Rewarding Learning

ADVANCED SUBSIDIARY (AS)
General Certificate of Education
2014

Centre Number	
71	

Candidate Number

Health and Social Care

Assessment Unit AS 14

assessing

Unit 14: Understanding Human Physiology

[A3H81]

TUESDAY 20 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 **2(a)**, **4(a)** 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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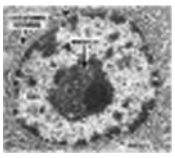
Examiner Only	
Marks	Remark

1 **(a)** The table below shows some of the organelles found in a human cell.

Complete the table by writing down the name and one function of each organelle.

Organelle	Name	Function
		
		
		
		

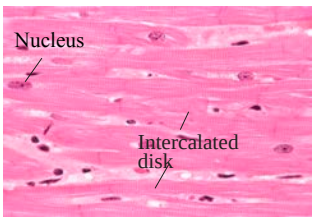
Adapted from É D. J. Taylor, N. P. O. Green, G. W. Stout, "Cells", R. Soper (ed.,), (1997), "Biological Science 1 and 2", (3rd edition), Cambridge : Cambridge University Press.

[8]

(b) The images below show the structure of different muscle types.

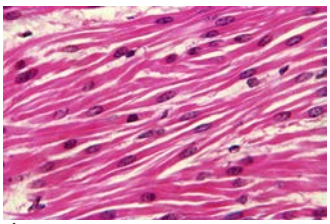
Write down the name of muscle types A, B and C.

A



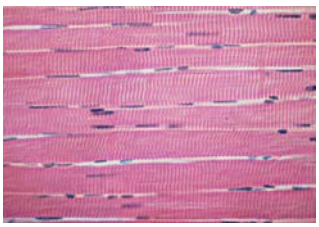
É Innerspace imaging / Science Photo Library

B



É Biophoto Associates / Science Photo Library

C



É Eric Grave / Science Photo Library

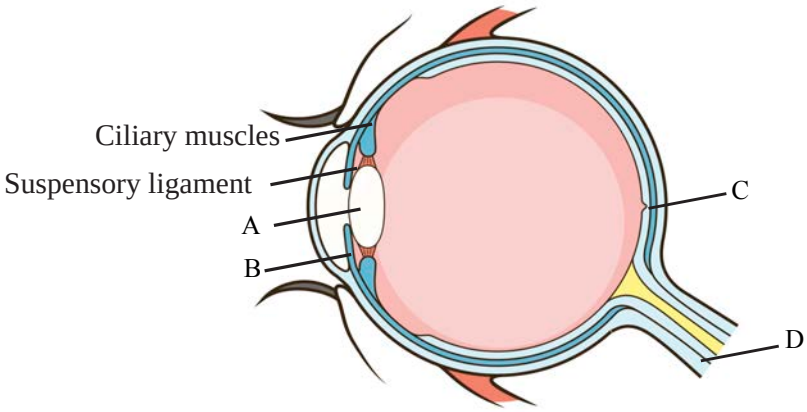
A _____ [1]

B _____ [1]

C _____ [1]

Examiner Only	
Marks	Remark

(c) The diagram below shows the structure of the eye.



(i) Write down the name and one function of parts 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]

(ii) The ciliary muscles and suspensory ligament, labelled in the diagram, are involved in the accommodation of light on the retina.

Circle the correct options in the boxes below to demonstrate your knowledge of accommodation.

When focusing on a near object the suspensory ligaments are

slack / taut and the ciliary muscles are **contracted / relaxed**

making the lens appear **thicker / thinner** .

[3]

(iii) Explain what is meant by the following terms.

