Rewarding Learning

ADVANCED SUBSIDIARY (AS)
General Certificate of Education
2015

Centre Number

Candidate Number

Health and Social Care

A3H81

Assessment Unit AS 14
assessing
Unit 14: Understanding Human Physiology

[A3H81]
THURSDAY 28 MAY, AFTERNOON

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 **2(a), 3(b)(ii)** and **4(d)**.
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	

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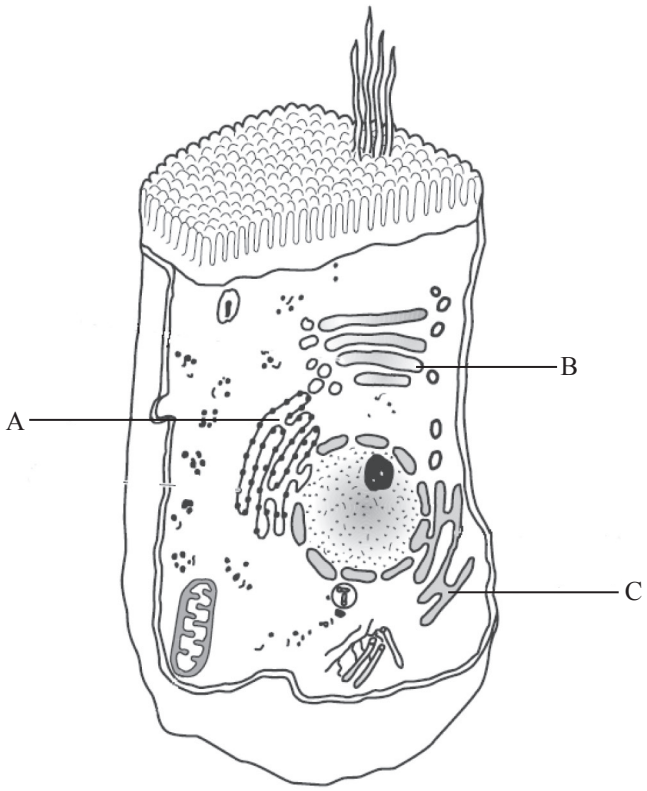
Examiner Only	
Marks	Remark

1 **(a)** This is a diagram of an epithelial cell from the ileum (small intestine).



(i) Write down the name and **one** function of the organelles A, B and C.

A Name _____ [1]

Function _____

_____ [1]

B Name _____ [1]

Function _____

_____ [1]

C Name _____ [1]

Function _____

_____ [1]

Examiner Only	
Marks	Remark

(ii) Explain how the epithelial cell is specialised to enable it to perform its function.

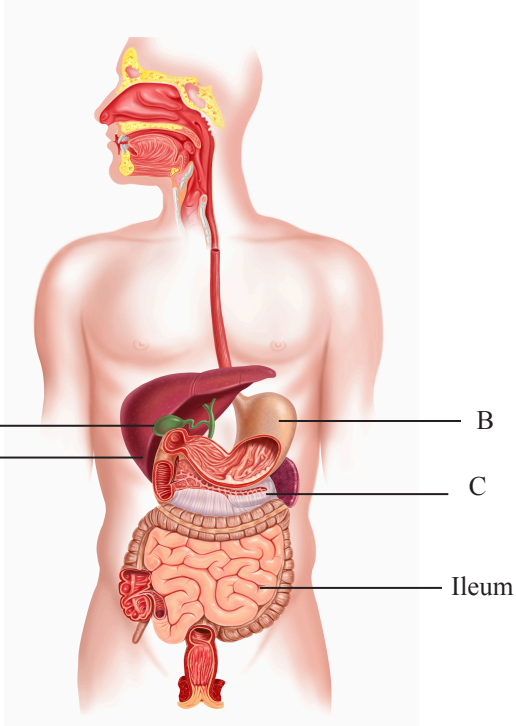
_____

_____

_____

_____ [2]

(b) The diagram below shows the ileum and several other parts of the digestive system.



(i) Label the diagram with an X where digestion begins and a Y where digestion ends. [2]

(ii) Identify organs A, B and C.

A Name _____ [1]

B Name _____ [1]

C Name _____ [1]

(iii) The three main groups of enzymes involved in digestion are shown in the table below. Complete the table to show where the enzyme is first released and the food group on which it acts.

