**Breathing System**

**Q 2017 15 a**

(i) Explain the term *homeostasis*.

1. Why is homeostasis important in the human body?
2. Describe in detail the process of inhalation.
3. Name a human breathing disorder.
4. State a cause **and** a treatment for the breathing disorder referred to in part (iv).

**Q 2014 12 b**

1. (i) Draw a large labelled diagram of the human breathing tract.

(ii) Outline the details of the process of inhalation. **(27)**

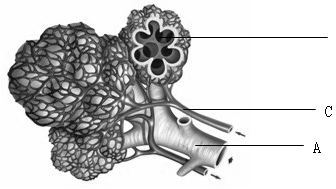
1. Answer the following questions in relation to carbon dioxide.
   1. Name a structure found in cells in which carbon dioxide is produced.
   2. Give a feature of a capillary which allows the rapid uptake of carbon dioxide.
   3. Carbon dioxide levels are usually higher in venous blood than in arterial blood. Why is this the case?
   4. Name a blood vessel which is an exception to the situation outlined in (iii) above. Give a reason for the exception.
   5. Briefly outline the role of carbon dioxide in the control of the human breathing rate. **(24)**

**MS 2014 12 b**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| (b) | (i) | Diagram showing: trachea, bronchus and bronchioles | | | **6, 3, 0** |
|  |  | Labels: trachea / cartilage / bronchi / bronchioles / alveoli | | | **3(1)** |
|  | (ii) | Brain sends message to muscles / intercostals contract / diaphragm | | |  |
|  |  | contracts / ribcage moves up **and** out / diaphragm moves down / | | |  |
|  |  | volume of thoracic cavity increases / pressure drops / air in | | | **6(3)** |
| (c) | (i) | \*Mitochondrion |  |  | **3** |
|  | (ii) | Wall one cell thick **or** thin wall |  |  | **3** |
|  | (iii) | Venous blood has collected CO2 / from respiration (or cells) / arterial | | |  |
|  |  | blood has been cleared of CO2 (in lungs) | | | **2(3)** |
|  | (iv) | Pulmonary Vein | **OR** | Pulmonary Artery | **3** |
|  |  | Blood has been cleared of CO2 |  | Brings CO2 rich blood |  |
|  |  | in the lungs |  | to the lungs | **3** |
|  | (v) | Medulla oblongata registers blood CO2 levels | | | **3** |
|  |  | More CO2 results in faster (breathing) | |  |  |
|  |  | **or** less CO2 results in slower (breathing) | | | **3** |

**Q 2009 13 c**

The diagram shows microscopic detail from a human lung.



1. Name the parts labelled A, B and C.
2. Give **two** features of the structures in the diagram that allow for efficient gas exchange.
3. Name a disorder of the breathing system and say how it may be:
   1. Caused.
   2. Prevented.

3.Treated.

1. Which gas, dissolved in the blood, can trigger deeper or faster breathing? **(24)**

**MS 2009 13 c**

|  |  |  |  |
| --- | --- | --- | --- |
| (c) | (i) | A = Bronchiole | **2** |
|  |  | B = Alveolus | **2** |
|  |  | C = Arteriole **or** Capillary | **2** |
|  | (ii) | Thin walled / moist surfaces / proximity (of alveoli and capillaries) / large surface area / large number (of alveoli or capillaries) | **Any two 2(3)** |
|  | (iii) | Named disorder | **3** |
|  | 1. Cause | **2** |
|  | 2. Preventation | **2** |
|  | 3. Treatment | **2** |
|  | (iv) | \*CO2 | **3** |

**Q 2007 13**

1. (a) (i) Name the blood vessel that returns blood to the heart from the lungs.

(ii) Name the main gas transported in the blood vessel that you have named in (i).

How is this gas transported? **(9)**

1. (i) Draw a large diagram of the human breathing system. Label the trachea, bronchus and lung.
2. State the function of the following: epiglottis, larynx.
3. Describe briefly the role of the diaphragm and intercostal muscles in inhalation.

In your answer refer to volume and thoracic air pressure. **(27)**

1. (i) Give **three** ways in which an alveolus is adapted for efficient gas exchange.
2. Name the process involved in the passage of gas between the alveolus and the blood.
3. Name a breathing disorder.
4. In the case of the breathing disorder that you have named in (iii) state:
   1. a cause,
   2. a means of prevention,
   3. a treatment. **(24**

**MS 2007 13 b**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Q 13.** | **(a)** | **(i)** | pulmonary vein\* | **3** |
|  |  | **(ii)** | oxygen\* | **3** |
|  |  |  | by (oxy)haemoglobin **or** by iron | **3** |
|  | **(b)** | **(i)** | diagram [*trachea, bronchus, alveoli, diaphragm or ribs*] *[any one missing 3 marks] labels* [*trachea, bronchus, lung]* | **6, 3, 0**  **3(1)** |
|  |  | **(ii)** | *epiglottis*: to close off trachea or described | **3** |
|  |  | **(iii)** | *larynx*: to make sound  diaphragm contracts / lowers / intercostal muscles contract / rib cage up/  #volume of chest (cavity) increased / #decreased pressure / air in / to | **3**  **#2(3)** |
|  |  |  | equalise pressure  [*# points compulsory*] | **2(3)** |
|  | **(c)** | **(i)** | capillary network / moist surface / thin walled / elastic wall [*allow* large surface area **or** one cell thick **or** thin membrane] | **3(3)** |
|  |  | **(ii)** | diffusion **or** passive transport | **3** |
|  |  | **(iii)** | asthma **or** bronchitis | **3** |
|  |  | **(iv)** | 1. *cause:* | **3** |
|  |  |  | 2. *prevention:* | **3** |
|  |  |  | 3. *treatment:* | **3** |