

REVISION (6)

GRADE 8

CHAPTER

**RESPIRATION &
GAS EXCHNAGE**

PAPER (3)

Q1)

Fig. 3.1 shows structures in the human thorax.

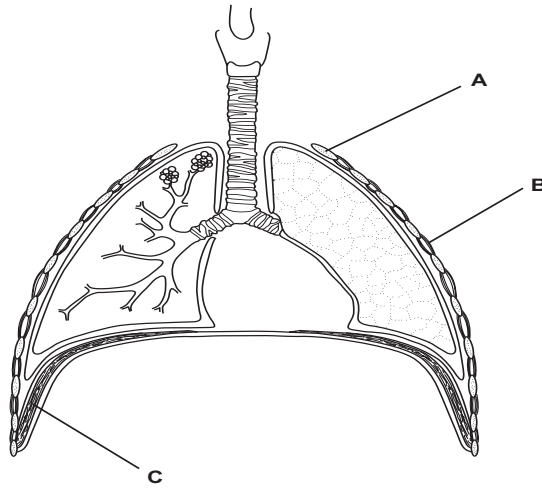


Fig. 3.1

(a) Complete the table by identifying parts **A**, **B** and **C** and describing their roles in breathing in.

part	name	role in breathing in
A
B
C

[6]

ANS)

part	name	role in breathing in
A ↑ ↓	ribs; Ⓐ rib cage	prevent collapse of thoracic cavity or lungs AW (as a result of pressure changes). move up to + increase volume/decrease pressure;
B	intercostal muscle;	contracts + to move ribcage up or out/to increase volume of chest cavity or lungs AW/decrease pressure;
C	diaphragm ;	contracts/moves downwards + to increase volume of chest cavity AW/decrease pressure

Fig. 3.2 shows some cells from the lining of the bronchus.

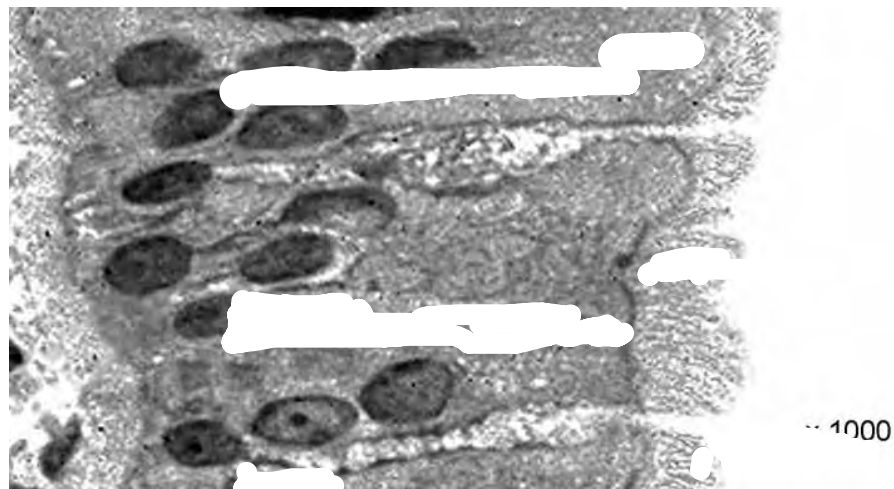


Fig. 3.2

(b) (i) Explain how these cells help to keep the bronchus free from dust and bacteria.

ANS)

The bronchus in the lungs are lined with hair-like projections called cilia that move microbes and debris up and out of the airways. Scattered throughout the cilia are goblet cells that secrete mucus which helps protect the lining of the bronchus and trap bacteria.

Q2)

Fig. 4.1 shows part of the human gas exchange system.

