Candidate Number	Candidate Name

JUNIOR SECONDARY CERTIFICATE

LIFE SCIENCE 1220/1

WRITTEN PAPER 2 hours 15 minutes

Marks 130 **2018**

Additional Materials: Multiple-choice answer sheet
Non-programmable calculator
Soft clean eraser
Soft pencil (type B or HB)
Ruler

INSTRUCTIONS AND INFORMATION TO CANDIDATES

SECTION A

- Make sure that you receive the multiple-choice answer sheet with **your Candidate Number** on it to answer **Section A.**
- There are **thirty** questions.
- Answer **all** questions.

SECTION B

- Write your Candidate Number and Candidate Name in the spaces at the top of this page.
- Write your answers on the Question Paper in the spaces provided.
- Answer **all** questions.
- Write in dark blue or black pen.
- Use a pencil for diagrams, graphs or rough working.
- Do not use correction fluid.
- You may use a non-programmable calculator.
- The number of marks is given in brackets [ ] at the end of each question or part question.

For Examiner's Use	
Section B	
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
TOTAL	

Marker	
Checker	

This document consists of **26** printed pages.

Republic of Namibia

MINISTRY OF EDUCATION, ARTS AND CULTURE

[Turn over

SECTION A

- Answer **all** questions.
- For each question there are four possible answers, **A**, **B**, **C** and **D**. Choose the **one** you consider correct and record your choice in soft pencil on the multiple-choice answer sheet.
- If you want to change an answer, thoroughly erase the one you wish to delete.

---

1 Which cell type is directly affected by HIV?

A lymphocytes

B phagocytes

C platelets

D red-blood cells

2 What initially happens when HIV enters the body?

A HIV reproduces outside the host cell.

B Lymphocytes produce antibodies to HIV.

C Red blood cells carry more oxygen.

D The body's immune system becomes stronger.

3 ELISA is one of the tests used in Namibia to reveal one's HIV status.

What does this test detect?

A antibodies to HIV

B CD4 count

C HIV antigens

D viral nucleic acid

4 Which STD infects the urethra in males and the cervix in females?

A genital herpes

B gonorrhoea

C HIV

D syphilis

5 Tuberculosis is caused by

A a bacterium.

B a fungus.

C a protozoan.

D a virus.

6 A person may suffer from which condition as a result of the destruction of red blood cells by plasmodium?

A anaemia

B chicken pox

C polio

D thrush

7 The slow and gradual change in characteristics of species over a long period of time is called

A classification.

B evolution.

C mutation.

D variation.

8 Exposure to which pollutant reduces the amount of oxygen that the blood is able to carry?

A carbon monoxide

B dust particles

C nicotine

D tar

9 When exercising, an individual breathes faster in order to

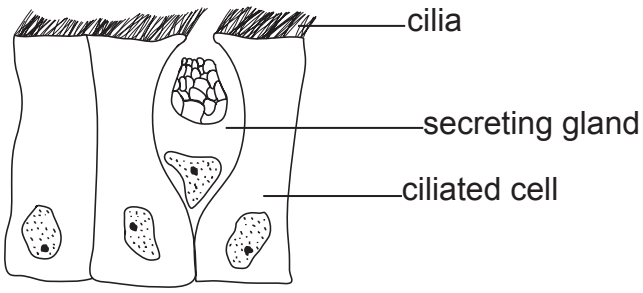
A digest more food.

B drink more water.

C take in more oxygen.

D take in more carbon dioxide.

10 The diagram below shows a ciliated glandular epithelial tissue.



In which parts of the respiratory system can this type of tissue be found?

A alveoli and diaphragm

B bronchi and trachea

C bronchioles and alveoli

D diaphragm and bronchi

11 The blood vessel best described as having a thick muscular and elastic wall, no valves and a small lumen is the

A aorta.

B capillary.

C pulmonary vein.

D vena cava.

12 Which organ pumps blood through the circulatory system?

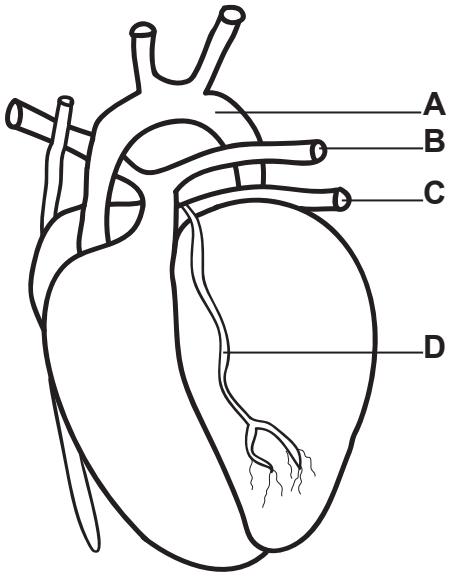
A brain

B heart

C lung

D skin

13 The diagram shows the external structure of the human heart.



Which of the labelled vessels supplies the heart muscles with oxygen and glucose?

