



Rewarding Learning

ADVANCED SUBSIDIARY (AS)
General Certificate of Education
2013

Centre Number

71

Candidate Number

Health and Social Care

Assessment Unit AS 14

assessing

Unit 14: Understanding Human Physiology

[A3H81]

TUESDAY 21 MAY, MORNING



A3H81

TIME

2 hours.

INSTRUCTIONS TO CANDIDATES

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.

Write your answers in the spaces provided in this question paper.

Answer **all four** questions.

INFORMATION FOR CANDIDATES

The total mark for this paper is 100.

Quality of written communication will be assessed in questions **1(c)(iii)**, **2(c)** and **4(d)(iii)**.

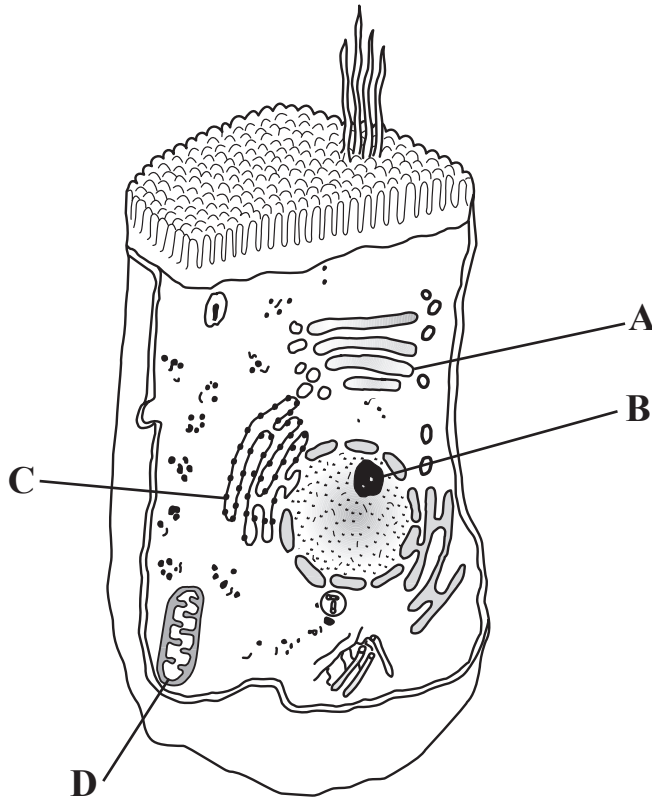
Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.

For Examiner's use only

Question Number	Marks
1	
2	
3	
4	

Total Marks

1 (a) The diagram below shows the structure of a human cell in the ileum.



© Introduction to Advanced Biology by C J Clegg, published by John Murray, 2000.
ISBN 0719576717. Reproduced by permission of Dr C J Clegg

The cell contains organelles labelled A, B, C and D. Write down the name and **one** function of A, B, C and D.

A Name: _____ [1]

Function: _____

_____ [1]

B Name: _____ [1]

Function: _____

_____ [1]

C Name: _____ [1]

Function: _____

_____ [1]

D Name: _____ [1]

Function: _____

_____ [1]

Examiner Only	
Marks	Remark

(b) The table below shows the components of the blood collected after centrifugation. Complete the table below to identify **one** function of each of the blood components shown.





Blood components	Function
	
	
	
	

Figure from: © ORG Biology, through Diagrams by W R Pickering (OUP, 1996), reproduced by permission of Oxford University Press

[4]

Examiner Only	
Marks	Remark

2 (a) The diagram below shows a motor neurone attached to a muscle.