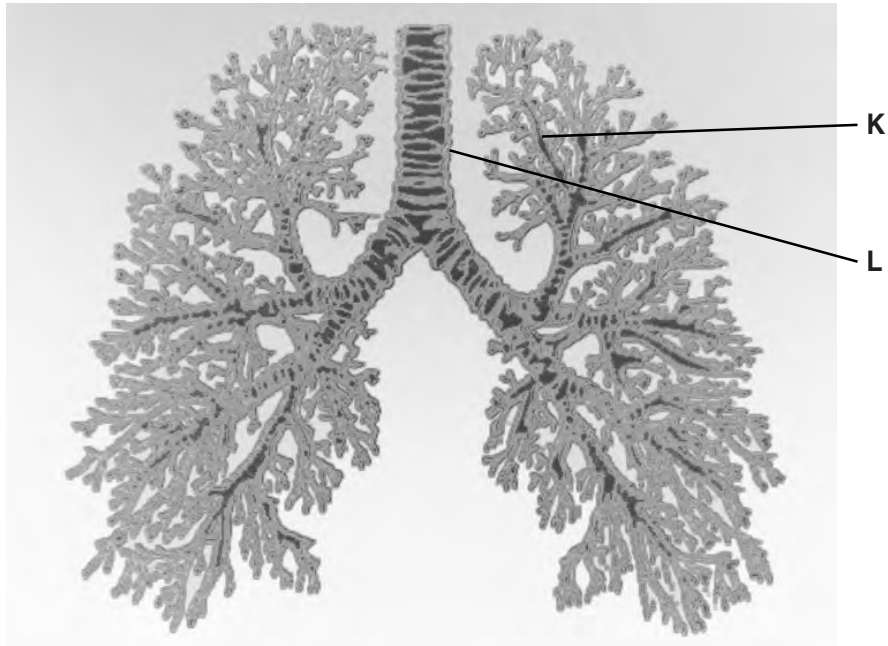


Fig. 4.1

(a) (i) Name structure K.

ANS) Bronchus / bronchioles

(ii) Ciliated cells and goblet cells line structure L.

Explain the function of these cells in structure L.

ANS) Goblet cells produce, mucus which traps, dirt / particles / pathogens and cilia beat the mucus up to & out of the mouth.

Gas exchange occurs at the alveoli.

(i) Describe how oxygen molecules move from the alveoli into the blood.

ANS) The transfer of oxygen into the blood is through simple diffusion. Across semi-permeable membrane oxygen moves from high concentration to low concentration from alveoli in to the blood where gas exchange takes place.

(ii) During inspiration, air moves from the atmosphere into the lungs.

Describe the mechanism of inspiration.

ANS) INSPIRATION

1)The internal intercostal muscles relax and the external intercostal muscles contract, pulling the ribcage upwards and outwards.

2) The diaphragm contracts, pulling downwards.

3) The volume in the thorax gets bigger, forcing the lungs to expand, and the air pressure inside decreases.

4) Air is pushed into the lungs.

(iii) Name **one** gas that is found in a higher concentration in expired air than in inspired air.

ANS) Carbon dioxide & water vapours.

(c) The gas exchange system contains cartilage.

Describe the function of cartilage in the gas exchange system.

ANS) The human respiratory system is adapted to allow air to pass in and out of the body, and for efficient gas exchange to happen.Rings of cartilage in the walls of the trachea help to keep it open as air is drawn in. They prevent the trachea from collapsing during absence of air and also protect it.

Q3)

Fig. 6.1 shows the movement of the ribs and the diaphragm during breathing in.