14 Which component of the blood contains an iron-rich protein?

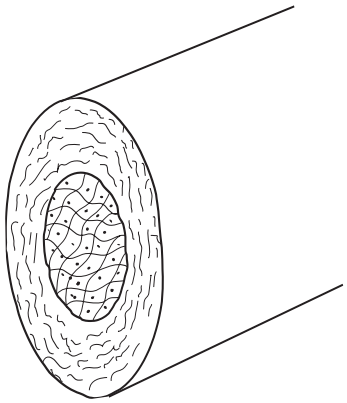
A plasma

B platelets

C red blood cells

D white blood cells

15 The diagram shows a portion of a blood vessel.



Is the vessels shown in the diagram a vein or an artery? The vessel is

A an artery because it has a large lumen.

B an artery because it has a thick wall.

C a vein because it has walls made of elastic fibres.

D a vein because it has valves along its length.

16 The change in pulse observed immediately following exercise is a result of

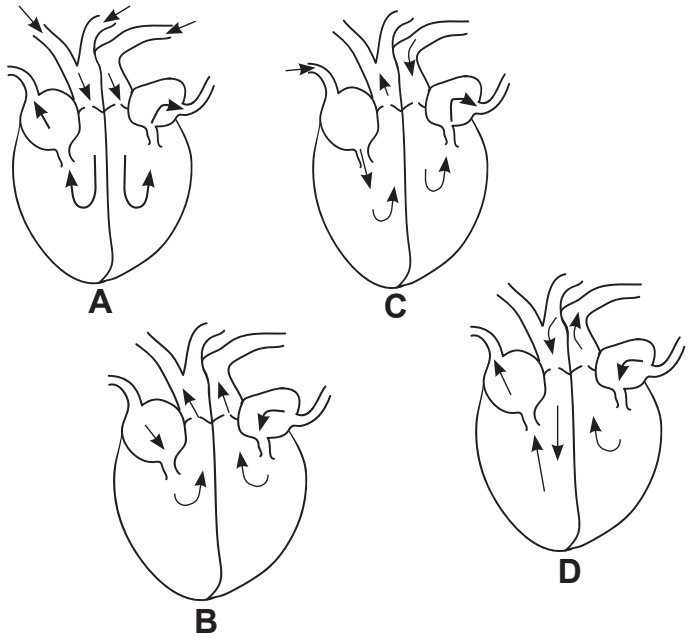
A decreased concentration of carbon dioxide.

B decreased demand for oxygen by muscles.

C increased blood volume.

D increased heart rate.

17 Which diagram correctly shows the flow of blood through the heart?



18 All of the following are excreted by the skin, **except**

A carbon dioxide.

B lactic acid.

C salt.

D water.

19 The tube that delivers urine from the kidney to the bladder is called the

A aorta.

B penis.

C ureter.

D urethra.

20 The sensory neurone receives nerve impulses from the

A brain.

B effector.

C receptor.

D spinal cord.

21 Which gland produces the growth hormone?

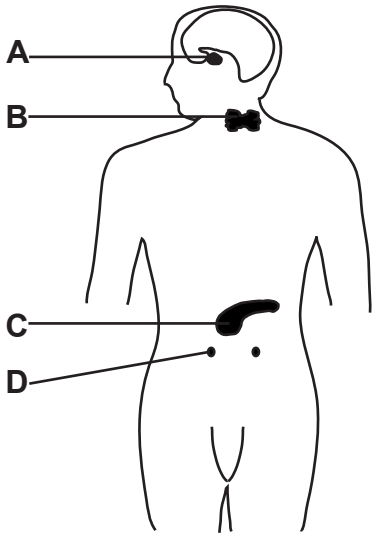
A adrenal

B pancreas

C pituitary

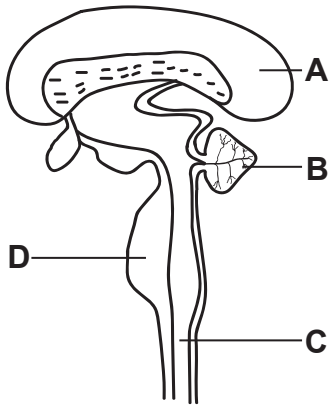
D thyroid

22 The diagram shows some of the endocrine glands in a human.



Which gland produces the hormone that controls the level of glucose in the blood?

23 The diagram shows the main parts of the human brain.



Which labelled part controls the heartbeat?

