labelled Y and Z. **2**



(ii) Relate the structure of the part of the eye labelled X to its function. **3**

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