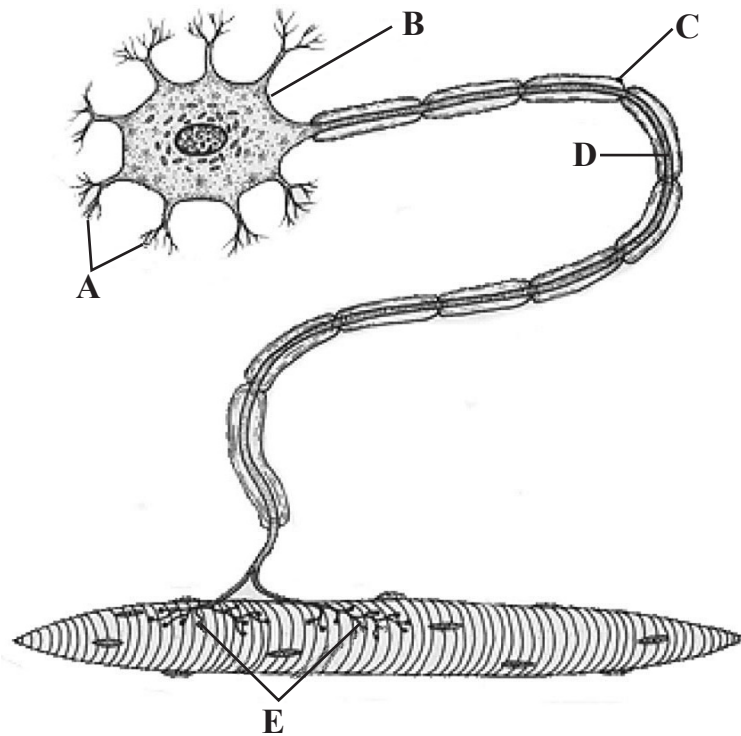


Figure from © Illustrated Biology by B S Beckett (OUP, 1978), reproduced by permission of Oxford University Press

(i) Identify parts A, B, C and D.

- A _____ [1]
 B _____ [1]
 C _____ [1]
 D _____ [1]

(ii) Write down the muscle type shown in the diagram.

_____ [1]

Examiner Only	
Marks	Remark

(b) The cell body of the motor neurone is found in the grey matter of the spinal cord, which is part of the Central Nervous System (CNS). Damage to the CNS can cause paraplegia or quadriplegia.

Write down what is meant by the terms paraplegia and quadriplegia.

Paraplegia

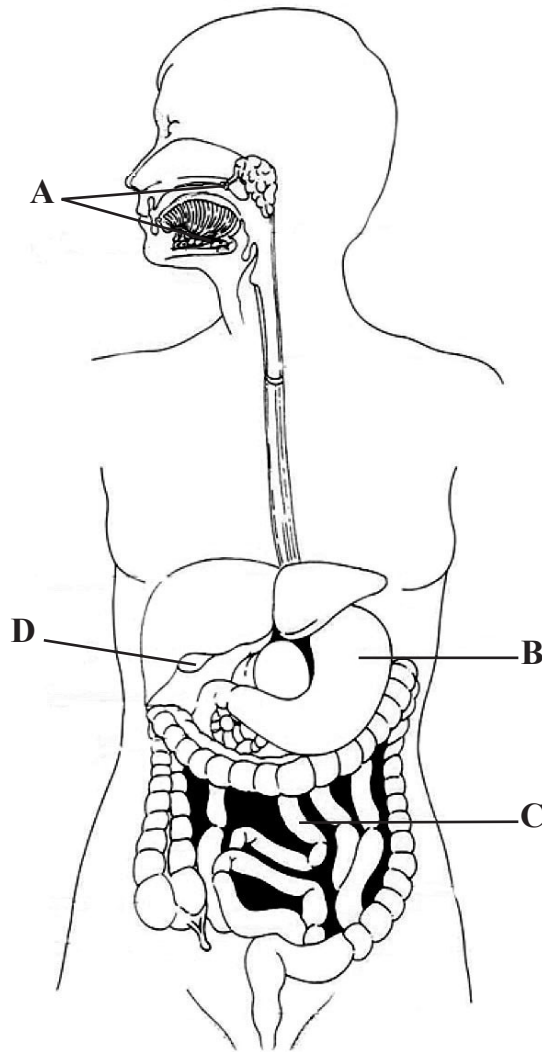
_____ [1]

Quadriplegia

_____ [1]

Examiner Only	
Marks	Remark

- 3 (a) The diagram below shows some of the main parts of the digestive system.