Enzyme	Where enzyme is first released	Food group on which enzyme acts
Carbohydrases		Carbohydrates
Lipases	Small intestine	
Proteases		

[4]

(c) The liver has many important functions.

(i) Discuss the role of the liver in the deamination of excess amino acids.

_____

_____

_____

_____

_____

_____ [3]

Examiner Only

Marks	Remark

(ii) The liver produces bile. Discuss the role of bile in digestion.

Examiner Only	
Marks	Remark

_____

_____

_____

_____

_____

_____ [3]

(d) Liver damage can lead to cirrhosis of the liver.

(i) Write down two common causes of cirrhosis of the liver.

1. _____ [1]

2. _____ [1]

(ii) Write down two symptoms of cirrhosis of the liver.

1. _____ [1]

2. _____ [1]

(iii) Suggest two ways to reduce the risk of developing cirrhosis of the liver.

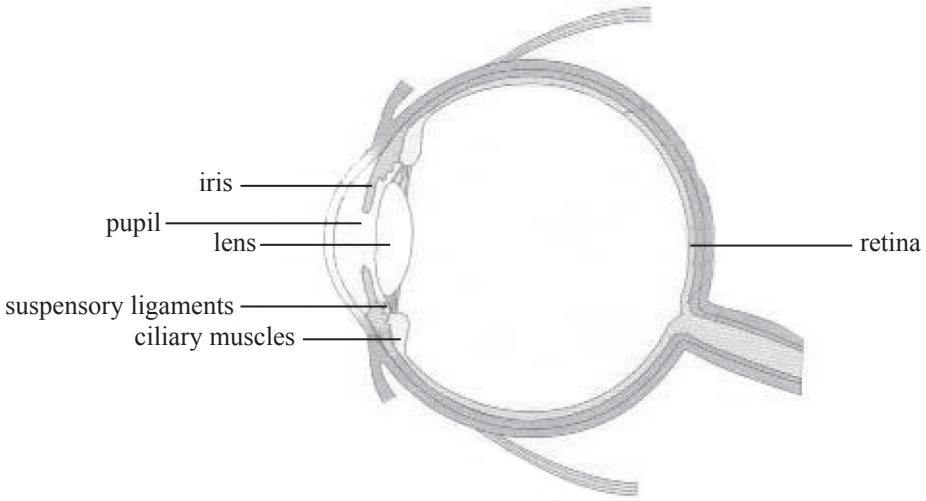
1. _____

_____ [1]

2. _____

_____ [1]

2 The diagram below shows the structure of the eye.



© Adapted from CCEA Biology Student Unit Guide A2 Unit 1 by John Campton, figure 21, page 34, published by Philip Allan Updates, 2013. "Reproduced by permission of Philip Allan (for Hodder Education)".

(a) Accommodation is the process by which the eye adapts to ensure light is focused on the retina to enable us to see. Discuss the mechanisms by which the eye accommodates to view both near and far objects.

Near objects

Examiner Only	
Marks	Remark

Far objects

Examiner Only	
Marks	Remark

[9]

(b) Geraldine has cataracts in both eyes.

Examiner Only	
Marks	Remark

(i) Explain the physiological process that leads to the development of cataracts.

_____

_____

_____

_____ [2]

(ii) Geraldine wears glasses because she has always suffered from hypermetropia. Explain the term hypermetropia.

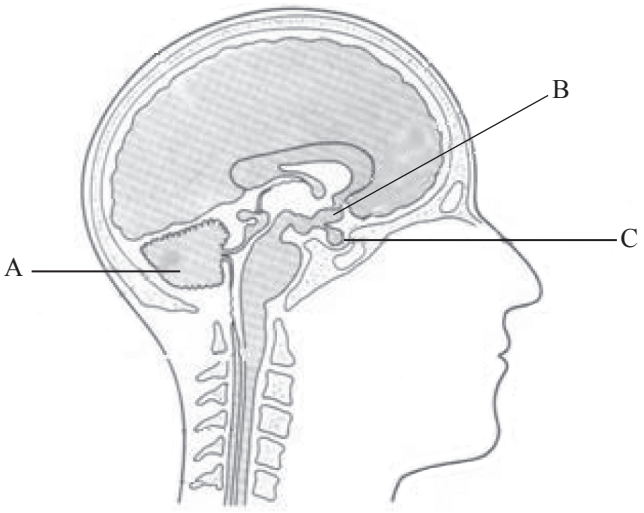
_____

_____

_____

_____ [2]

3 The diagram below shows the structure of the brain.



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(a) Write down the name and **one** function of parts A, B and C.

