



LIFE SCIENCES GRADE 11

PRACTICAL TASK 1.2

GASEOUS EXCHANGE

TIME: 30 MINUTES

MARKS

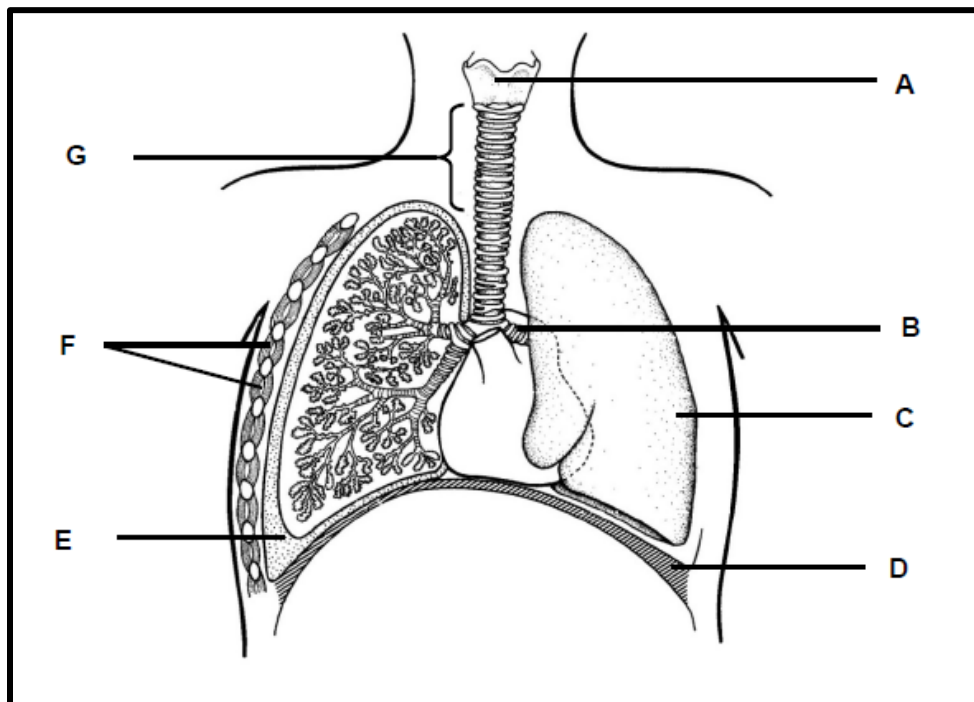
30

DATE: _____

Name: _____

QUESTION 1

1.1 The diagram below represents the respiratory system in humans.



1.1.1 Identify:

(a) Structure **A** (1)

(b) Air passage **B** (1)

1.1.2 State ONE function of each of the following:

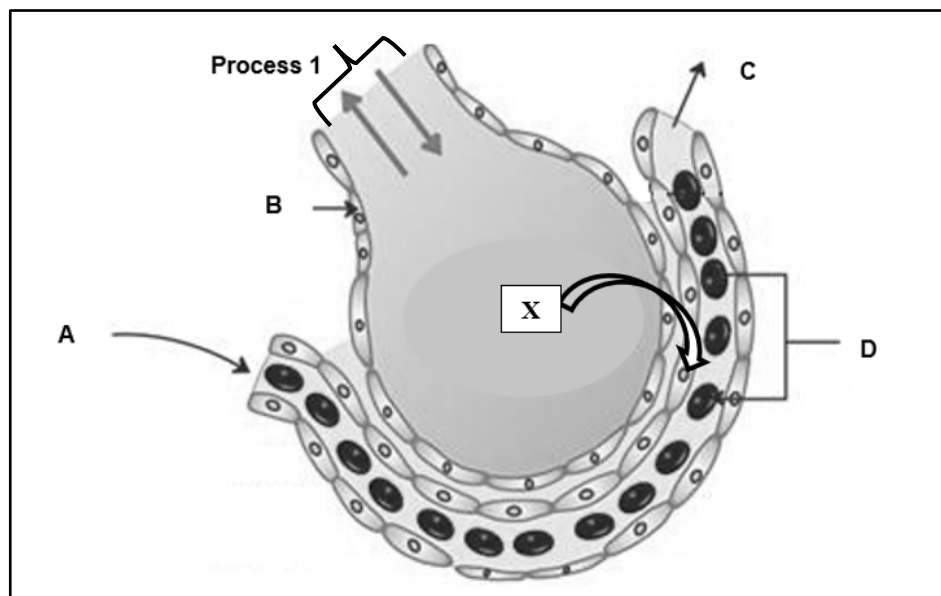
(a) The cartilaginous rings in part **G** (1)

(b) The epithelial tissue that lines the inside of part **G** (1)

1.1.3 Explain the effect that the changes in part **D** have on part **C** during inhalation. (4)

(8)

1.2 The diagram below shows a section through an alveolus.



1.2.1 Identify:

(a) Process 1 (1)

(b) Gas X (1)