24 The human heart is composed primarily of what type of muscle?

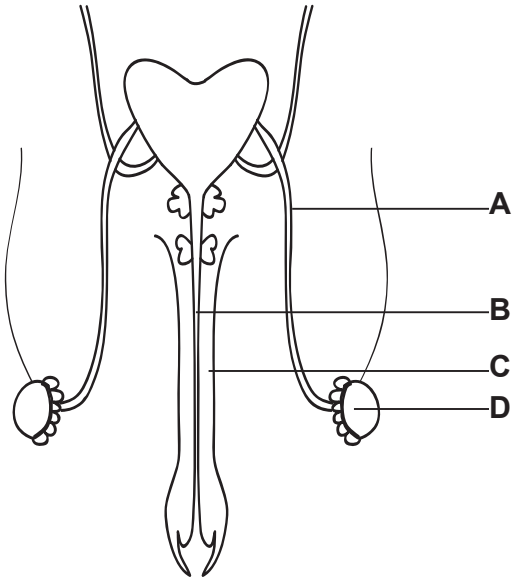
A antagonistic muscle

B cardiac muscle

C smooth muscle

D skeletal muscle

25 The diagram shows a cross-section of the male reproductive system.



Which labelled structure produces sperm and testosterone?

26 Which series correctly orders stages in the development of a foetus?

A conception; implantation; ovulation; zygote

B implantation; ovulation; zygote; conception

C ovulation; conception; zygote; implantation

D zygote; implantation; ovulation; conception

27 A fertilised egg is also known as

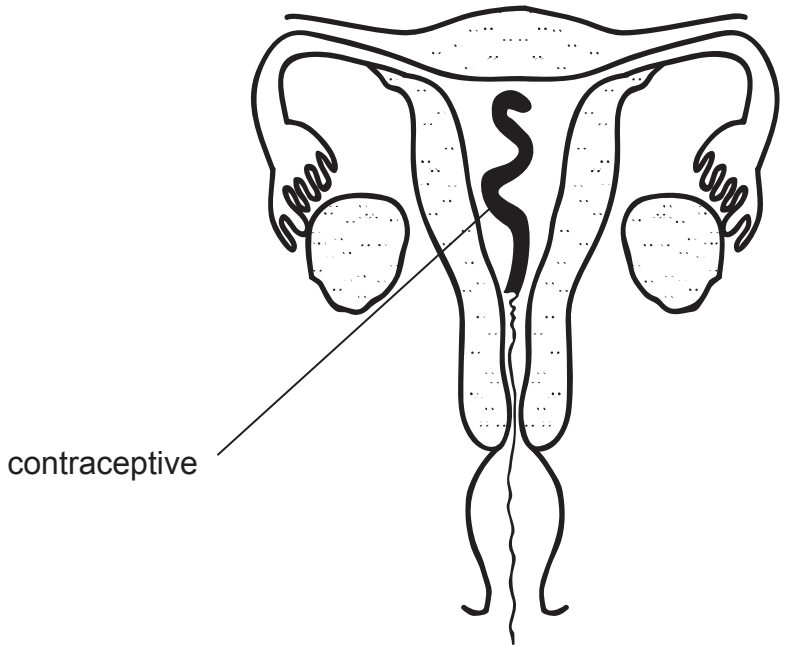
A a foetus.

B a zygote.

C an embryo.

D an ovum.

28 The diagram shows a type of contraceptive.



The contraceptive shown, works to prevent pregnancy by preventing

A fertilisation.

B implantation.

C menstruation.

D ovulation.

29 Inheritable mutations can result from exposure of sex organs to all of the following, **except**

A certain chemicals.

B gamma rays.

C sunshine.

D X-rays.

30 What is the process when heat from the sun is trapped within the earth's atmosphere called?

A combustion

B global warming

C greenhouse effect

D ozone depletion

SECTION B

For Examiner's Use

- Answer **all** the questions in Section B.
- Use a pencil when making drawings or drawing graphs.