A Name _____ [1]

Function _____

_____ [1]

B Name _____ [1]

Function _____

_____ [1]

C Name _____ [1]

Function _____

_____ [1]

Examiner Only	
Marks	Remark

(b) David is a 63 year old widower. He lives alone in a bungalow. He has one daughter who lives close by with her husband and three young children. David has worked as a school caretaker for the past 35 years. He has a busy life and often eats food from his local chip shop as he has no time to cook. His hobbies include playing snooker and darts at a local pub where he is a valued member of the team.

(i) David has just been admitted to hospital with a suspected stroke. The doctors are running tests to find out if the stroke is ischemic or haemorrhagic. Explain the following:

Ischemic stroke _____

_____

_____

_____ [2]

Haemorrhagic stroke _____

_____

_____

_____ [2]

Examiner Only	
Marks	Remark

(ii) Test results show that David has had an ischemic stroke. He has right sided hemiplegia (paralysis of the right side of the body) and his speech has been affected. Doctors believe he may regain some use of the right side of his body but his recovery will be slow. Analyse how David's stroke may affect his lifestyle.

Examiner Only	
Marks	Remark

Examiner Only	
Marks	Remark

Examiner Only	
Marks	Remark

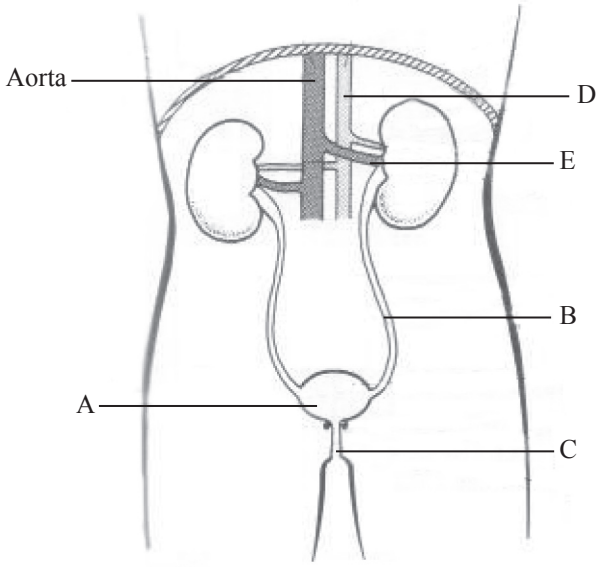
[12]

(iii) As a result of the stroke David is now incontinent.

Explain the physiological process that causes urinary incontinence.

[2]

(c) The diagram below shows the excretory system.



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(i) Identify parts A, B and C.

A _____ [1]

B _____ [1]

C _____ [1]

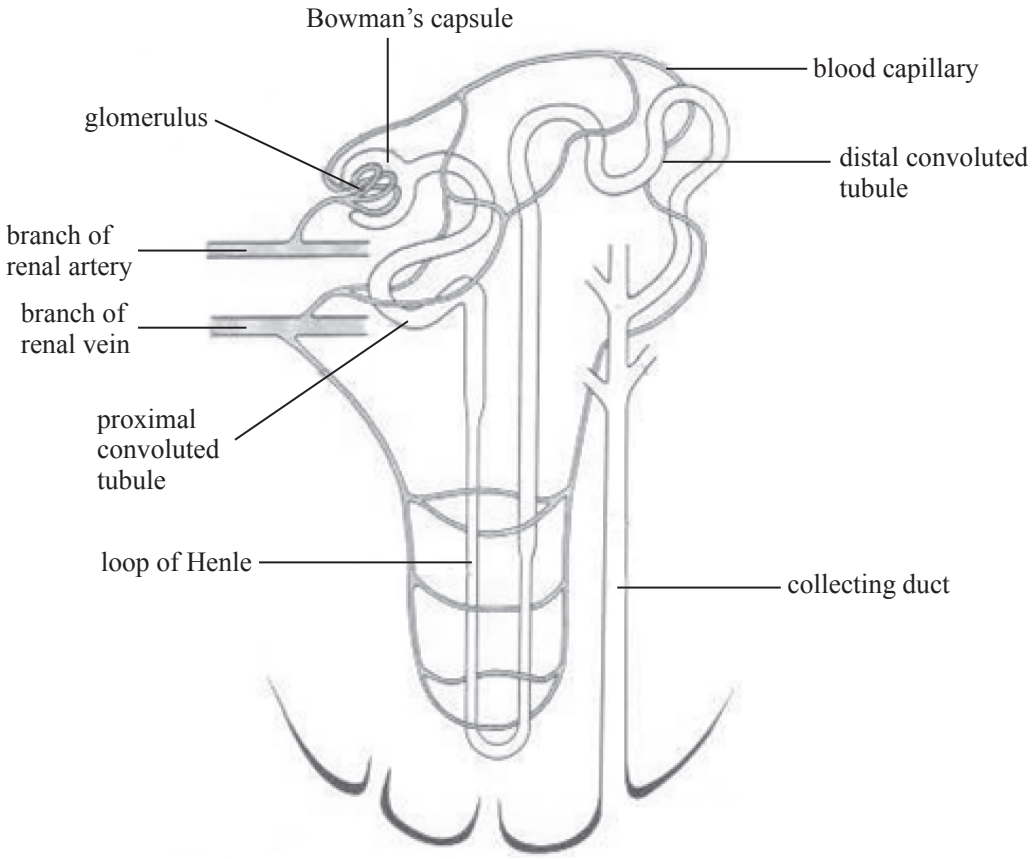
(ii) Identify blood vessels D and E.