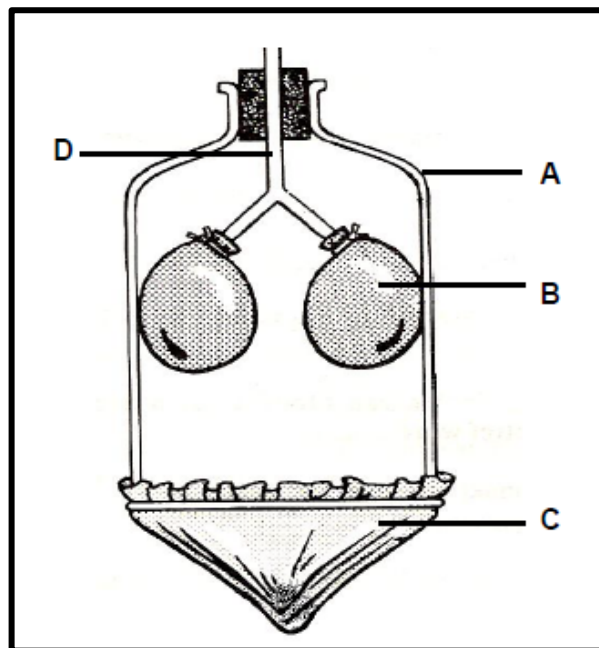
1.2.2 Name the main blood vessels that carry blood away from the lungs to the heart. (1)

1.2.3 Name THREE ways in which CO₂ is transported in blood. (3)

(6)

QUESTION 2

2.1 The diagram below demonstrates breathing in humans.



2.1.1 Which parts of the human respiratory system are represented by:

(a) B (1)

(b) **D** (1)

2.1.2 Give ONE reason why each of the following parts on the diagram will NOT allow the apparatus to function like the normal respiratory system:

(a) **A** (1)

(b) **C** (1)

2.1.3 Explain the effect on **B** if a hole of 2cm in diameter is made in **A**. (3)

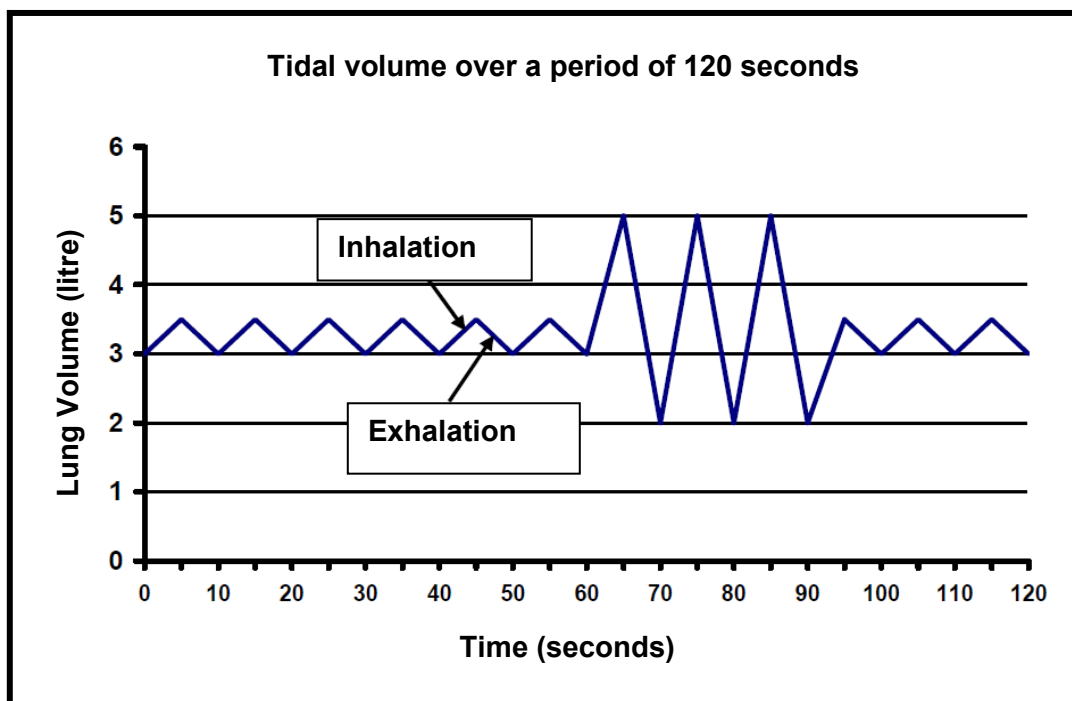
(7)

- 2.2 Lung capacity refers to the total volume of air that the lungs can accommodate. The human lung capacity is about 5 liters (5 000cm³).

The amount of air that is breathed in and out during normal breathing is called the tidal volume.

The depth of breathing can be determined before and after exercise, by measuring the tidal volume before and after exercise.

A spirometer is an instrument to measure the amount of air that enters and leaves the lungs during breathing. The graph below represents the results of an investigation where a spirometer was used to measure the tidal volume in a person.



- 2.2.1 How many times did this person inhale in the first 60 seconds? (1)

- 2.2.2 Calculate how much air were exhaled during ONE deep exhalation. Show all your calculations. (3)

2.2.3 What will happen to the rate of breathing during exercise? (1)

(5)

2.2.4 Composition of inhaled air in comparison with exhaled air.

COMPONENTS OF AIR	INHALED AIR	EXHALED AIR
Nitrogen	78%	78%
Oxygen	21%	15%
CO ₂	0.04%	4.04%

(a) Which component is of no use for the human body? (1)

(b) Explain why 0.04% carbon dioxide is inhaled, while 4.04% is exhaled. (3)

(4)

TOTAL: 30