1 Fig. 1.1 shows components of the immune system.

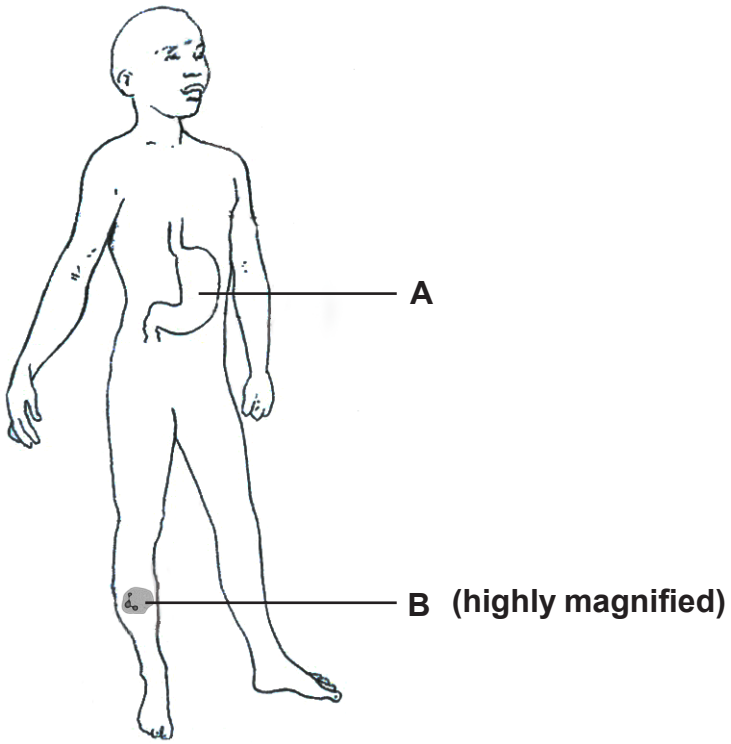


Fig. 1.1

(a) Identify component **A** of the immune system.

..... [1]

(b) Explain how the trachea and the skin protect the body against pathogens.

trachea .....

.....

skin.....

..... [2]

(c) Component **B** forms part of the human circulatory system.

Identify component **B**.

..... [1]

(d) The life cycle of a Plasmodium is described in Table 1.1.

Table 1.1

Events in the life cycle of a Plasmodium	number
• New Plasmodium parasites enter the blood.	
• An infected *Anopheles* mosquito bites the human and transmits the Plasmodium parasite.	
• Plasmodium parasite reproduces in the liver.	
• The *Anopheles* mosquito sucks in blood containing the Plasmodium parasite.	

Put the numbers 1- 4 next to the corresponding event, in order to reflect the correct order of events in the life cycle of a Plasmodium. [4]

(e) During an immunisation campaign babies are vaccinated against the polio virus.

(i) Describe the effects of this vaccine on the baby's immune system.

.....

..... [1]

(ii) State how this vaccine affects the baby's immunity to future exposure against polio.

.....

..... [1]

[10]

2 Fig. 2.1. shows the major levels of classification in their hierachical order.

For Examiner's Use

kingdom

phylum

class

.....

.....

genus

species

Fig. 2.1

(a) Complete Fig. 2.1 by filling in the missing levels. [2]

(b) Use the organisms listed below to construct a cladogram to show their relationships.

an owl, a chicken, a goat

[3]

For Examiner's Use

(c) Fig. 2.2 shows five types of insects. Use the key to identify them. Complete Table. 2.1.

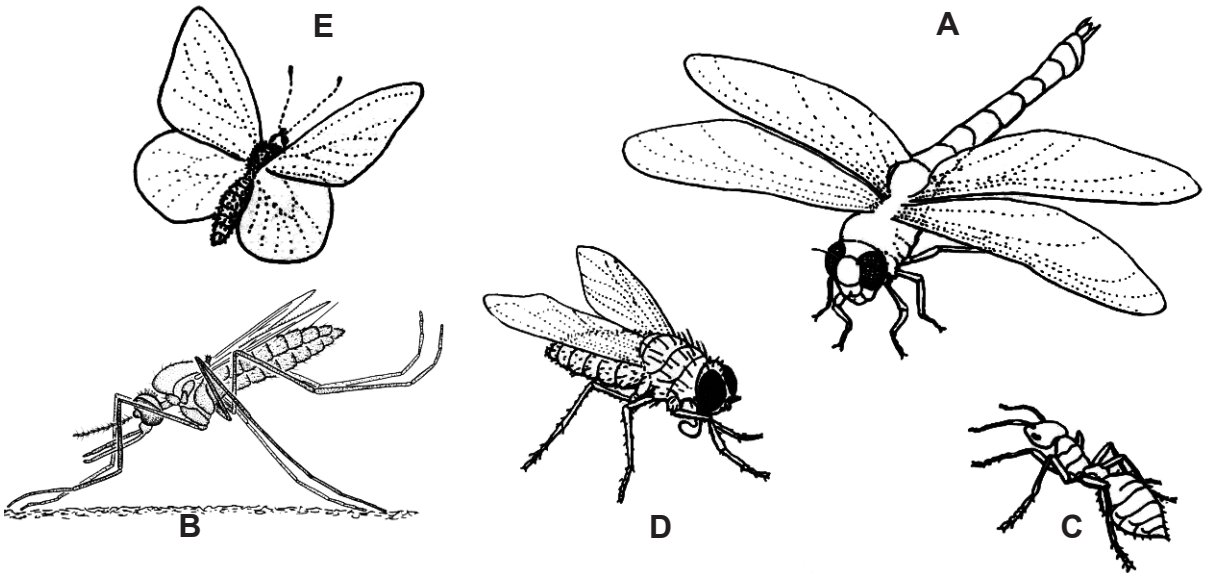


Fig. 2.2

1	(a)	wings present	go to 2
	(b)	wings absent	ant
2	(a)	has one pair of wings	go to 3
	(b)	has two pairs of wings	go to 4
3	(a)	legs not as long as body	housefly
	(b)	legs longer than body	mosquito
4	(a)	wings shorter	butterfly
	(b)	wings longer	dragonfly