D _____ [1]

E _____ [1]

Examiner Only	
Marks	Remark

(d) The diagram below shows the structure of a kidney nephron.



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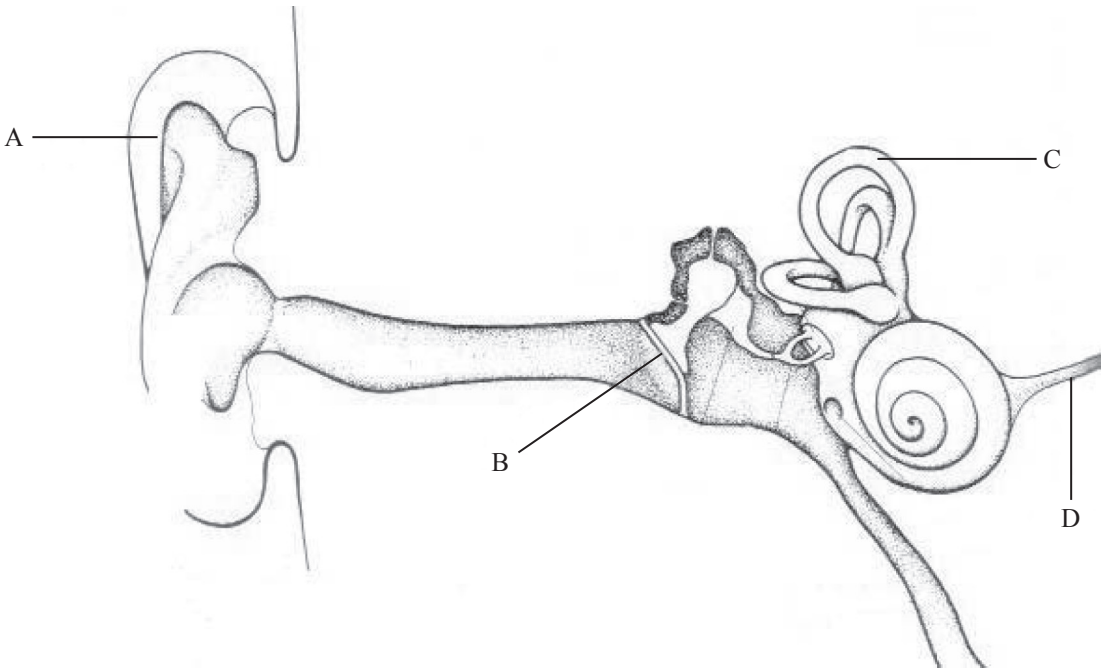
Using the diagram and your knowledge of the kidney nephron, complete the following sentences.

Blood enters the kidney through the _____

_____ . Substances are filtered out of the blood under high pressure into the _____ _____ . Some substances like protein are not filtered out of the blood because they are too _____ . Urea, salts, glucose and water are all filtered out. _____ needs to be reabsorbed back into the blood as it is needed to produce energy. _____ needs to be removed as it is poisonous to the body if not removed. The re-absorption of water will depend on the permeability of the _____ _____ which will change depending on the release of anti-diuretic hormone (ADH) from the pituitary gland. [6]

Examiner Only	
Marks	Remark

4 The diagram below shows the structure of the ear.



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(a) Match each statement below with the correct letter in the diagram.