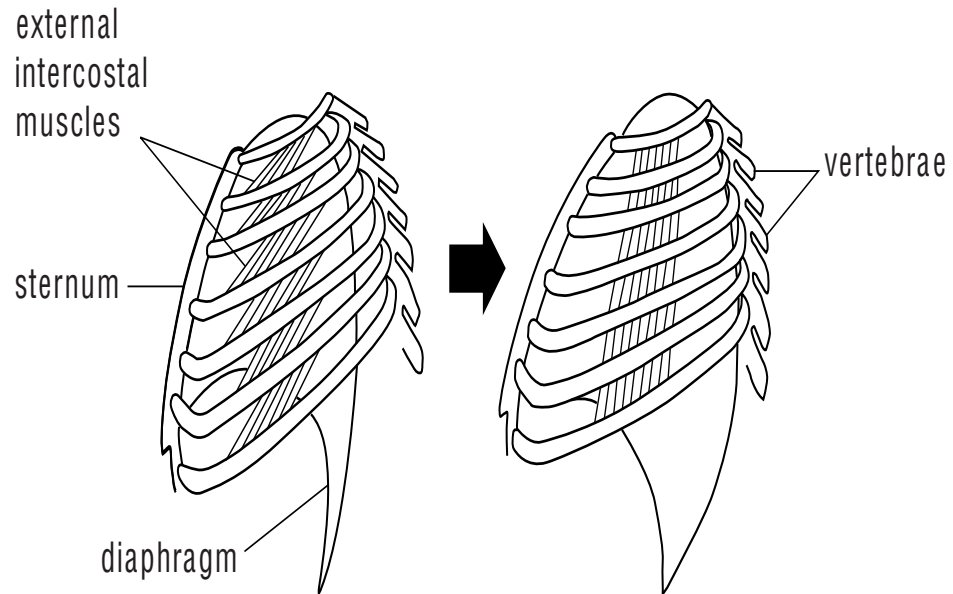


Fig. 6.1

(a) State what happens to the following structures during breathing in.

ANS) Diaphragm contracts and flattens.

Rib cage moves, upwards & outwards.

External intercostal muscles contract.

(b) Explain the effect of strenuous physical activity on the pH of the blood.

ANS)

1) pH of blood decreases.

2) Increased rate of aerobic respiration and more carbon dioxide released into blood plasma forms (carbonic) acid.

3) Anaerobic respiration occurs during strenuous exercise produced lactic acid.

Q4)

(a) Fig. 1.1 shows the human head, neck and thorax.

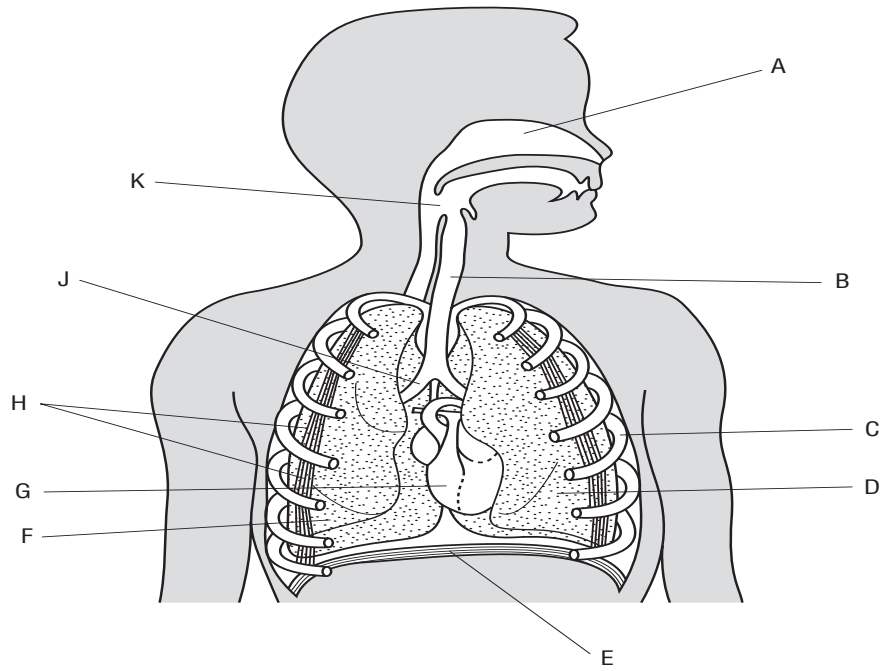


Fig. 1.1

Complete Table 1.1 by writing **one** letter from Fig. 1.1 to identify the named structures.

The first one has been done for you.

Table 1.1

structure	letter from Fig. 1.1
left lung	D
bronchus	
diaphragm	
intercostal muscle	
rib	
trachea	

[5]

ANS)

structure	letter from Fig. 1.1
left lung	D
bronchus	J
diaphragm	E
intercostal muscle	H
rib	C
trachea	B