Myopia _____

_____

_____

_____ [2]

Presbyopia _____

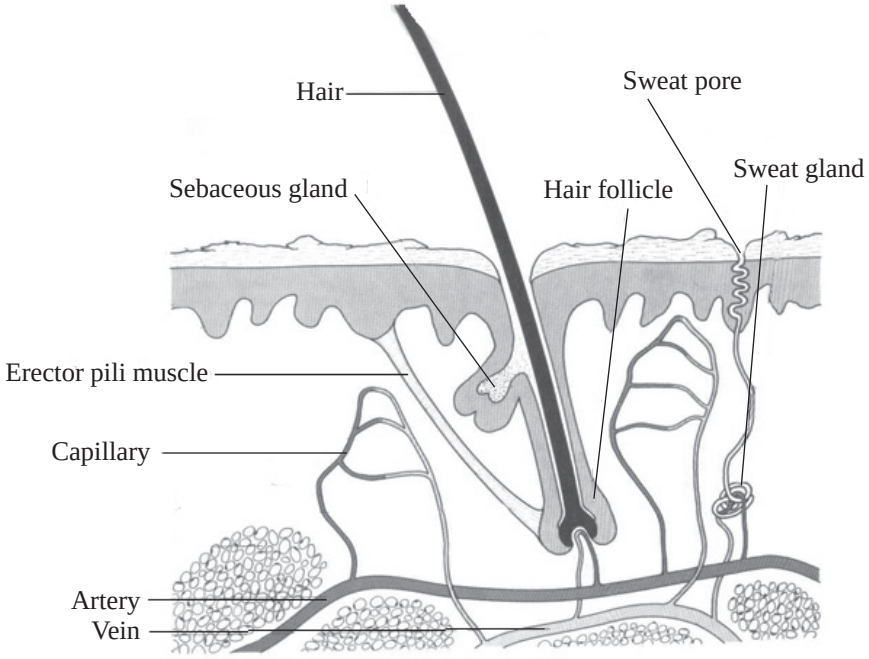
_____

_____

_____ [2]

Examiner Only	
Marks	Remark

2 The diagram below shows the structure of the skin.



(a) Use the diagram to discuss the role of the skin in controlling body temperature.

Examiner Only	
Marks	Remark

Examiner Only	
Marks	Remark

[9]

(b) Gita is eight months old and she often develops a high temperature which can be difficult to control. Her mother monitors her temperature regularly.

Examiner Only	
Marks	Remark

(i) Write down the normal range for body temperature.

_____ °C to _____ °C [2]

(ii) Explain why it can be more difficult for infants to control their body temperature.

_____

_____

_____

_____ [2]

(iii) Explain what is meant by the following terms.

Pyrexia _____

_____

_____

_____ [2]

Hypothermia _____

_____

_____

_____ [2]

Examiner Only	
Marks	Remark

3 (a) (i) The diagram below shows the structure of the brain.

On the diagram mark the position of the pituitary gland with an X.

[1]

(ii) Write down the name of the hormone released by the pituitary gland and the organ it reaches that is responsible for the homeostatic control of water content in the urine.

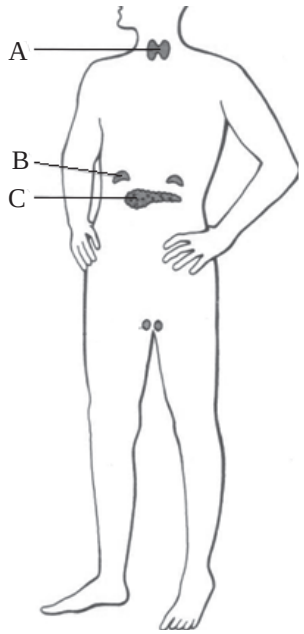
Hormone _____ [1]

Organ _____ [1]

Examiner Only	
Marks	Remark

(iii) The diagram below shows other glands found in the endocrine system.

Complete the table by identifying glands A, B and C and writing down the name of one hormone released by each.



Gland	Name	Hormone released
A		
B		
C		

[6]

(iv) Explain two ways the endocrine and nervous systems differ.

