

**Paper Reference(s) 31493H**  
**Pearson BTEC Level 3**  
**Nationals Extended Diploma**  
**Health and Social Care**  
**Unit 3: Anatomy and Physiology for**  
**Health and Social Care**

**Wednesday 6 June 2018 – Morning**  
**Time: 1 hour 30 minutes plus your**  
**additional time allowance**

**INSTRUCTIONS TO CANDIDATES**  
**Write your centre number, learner**  
**registration number, surname, other**  
**names and your signature in the boxes**  
**below. Check that you have the correct**  
**question paper.**

|                                     |          |          |          |          |          |          |  |
|-------------------------------------|----------|----------|----------|----------|----------|----------|--|
| <b>Centre No.</b>                   |          |          |          |          |          |          |  |
| <b>Learner<br/>Registration No.</b> |          |          |          |          |          |          |  |
| <b>Surname</b>                      |          |          |          |          |          |          |  |
| <b>Other names</b>                  |          |          |          |          |          |          |  |
| <b>Signature</b>                    |          |          |          |          |          |          |  |
| <b>Paper Reference</b>              | <b>3</b> | <b>1</b> | <b>4</b> | <b>9</b> | <b>3</b> | <b>H</b> |  |

- **Use BLACK ink or ball-point pen.**
- **Answer ALL questions.**
- **Answer the questions in the spaces provided – there may be more space than you need.**

**MATERIALS REQUIRED FOR EXAMINATION**

**Calculator (optional)**

**ITEMS INCLUDED WITH QUESTION PAPERS**

**Nil**

**INFORMATION FOR CANDIDATES**

- **The total mark for this paper is 90.**
- **The marks for EACH question are shown in brackets – use this as a guide as to how much time to spend on each question.**
- **You may use a calculator.**

**(Instructions continue on next page)**

**(Turn over)**

**ADVICE TO CANDIDATES**

- **Read each question carefully before you start to answer it.**
- **Try to answer every question.**
- **Check your answers if you have time at the end.**

**Answer ALL questions. Write your answers in the spaces provided.**

**1 (a) (i) Define basal metabolic rate.  
(1 mark)**

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**(ii) State ONE function of  
adipose tissue. (1 mark)**

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**(Question continues on next page)**

**(Turn over)**

**(b) (i) Outline TWO different ways the body uses negative feedback to regulate body temperature. (4 marks)**

**1** \_\_\_\_\_

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\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**2** \_\_\_\_\_

\_\_\_\_\_

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**(Continue your answer on next page)**  
**(Turn over)**

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**(Question continues on next page)**

- (ii) Describe how the failure of homeostatic mechanisms can lead to hypothermia. (4 marks)**

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**(Continue your answer on next page)**

**(Turn over)**

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**(Total for Question 1 = 10 marks)**

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**(Questions continue on next page)**

**(Turn over)**



**2 (a) Explain how the nervous system controls involuntary activities in the body. (4 marks)**

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**(Question continues on next page)**  
**(Turn over)**

**(b) (i) State TWO symptoms  
of Parkinson's disease.  
(2 marks)**

**1** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**2** \_\_\_\_\_

\_\_\_\_\_

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**(Question continues on next page)**

**(Turn over)**

**(ii) Explain how Parkinson's disease causes symptoms.  
(4 marks)**

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**(Continue your answer on next page)  
(Turn over)**

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**(Total for Question 2 = 10 marks)**

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**(Questions continue on next page)**

**(Turn over)**

**3 (a) Describe meiosis. (4 marks)**

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**(Question continues on next page)**  
**(Turn over)**

**(b) Compare foetal development in the first and third trimesters of pregnancy. (4 marks)**

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**(Question continues on next page)**  
**(Turn over)**

**(c) Explain the role of the ovaries in controlling the menstrual cycle. (4 marks)**

[illegible]

**(Question continues on next page)**  
**(Turn over)**

**(d) Explain the symptoms and consequences of endometriosis. (6 marks)**

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**(Continue your answer on next page)**  
**(Turn over)**



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**(Total for Question 3 = 18 marks)**

**(Questions continue on next page)**

**(Turn over)**

- 4 (a) One function of the pituitary gland is to control growth.

Outline ONE OTHER function of the pituitary gland. (2 marks)

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(Question continues on next page)

(Turn over)

**(b) (i) Describe the ‘flight or fight’ response. (4 marks)**

[illegible]