This part of the ear is involved in balance	☐	[1]
This part of the ear is known as the pinna	☐	[1]
This part of the ear vibrates against the ossicles	☐	[1]
This part of the ear carries messages to the brain	☐	[1]

(b) Discuss how sound waves travel through the ear from A to D.

Examiner Only

Marks	Remark

Examiner Only	
Marks	Remark

[6]

(c) Explain the following terms:

Conductive hearing loss

_____

_____

_____

_____ [2]

Sensorineural hearing loss

_____

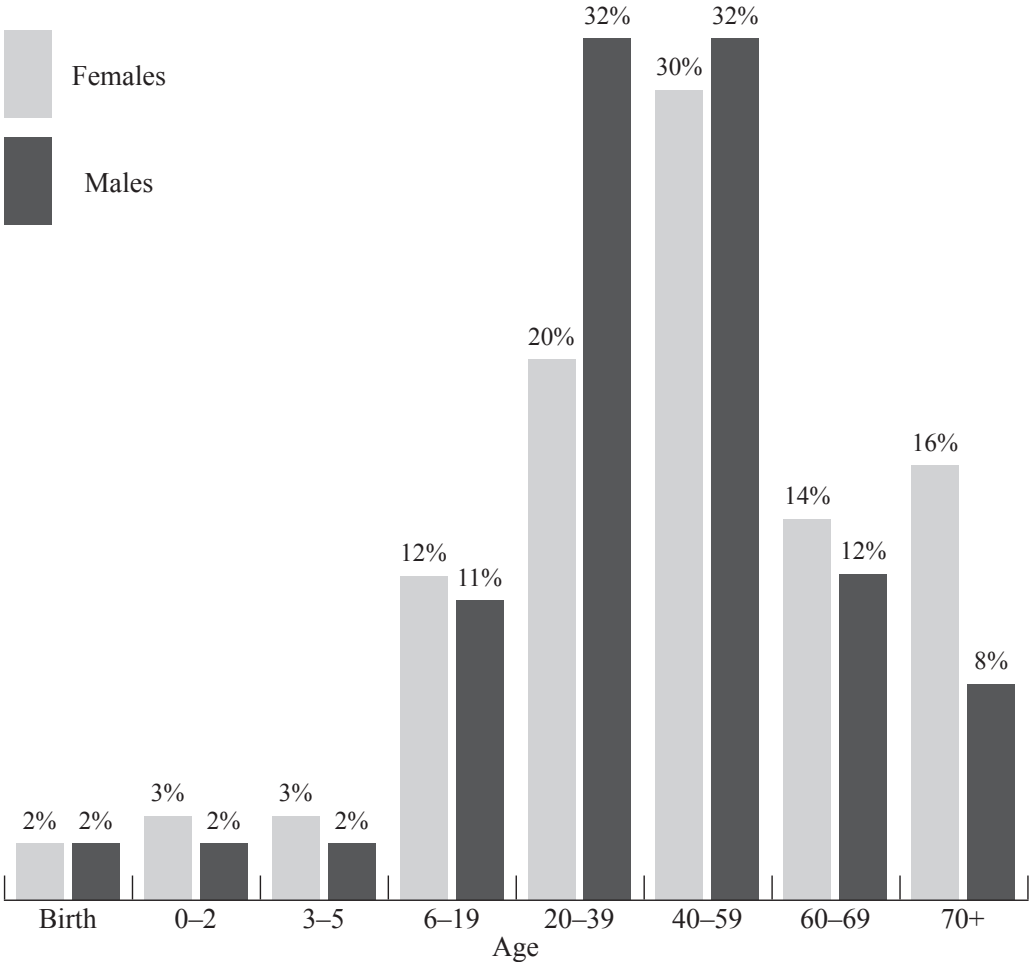
_____

_____

_____ [2]

Examiner Only	
Marks	Remark

(d) The chart below shows the ages at which males and females first experience hearing loss.



© National Health Interview Survey, 2007. Chart created by the NIDCD Epidemiology and Statistics Program. Updated in November 2012.

Analyse the information in the above chart, suggesting reasons for the data shown.

Examiner Only	
Marks	Remark

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Marks	Remark

Examiner Only	
Marks	Remark

[9]

THIS IS THE END OF THE QUESTION PAPER