1. _____

_____

_____

_____ [2]

2. _____

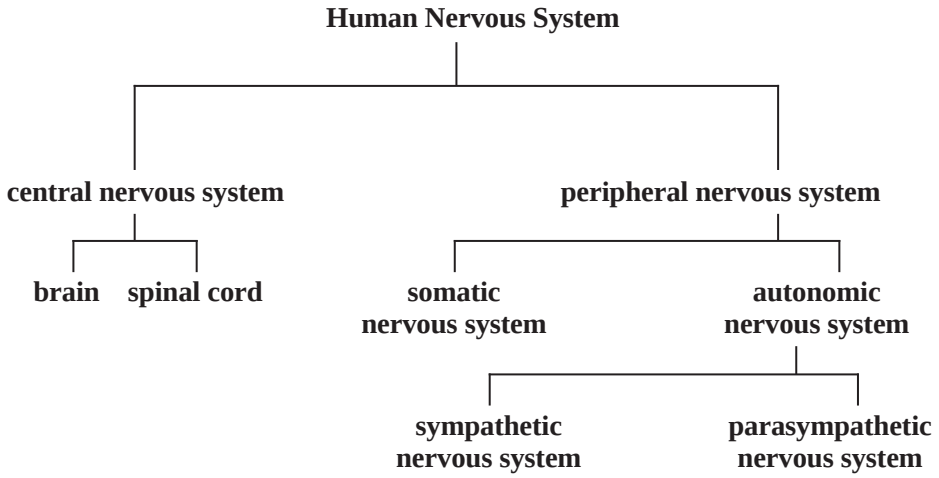
_____

_____

_____ [2]

Examiner Only	
Marks	Remark

(b) The diagram shows the organisation of the human nervous system.



(i) Discuss the role of the following parts of the nervous system.

The sympathetic nervous system

_____

_____

_____

_____

_____

_____ [3]

The parasympathetic nervous system

_____

_____

_____

_____

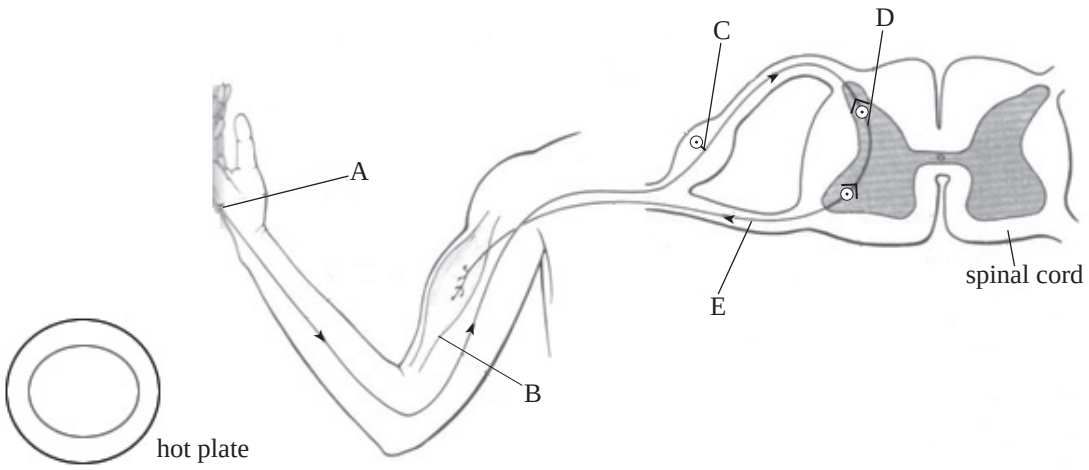
_____

_____ [3]

(ii) From the diagram above identify the part of the nervous system where reflex reactions occur.

_____ [1]

The diagram below shows a reflex arc.



(c) Use the letters in the diagram above to identify the following structures.

1. This neurone is found only in the central nervous system _____
[1]

2. This detects the stimulus of the hot plate _____
[1]

3. This neurone carries information to the central nervous system _____
[1]

4. This is called the effector _____
[1]

5. This is the motor neurone _____
[1]

Examiner Only	
Marks	Remark

(d) Multiple sclerosis (MS) is a disease which affects the central nervous system.

