Candidate Number	Candidate Name

JUNIOR SECONDARY CERTIFICATE

LIFE SCIENCE 1220/1

WRITTEN PAPER 2 hours 15 minutes

Marks 130 **2019**

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 **25** printed pages.

Republic of Namibia

MINISTRY OF EDUCATION, ARTS AND CULTURE

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.

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1 In which way can STDs be prevented.

A having more than one sexual partner

B sterilisation

C using a condom during sexual intercourse

D using oral contraceptives

2 The symptom of gonorrhea in male is

A blisters around the genitals.

B a burning sensation when urinating.

C fever and rash on the body.

D hard red ulcers around the genitals

3 Which STD infection in women can result in the baby being born blind?

A AIDS

B gonorrhoea

C herpers

D syphillis

4 How is the malaria parasite transmitted to humans?

A by close contact with a person infected with malaria

B by drinking water infected with the parasite

C by eating food contaminated with mosquito saliva

D by mosquito saliva entering the bloodstream

5 On a microscope the eye piece shows 10x and the objective lens 60x.

What will be the total magnification of an object viewed through this microscope?

A x10

B x60

C x70

D x600

6 Which is the largest group used in biological classification?

A class

B family

C kingdom

D species

7 The scientific name of a tree is a *Acacia erioloba*.

To which species does it belong?

A erioloba

B Acacia

C Erioloba

D acacia

8 At which level of organisation is the heart?

A cell

B organ

C organ system

D tissue

9 What is the movement of water molecules through a partially permeable membrane called?

A active transport

B diffusion

C osmosis

D transpiration

10 Which structures do a liver cell, white blood cell, palisade cell and a sperm cell have in common?

A cell membrane and cell wall

B cell membrane and nucleus

C chloroplast and cell wall

D chloroplast and nucleus

11 Which two cells are modified to increase absorption?

A red blood cell and root hair cell

B root hair cell and white blood cell

C white blood cell and muscle cell

D muscle cell and root hair cell

12 Which list represents **four** different organ systems?

A heart, lung, liver, brain

B nose, trachea, bronchi, lungs

C spinal cord, brain, nerves, skin

D testis, urethra, kidney, bladder

13 Which factor does **not** affect the rate of diffusion?

A air currents

B surface area

C temperature

D water

14 Feathers, wings, two legs with scales on legs are some external features of a bird.

Which feature can also be found in fish and reptiles?

A feathers

B scales

C two legs

D wings

15 The characteristic features of four vertebrates are give below in a table.

vertebrate	feature			
	scales	lay eggs	wings	hair
A	✓	✓	X	X
B	X	✓	X	X
C	X	✓	✓	X
D	X	X	X	✓

Key

✓ feature present

X feature absent

Which vertebrate is a mammal?

16 Which is a feature of all monocotyledenous plants?

A each leaf has only one vein

B each stem has one flower

C their seeds have one leaf

D the plant lives for one year only

17 An organism has a vertebral column, four limbs, moist skin and no scales.

To which group does it belong?

A amphibians

B annelids

C fishes

D reptiles

18 What are the basic units of glycogen, protein and starch?

	glycogen	protein	starch
A	amino acids	simple sugars	fatty acids
B	fatty acids	simple sugars	simple sugars
C	simple sugars	amino acids	simple sugars
D	simple sugars	fatty acids	amino acids

19 Which mineral generally obtained from the soil, do plants need to make proteins?

A carbon

B hydrogen

C nitrogen

D oxygen

20 Which deficiency disease will result from a lack of vitamin C in the human diet?

A anaemia

B marasmus

C rickets

D scurvy

21 The numbered parts belong to the respiratory system

1. alveoli

2. bronchi

3. trachea

4. bronchioles

In which order does air pass through these organs?

A 1 2 3 4

B 1 4 2 3

C 3 2 4 1

D 3 4 2 1

22 Why are all gaseous exchange surfaces moist?

A concentration gradients occur only in liquids

B gases dissolve before diffusing across the surfaces

C gases move across the surfaces by osmosis

D molecules cannot diffuse in air

23 The table shows changes in heart rate and in the volume of blood pumped per beat of an adult man while resting and during vigorous exercise.

adult man	**heart rate/beats per minute**	**volume of blood pumped per beat/dm^3**
resting	50	50
exercising	200	75

Compared with when he was resting, by how much was the volume of blood passing through his heart per minute increased during exercise?