**(Question continues on next page)**  
**(Turn over)**

**(ii) Explain the effects of hypothyroidism. (6 marks)**

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**(Turn over)**

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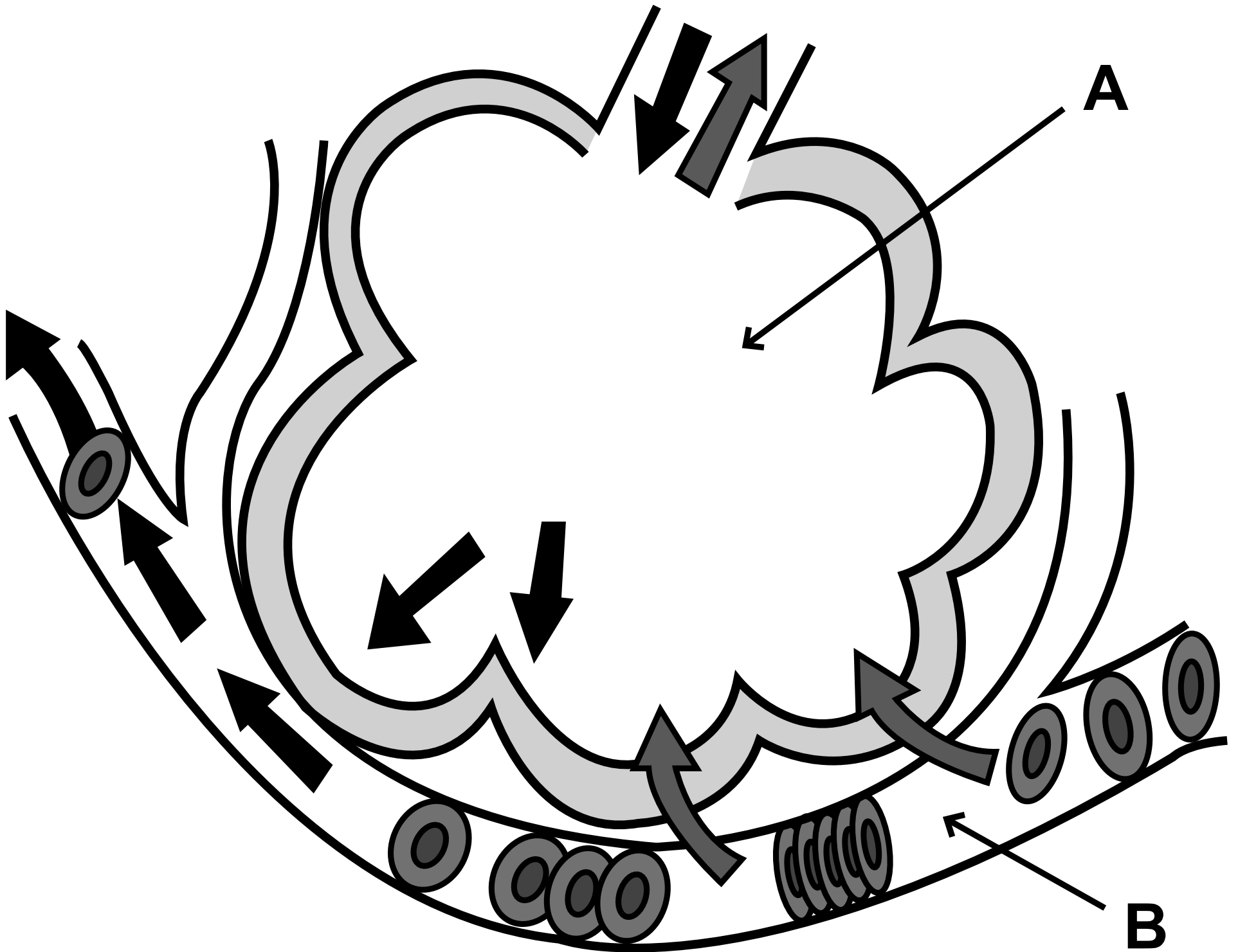
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**(Total for Question 4 = 12 marks)**

**(Questions continue on next page)**

The diagram shows gas exchange in the lungs.



(Question continues on next page)

(Turn over)

- 5 (a) (i) Outline the role of structures A and B in the diagram.  
(4 marks)**

**A**

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**B**

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**(Continue your answer on next page)**

**(Turn over)**

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**(Question continues on next page)**



**(ii) Describe ONE way the lungs are adapted for effective gas exchange. (2 marks)**

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**(Question continues on next page)**

**(Turn over)**

**(b) Explain TWO symptoms of chronic obstructive pulmonary disease. (4 marks)**

**1** \_\_\_\_\_

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**2** \_\_\_\_\_

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**(Continue your answer on next page)**

**(Turn over)**

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**(Question continues on next page)**

- (c) Discuss how the cardiovascular system enables effective oxygenation of the tissues.  
(8 marks)**

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**(Continue your answer on next page)**

**(Turn over)**

**(Continue your answer on next page)**  
**(Turn over)**

**(Question continues on next page)**  
**(Turn over)**

**(d) Compare aerobic and anaerobic respiration. (4 marks)**

[illegible]

**(Total for Question 5 = 22 marks)**

**(Questions continue on next page)**  
**(Turn over)**

## **Chronic Obstructive Pulmonary Disease (COPD) and Asthma in England**

**Chronic Obstructive Pulmonary Disease (COPD) is the fifth biggest killer disease in the UK, killing approximately 25,000 people a year in England. Premature mortality from COPD in England was almost twice as high as the European (EU-15) average in 2008 and premature mortality for asthma was over 1.5 times higher.**

**Although deaths from asthma have remained at between 1000 and 1200 deaths a year since 2000, it is estimated that 90% of deaths are associated with preventable factors. Almost 40% of these deaths are in the under 75 age group. Asthma is also responsible for large numbers of hospital admissions, the majority of which are emergency admissions.**

**(Questions continue on next page)**

**(Turn over)**



- 6 (a) (i) Compare the mortality statistics for COPD and asthma in the article above. (2 marks)**

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**(Question continues on next page)**

**(Turn over)**

**(ii) Explain the differences in incidences of COPD and asthma. (4 marks)**

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**(Turn over)**

**(b) When researching respiratory diseases, researchers use statistics to identify areas of interest.**

**Explain how statistics can be used for this. (4 marks)**

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**(Continue your answer on next page)**  
**(Turn over)**

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**(Question continues on next page)**

- (c) Cystic fibrosis is an inherited disorder that affects the lungs and other parts of the body. The parents of a person with cystic fibrosis may not have cystic fibrosis themselves.**

**Explain why, including a genetic diagram in your answer.  
(8 marks)**

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**(Continue your answer on next page)**

**(Turn over)**

**(Continue your answer on next page)**  
**(Turn over)**

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**(Total for Question 6 = 18 marks)**

**TOTAL FOR PAPER = 90 MARKS**

**END**