Describe the physiological process that leads to an individual developing MS.

[6]

Examiner Only	
Marks	Remark

4 **(a)** Discuss the normal mechanism for regulating blood glucose levels.

Examiner Only	
Marks	Remark

Examiner Only	
Marks	Remark

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____[9]

(b) Anya, aged 34, was diagnosed with Type I diabetes when she was 11. She has found it difficult to control her diabetes and as a result has developed renal failure.

Write down two symptoms of renal failure.

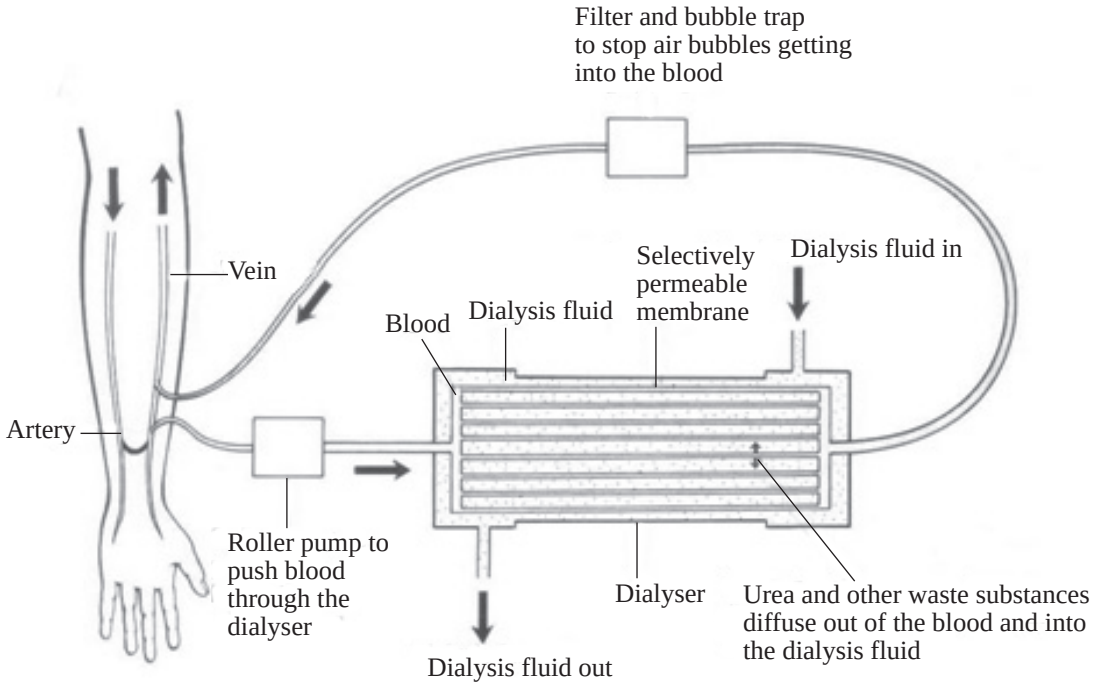
Symptom 1 _____ [1]

Symptom 2 _____ [1]

Examiner Only	
Marks	Remark

(c) As a result of renal failure, Anya has dialysis three times a week and each session lasts several hours.

The diagram below shows a dialysis machine which carries out the function of the kidney for Anya.



(i) Explain why there is a selectively permeable membrane in the dialysis machine.

_____

_____

_____

_____ [2]

(ii) Protein in the blood is not filtered out during dialysis. Write down why protein remains in the blood.

_____ [1]

(d) Anya, a hairdresser, is married with two young children and has recently moved away from her extended family in the city to live in the countryside with her husband and children. Anya's husband travels to work every day and he is away from early in the morning until late in the evening.

Analyse the potential impact of renal failure on Anya's lifestyle.

Examiner Only	
Marks	Remark

Examiner Only	
Marks	Remark

[12]

THIS IS THE END OF THE QUESTION PAPER