A 1.5 times

B 3 times

C 4 times

D 6 times

24 Which part of the urinary system stores urine?

A bladder

B kidney

C ureter

D urethra

25 A person stands on a pin. In which order do motor, sensory and relay neurones become active?

A motor neurone → sensory neurone → relay neurone

B motor neurone → relay neurone → sensory neurone

C sensory neurone → motor neurone → relay neurone

D sensory neurone → relay neurone → motor neurone

26 Which gland produces adrenaline?

A adrenal

B ovary

C pituitary

D thyroid

27 Which process will take place normally on the 14th day of menstrual cycle?

A fertilisation
B implantation
C menstruation
D ovulation

28 Which method of family planning prevents ovulation by using hormones?

A diaphragm with spermicide
B femidom
C oral contraceptive pill
D condom

29 What determines the sex of a child?

A age of the mother
B chromosome content of the gametes
C diet of the mother during pregnancy
D number of days between ovulation

30 What is always found in female gametes and may be found in male gametes?

A one X chromosome
B one Y chromosome
C two X chromosome
D one X and one Y chromosome

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 the human male excretory and reproductive systems.

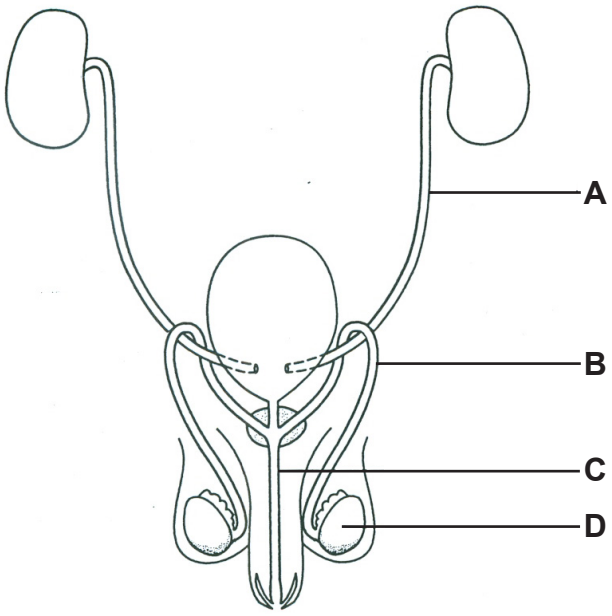


Fig. 1. 1

(i) Name the parts labelled **A**, **B** and **C**.

A .....

B .....

C ..... [3]

(ii) State **two** functions of **D**.

1 .....

2 ..... [2]

For Examiner's Use

(b) Syphilis is a disease that can affect the male reproductive system.

(i) State **one** symptom and **one** effect of syphilis.

symptom .....

effect ..... [2]

(ii) State **one** way in which syphilis can be treated.

.....

..... [1]

(iii) Explain what causes syphilis and how it is transmitted.

.....

.....

.....

..... [2]

[10]

For Examiner's Use

2 (a) Fig. 2.1 can be used to identify the main classes of vertebrates.

