SAFETY BAY
SENIOR HIGH SCHOOL

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YEAR: 11

SUBJECT: Human Biology ATAR Units 1 and 2

TEST: Respiratory, Circulatory, and Lymphatic Systems
TIME: 60 minutes
QUESTIONS: 20 Multiple Choice, 7 Short Answer, 1 Extended Answer
TOTAL MARKS: 70

DO NOT WRITE ON OR MARK THIS PAPER

SECTION ONE—MULTIPLE CHOICE (20 marks)

This section has **20** questions. Answer **all** questions on the separate Multiple-choice Answer Sheet provided.

Question 1
Windpipe is the common name for:

a) larynx
b) pharynx
c) trachea
d) Bronchi

Question 2
The correct sequence of structures through which oxygen would pass through the respiratory system is:

a) nasal cavity, trachea, larynx, pharynx, bronchi, bronchioles, alveoli
b) larynx, trachea, pharynx, bronchioles, alveoli, bronchi
c) bronchioles, bronchi, alveoli, nasal cavity, pharynx, larynx, trachea
d) nasal cavity, pharynx, larynx, trachea, bronchi, bronchioles, alveoli

Question 3
Ventilation is the process by which air is moved into and out of the lungs. Which of the following statements about the process is correct?

a) Air flows from places of higher pressure to places of lower pressure
b) Air pressures are always equal
c) Air flows from places of lower pressure to places of higher pressure
d) Air is released from the lungs into the heart

Question 4
When the volume of the thoracic cavity increases, the lungs expand, and air enters. What stops this process?

a) The intercostal muscles contract.
b) The pressure of the air inside the lungs and outside the body becomes equal.
c) The diaphragm relaxes.
d) The ribs descend.

Question 5
The lungs are well suited to gas exchange because:

a) they are small in size, there is little surface area for gaseous diffusion and each alveolus has restricted blood flow
b) they are found deep inside the body to reduce evaporation, have a large surface area for gaseous diffusion and each alveolus has is well supplied with blood
c) they are moist, have a small surface area for gaseous diffusion and blood flow changes depending on the amount of oxygen present
d) none of the above

Question 6

Table 7.1 Oxygen and carbon dioxide concentrations in expired and inspired air

	Inspired air	Expired air
Oxygen	20.95%	15.80%
Carbon dioxide	0.04%	4.30%

Note: The other 79% of the inspired air is made up mainly of nitrogen, with varying amounts of water vapour.

From this table it can be stated that from the total amount of oxygen inspired:

a) on average 25% remains in the body for use by cells
b) on average 15% remains in the body for use by cells
c) on average 30% remains in the body for use by cells
d) on average 20% remains in the body for use by cells

Question 7

Which of the following does not help to maintain the concentration gradients between the alveoli and capillaries?

a) combination of oxygen with haemoglobin in the red blood cells
b) the beating of the heart to maintain blood flow
c) continual movement of air through the bronchioles
d) accumulation of carbon dioxide within the alveolar sac

Question 8

Which of the following structures does not trap and remove particles from the respiratory track?

a) Tiny hair-like projections (cilia) on the cells that line the airway
b) Liquid layer of mucous that lines the airway
c) Lymphatic capillaries on the surface of the nasal cavity
d) Phagocytic cells on the alveolar surface.

Question 9

Which of the following is not a vasodilator?

a) Heat energy
b) Histamines
c) Carbon Dioxide
d) Oxygen

Question 10

One function of platelets is to:

a) assist in the clotting of blood
b) carry haemoglobin
c) ingest bacteria
d) transport carbon dioxide

Question 11
Erythrocytes primarily carry:

a) carbon dioxide
b) oxygen and carbon dioxide
c) oxygen
d) oxygen and nitrogen

Question 12
White blood cells (leucocytes) can be distinguished from red blood cells because they:

a) have a bi-concave shape
b) have a nucleus
c) contain haemoglobin
d) are smaller in size

Question 13
The presence of valves between the chambers of the heart ensures:

a) blood is maintained at a constant pressure
b) blood can move directly into the aorta
c) blood flow is restricted to one direction
d) all chambers of the heart can fill with blood simultaneously

Question 14
During the cardiac cycle the following events take place;

i. atrial systole
ii. diastole
iii. ventricular systole

In which order do the events occur?

a) atrial systole, diastole, ventricular systole
b) diastole, ventricular systole, diastole
c) ventricular systole, atrial systole, diastole
d) atrial systole, ventricular systole, diastole

Question 15
Which of the events above would blood pressure in the arteries be the highest and the lowest, respectively?