Table 2.1

insect	name
A	
B	
C	
D	
E	

[5]

[10]

3 Fig. 3.1 shows a water snail.

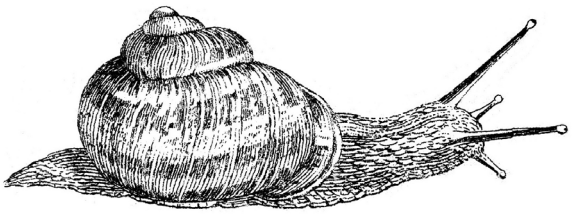


Fig. 3.1

(a) Draw an enlarged diagram of the water snail and label the antenna.

[3]

(b) Assuming that the actual size of the water snail is 33 mm and your drawing is 58 mm, calculate the magnification.

[2]

For Examiner's Use

(c) Organisms can either have prokaryotic or eukaryotic cells.

(i) Define the term *cell.*

.....

..... [1]

(ii) Compare **two** differences between prokaryotic and eukaryotic cells.

prokaryotic cells	**eukaryotic cells**
1	.....
.....	.....
2	.....
.....	.....

[2]

(d) Fig. 3.2. shows part of a cell.

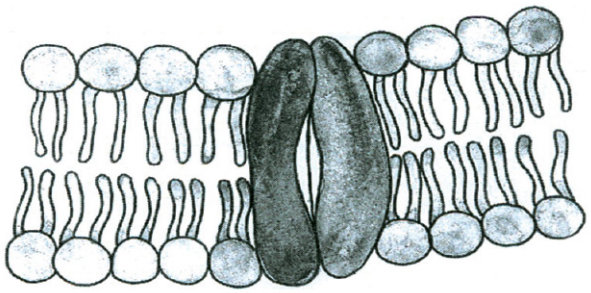


Fig. 3.2.

(i) Identify the structure shown in Fig. 3.2.

..... [1]

(ii) Underline the term which best describes the permeability of this structure.

fully **selectively** [1]

[10]

For Examiner's Use

4 Fig. 4.1 shows an experiment done by some Grade 10 learners. Two potato chips of the same size (10 cm long,1 cm broad and 1 cm wide) were placed into two different beakers.

Beaker **A** was filled with distilled water and beaker **B** was filled with a concentrated salt solution. The experiment was left for about 3 hours.

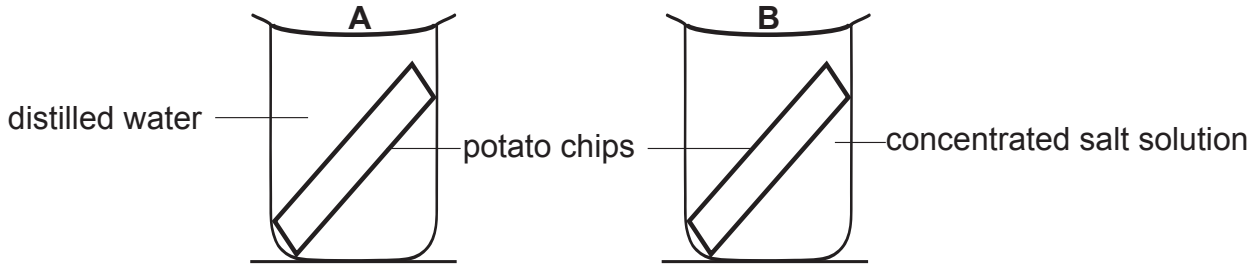


Fig. 4.1

(a) (i) Describe what happened to the size of the potato chips in beaker **A** and in beaker **B**.

A .....

.....

B .....

..... [2]

(ii) Explain what causes the changes you mentioned in **(a) (i)**.

A 1 .....

.....

2 .....

..... [2]

B 1 .....

.....

2 .....

..... [2]

(iii) Suggest what happened to the level of the water in beaker **A**.

.....

..... [1]

(iv) Name the process that has taken place in this experiment.

..... [1]

(v) State **two** significances of this process in organisms.

1.....

.....

2.....

