**13 Breathing - answers**

Self-assessment questions 13.02

**1** (a) Energy is obtained from food by a process called *respiration* (A).

 (b) The intake of oxygen and output of carbon dioxide at a respiratory surface is called

 *gaseous exchange* (B).

 (c) The process of renewing air in the lungs is called *ventilation* (C).

 (d) The processes B and C are included in the term ‘breathing’.

**2** From the nasal cavity the air would pass through the (pharynx, glottis), larynx, trachea, bronchi and bronchioles to reach the alveolus.

**3** The cartilage rings hold the air passages open.

**4** The lining of the air passages produces *mucus* which traps dust particles. *Cilia* in the lining flick to and fro to carry the mucus up and out of the passages.

**5** (b) When we inhale our diaphragm muscles contract and the ribs move up.

**6** Blood in the pulmonary artery will contain less oxygen and more carbon dioxide than blood in the pulmonary vein.

**7** Breathing becomes deeper and more rapid, thus exposing the capillaries to a greater volume of air in a given time.

**8** Exhaled air contains approximately 16% oxygen.

**9** (i) vital capacity: 5000 cm3, (ii) tidal Volume: 500 cm3, (iii) residual air: 1000 cm3.

**10** Four characteristics of an efficient respiratory surface are: thin epithelium, large surface area, abundant capillaries, ventilation mechanism.

**11** *Diffusion* is the process by which oxygen passes from the alveoli to the lung capillaries.

**12** (b)Tuberculosis and (d) colds are unlikely to be caused by smoking (but it doesn’t help).

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