a) Atrial systole and diastole
b) Diastole and ventricular systole
c) Ventricular systole and diastole
d) Diastole and atrial systole

Question 16
In which of the following blood vessels would you expect blood pressure to be the highest?

a) vena cava
b) pulmonary artery
c) aorta
d) pulmonary vein

Question 17

Which of the following is not a mechanism for transporting carbon dioxide in the blood?

a) Dissolving in the plasma
b) As bicarbonate ions
c) Ingestion by lymphocytes
d) Binding to haemoglobin on erythrocytes

Question 18

The lymphatic system carries out each of the following functions except the:

a) transport of glucose substances from the blood to the cells
b) return of the fluid to the blood stream
c) removal of impurities from the lymph
d) involvement in immune response

Question 19

Pus is formed when special cells of the immune system enter a site of infection and ingest or engulf foreign matter. These cells are called:

a) thrombocytes
b) phagocytes
c) lymphocytes
d) antigens

Question 20

The lymphatic system consists of:

a) a network of lymph capillaries joined to lymph vessels and associated lymph nodes
b) circulatory capillaries and associated glands joined in a network
c) circulatory capillaries joined to the arterial and venous network
d) lymph vessels connected to circulatory capillaries and lymph nodes

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Respiratory, Circulatory, and Lymphatic Systems Test:
Human Biology Unit 1 and 2
2015
ANSWER BOOKLET

NAME: _____

FORM: _____ DATE: _____

Multiple Choice	Short Answer	Extended Answer	Total
/20	/40	/10	/70

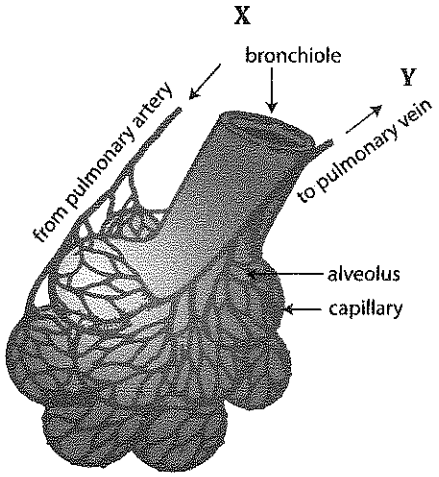
SECTION ONE: Multiple choice answers
Cross (X) through the correct answer.

1	a	b	c	d
2	a	b	c	d
3	a	b	c	d
4	a	b	c	d
5	a	b	c	d
6	a	b	c	d
7	a	b	c	d
8	a	b	c	d
9	a	b	c	d
10	a	b	c	d

11	a	b	c	d
12	a	b	c	d
13	a	b	c	d
14	a	b	c	d
15	a	b	c	d
16	a	b	c	d
17	a	b	c	d
18	a	b	c	d
19	a	b	c	d
20	a	b	c	d

SECTION TWO – SHORT ANSWER
Seven questions worth 40 marks
Complete all answers in wither blue or black pen.

Question 21
The diagram below represents a section of an alveolus and a capillary that surrounds it.



a) What happens to the blood as it moves from X to Y? (2 mark)

b) Describe two reasons why oxygen moves from the air space in the alveolus into the blood stream (2 marks)

c) List the special adaptations that an alveolus has to make it efficient in gas exchange.

(4 marks)

Question 22

Inspiration is the process of drawing air into the lungs. Explain how air is drawn into the lungs?

(4 marks)

Question 23

For each of the following, describe how its structure is related to its function.

Erythrocyte (3 marks)

Artery (3 marks)

Question 24

Describe the stages involved in the healing process that will occur when you cut yourself.

(3 marks)

Question 25

a) What is blood flow? (2 marks)

b) What changes occur in blood flow during exercise? (4 marks)

Question 26

a) Describe four differences between the circulatory system and the lymphatic system (2 marks)

b) Explain the role of a phagocyte and its importance in defence against foreign substances?
(4 marks)

Question 27

a) Complete the table below (4 marks)

Blood group	Genotype	Antigens present	Antibodies present
A	AO		
B	BO		
AB	AB		
O	OO		

b) Explain why red blood cells agglutinate during an unsuccessful blood transfusion.
(3 marks)

SECTION THREE – EXTENDED ANSWER

One question worth 10 marks
Answer question using blue or black pen and pencil for the diagrams.

Question 28

a) Explain how deoxygenated blood flows through your heart to become oxygenated and then how oxygenated blood leaves the heart to be transported around the body. Within your answer, explain the components that keep the blood flowing in its correct path. (7 marks)

b) The heart is a single organ but is referred to as a double pump. Explain why the heart is referred to as a double pump and its necessity to act as a double pump. (3 marks)