..... [2]

[10]

5 Fig. 5.1 shows structural characteristics of monocotyledons and dicotyledons.

For Examiner's Use

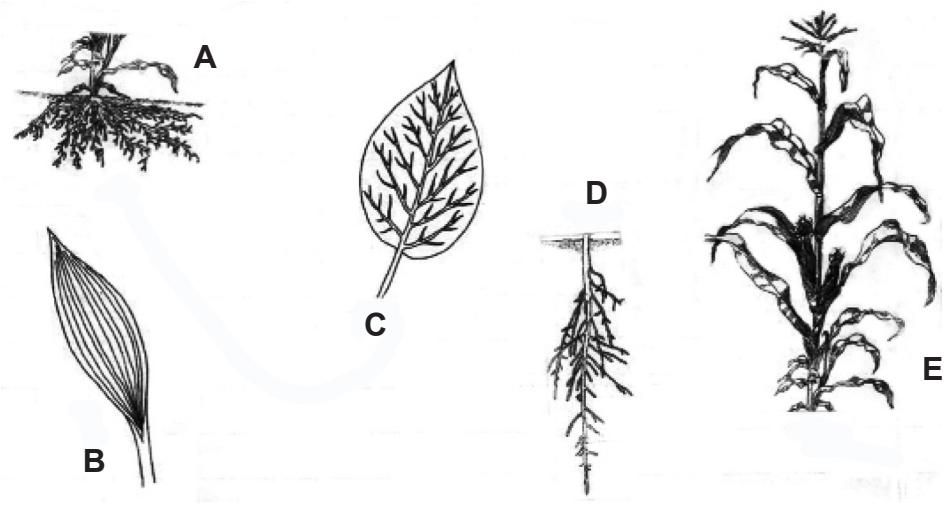


Fig. 5.1

(a) (i) Sort the features into the class to which they belong.

Record your answer in the table below. Write only the correct letters **A** - **E** in the appropriate column in Table 5.1.

Table 5.1

monocotyledons	dicotyledons

[5]

(ii) State the phylum to which monocotyledons and dicotyledons belong.

..... [1]

(b) Characteristics of organisms from various kingdoms are described.

State the kingdoms to which the organisms belong.

(i) They are made up of mycelium or hyphae.

..... [1]

(ii) They may have a backbone.

..... [1]

(iii) They have a cell wall made of chitin and have nuclei in their cells.

..... [1]

(iv) They are unicellular prokaryotes and cause diseases.

..... [1]

[10]

6 Fig. 6.1 shows different types of food.

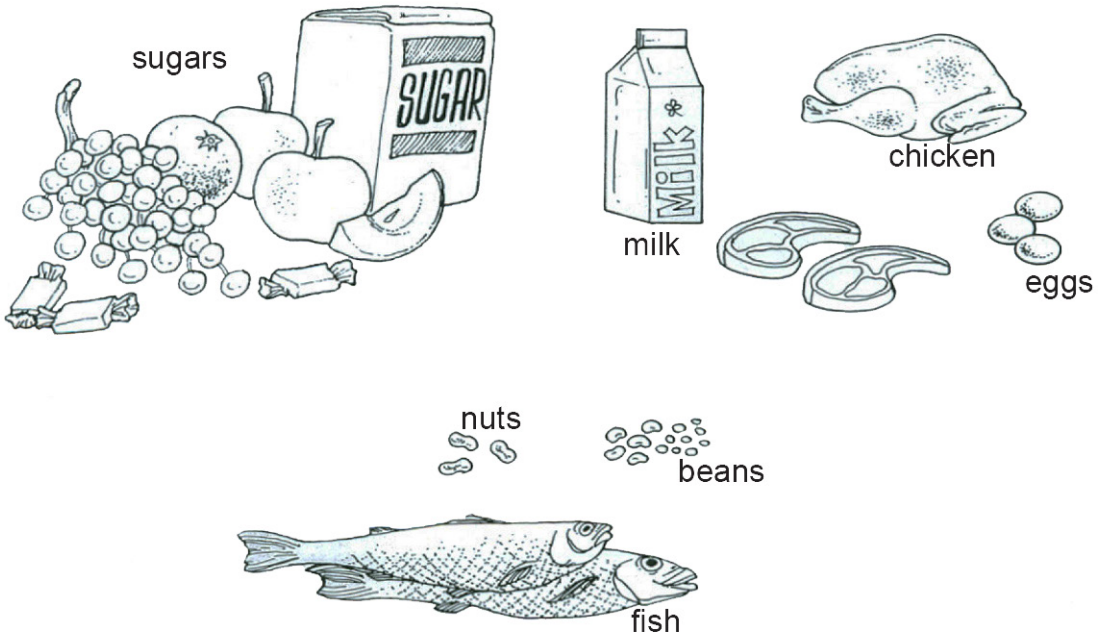


Fig. 6.1

(a) Name the sources of protein-rich food from Fig. 6.1 that are available to a vegetarian who

(i) will eat animal products but not meat itself.

..... [1]

(ii) will only eat plants and their products.

..... [1]

(b) Give **two** reasons why all diets must contain proteins.

1 .....

.....

2 .....

..... [2]

For Examiner's Use

(c) Suggest a diet that would meet the particular needs of a

(i) 2 year old child.

.....

..... [1]

(ii) male athlete.