© *Biological Science 1 & 2, 3rd edition by D J Taylor, N P O Green & G W Stout, published by Cambridge University Press, 1997. ISBN 0521561787*

- (i) Explain why the stomach (**B**) is described as an organ.

[2]

Examiner Only	
Marks	Remark

(iv) Complete the table below to identify the enzymes, substrates and end products produced in parts A, B and C of the digestive system. Some of the table has been completed for you.

Part	Enzyme	Substrate	End Products
A	Carbohydrase		
B			Amino Acids
C		Lipids	

[6]

(v) Structure D is the gall bladder which stores bile. Identify the organ which produces bile.

_____ [1]

(vi) Write down two functions of bile.

1. _____ [1]

2. _____ [1]

Examiner Only	
Marks	Remark

- (b) (i) The sugars produced during digestion are taken via the blood to the liver for storage as glycogen. Complete the diagram by naming the two hormones which control the processes shown below.

**Blood sugar levels high
body releases**



**Blood sugar levels drop
body releases**

[2]

- (ii) Excess amino acids must be removed during a process called deamination. Write down the part of the body where deamination takes place.

_____ [1]

- (iii) One of the products of deamination is urea. Describe how urea is removed from the body.

 _____ [3]

Examiner Only	
Marks	Remark

(ii) Andy has urinary incontinence. Explain the cause of his condition.

[2]

(c) The table below shows the percentage composition of blood plasma and urine for four substances.

Component	Blood Plasma %	Urine %
Water	90	90
Plasma Protein	8	0
Glucose	0.1	0
Urea	0.03	2

Use your knowledge of filtration in the kidney nephron to explain the following:

Absence of plasma proteins in the urine.

[2]

Absence of glucose in the urine.

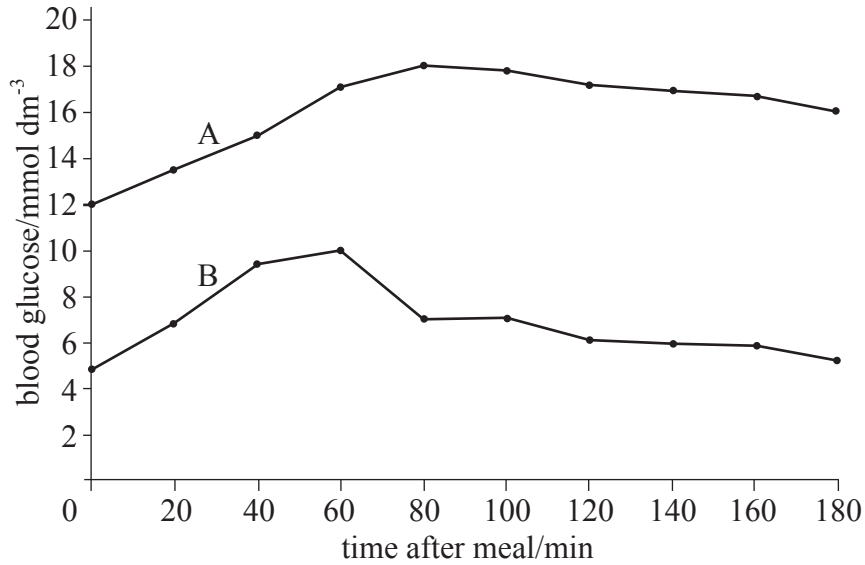
[2]

Higher concentration of urea in the urine than in the blood.

[2]

Examiner Only	
Marks	Remark

(d) The graph below shows the change in blood glucose levels of individuals A and B at hourly intervals after a meal.



© Practice in Biology by Sally Morgan, published by Hodder Education, 2000.
 ISBN 0340772670. "Reproduced by permission of Hodder Education"

(i) State the normal range for blood glucose levels in a healthy person.

_____ to _____ mmol dm⁻³ [1]

(ii) Which of the two lines represents the individual with diabetes?

_____ [1]

(iii) Analyse the information shown in the graph for individuals A and B.

Examiner Only	
Marks	Remark

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