.....

..... [1]

(d) Fig. 6.2 shows a person suffering from a deficiency disease common in humans.

Fig. 6.2

(i) Identify the disease.

..... [1]

(ii) Name the mineral that is lacking in the diet of this person.

..... [1]

(iii) State **two** ways in which this disease can be prevented.

1 .....

.....

2 .....

..... [2]

[10]

7 Fig. 7.1. shows part of the human respiratory system.

For Examiner's Use

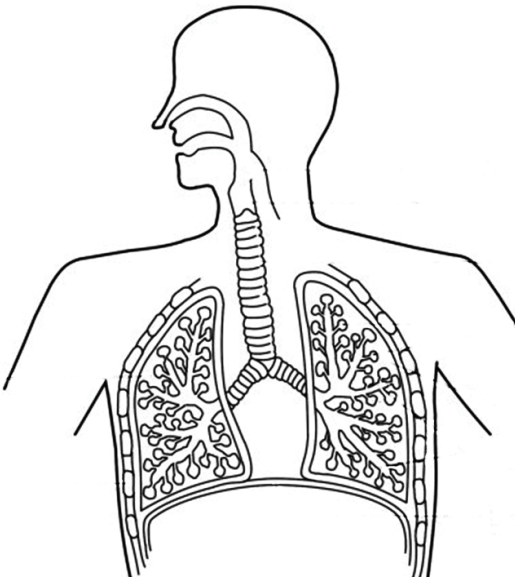


Fig. 7.1

(a) (i) **On Fig. 7.1** draw one label line and label the bronchus. [1]

(ii) Explain the role of the cartilage in the trachea.

.....

..... [1]

Fig. 7.2 shows an alveolus.

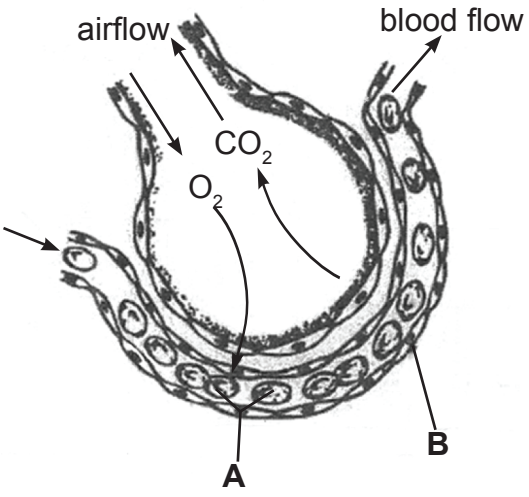


Fig. 7.2

(b) (i) Identify cell **A** and blood vessel **B**.

cell **A**.....

blood vessel **B** ..... [2]

For Examiner's Use

(ii) Name the process by which gases move in and out of the blood.

..... [1]

(c) Gaseous exchange structures in mammals are lungs.
State and discuss the significance of four features of gaseous exchange structures in animals for the maintenance of life.

1 .....

.....

2 .....

.....

3 .....

.....

4 .....

..... [4]

(d) Name **one** effect of cigarette smoke on the respiratory system.

.....

..... [1]

[10]

8 Fig. 8.1 shows stages leading to pregnancy.

For Examiner's Use

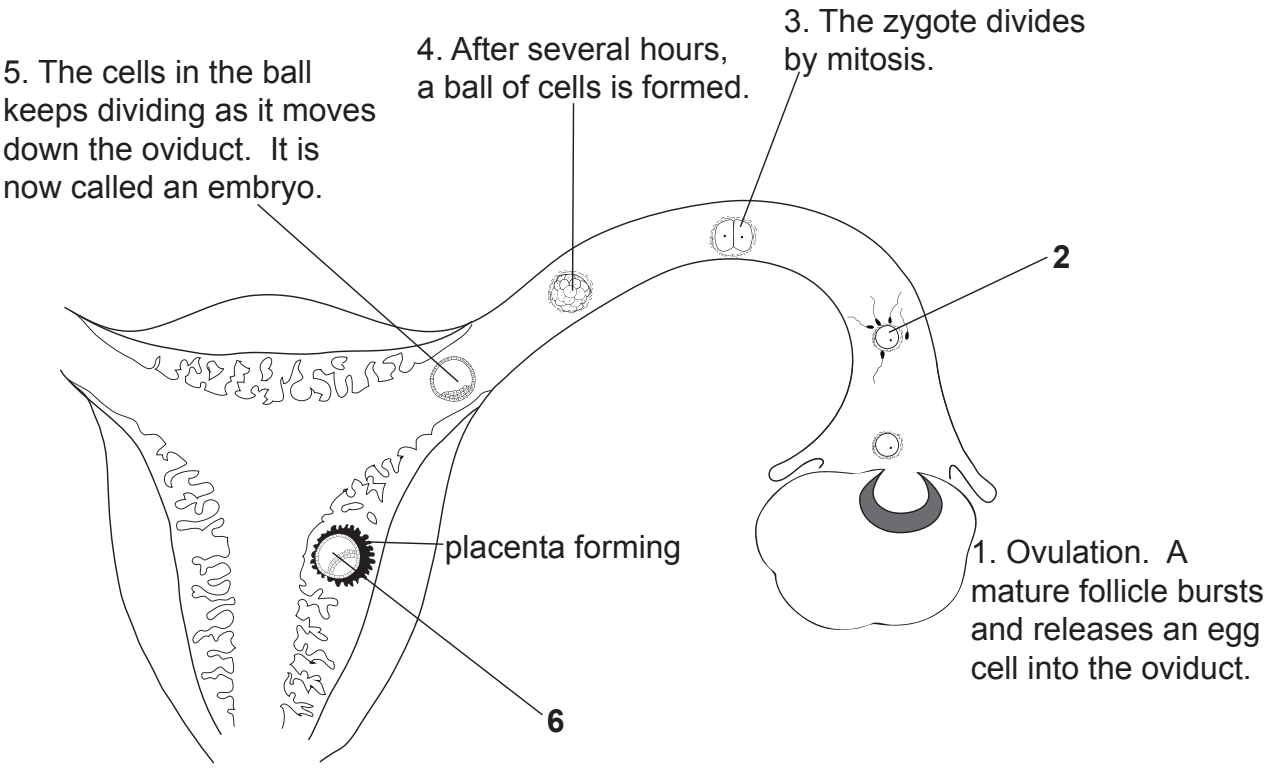


Fig. 8.1

(a) (i) Name and describe the process taking place at stage **2**.

name ..... [1]

description .....

.....

.....

..... [2]

(ii) Identify the process taking place at stage **6**.

..... [1]

(b) Discuss **two** functions of the uterus in the development of the foetus.

1 .....

.....

2 .....

..... [2]

(c) Discuss **two** advantages of family planning.

1 .....

.....

2 .....

..... [2]

(d) Name **one** argument that supports the legalisation of abortion.

.....

..... [1]

(e) Fig. 8.2 shows the major glands in the human body.

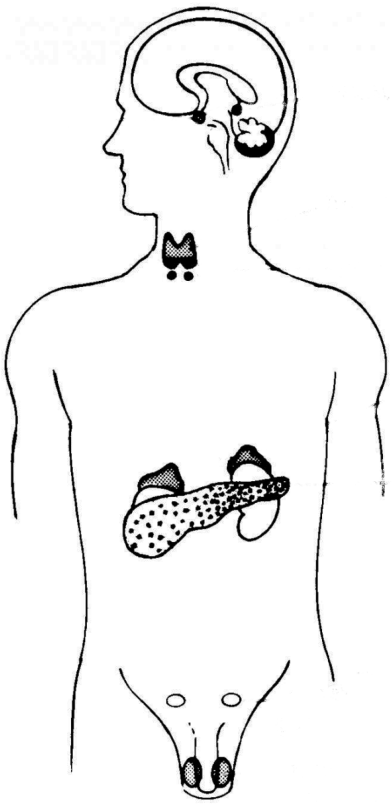


Fig. 8.2

Draw a label line to the gland that produces the female sex hormones and name the gland. [1]

[10]

For Examiner's Use

9 (a) Define the term *chromosome*.

.....

..... [1]

(b) Explain, with the aid of a simple diagram, (**a genetic diagram** with **labels**) how sex chromosomes determine the sex of mammals.

In your answer show what happens to the sex chromosomes when the sex cells are formed.

[4]

(c) Distinguish clearly between the terms dominant and recessive.

.....

.....

.....

..... [2]

(d) The inheritance of blood groups in humans is an example of a variation caused by co-dominant genes.

(i) What is meant by the term co-dominance?

.....

.....

.....

..... [2]

(ii) Which blood group is a result of co-dominant genes in humans?

.....

..... [1]

[10]

For Examiner's Use

10 The combustion of wood, petroleum and natural gas are activities occurring on a daily basis.

(a) (i) Name the main gas produced during the combustion process.

..... [1]

(ii) State the process that increases temperatures worldwide as a result of an increase in the gas mentioned in **(a) (i)**.

..... [1]

(b) Human activities can damage the ozone layer, which causes UV-rays to reach the earth.

(i) State the name of the gas that can deplete the ozone layer.

..... [1]

(ii) List **two** items whose use can release this gas into the atmosphere.

1 .....

2 ..... [2]

(iii) Describe how the gas mentioned in **(b) (i)** depletes the ozone layer.

.....

.....

.....

.....

.....

..... [3]

(iv) Explain **two** importances of the ozone layer.

1.....

.....

2.....

..... [2]

[10]