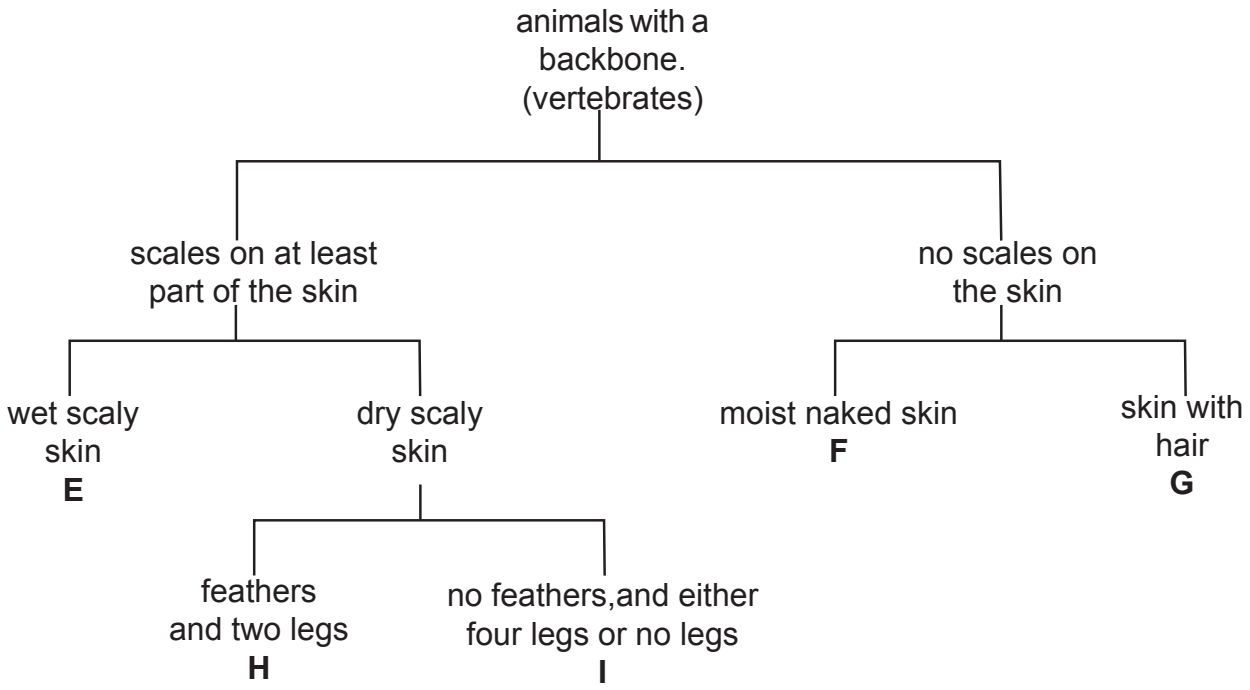


Fig. 2.1

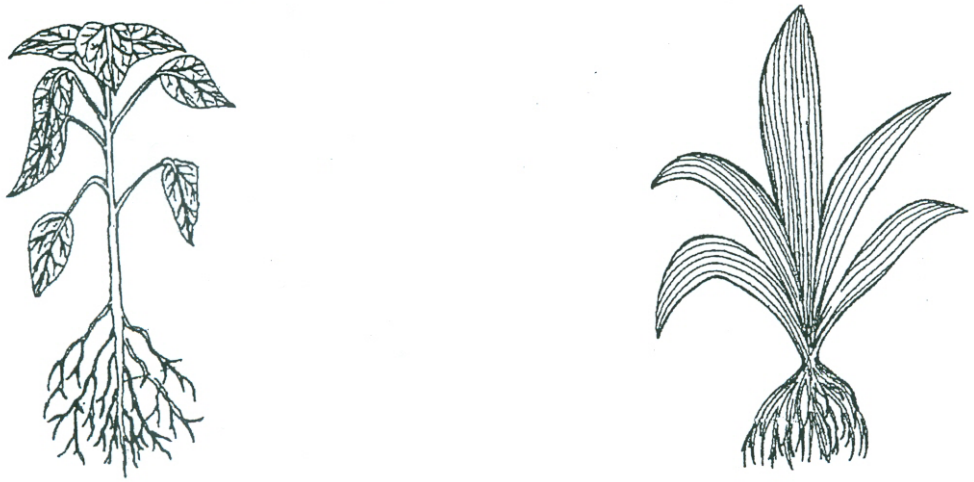
Use Fig. 2.1 to identify the main classes represented by the letters, **E** – **I**.

Letter	Class of vertebrate
E	
F	
G	
H	
I	

[5]

For Examiner's Use

(b) Fig. 2.2 shows two different flowering plants **K** and **J**.



K **J**

Fig. 2.2

(i) In a table form compare **two** visible features of organisms **J** and **K**.

K	J
1.....	1.....
.....	.....
2.....	2.....
.....	.....

[2]

(ii) Name the process by which carbon dioxide moves through the stomata into leaves.

..... [1]

(iii) With reference to the above mentioned process, explain why carbon dioxide moves into the leaf.

.....

.....

.....

..... [2]

[10]

For Examiner's Use

3 Fig. 3. 1 shows a light microscope.

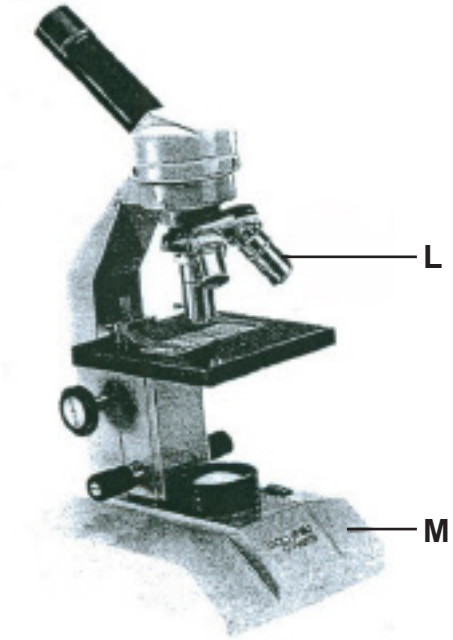


Fig. 3.1

(a) Name the parts labelled **L** and **M**.

L.....

M..... [2]

(b) (i) Fig. 3.2 shows a ground-living beetle.

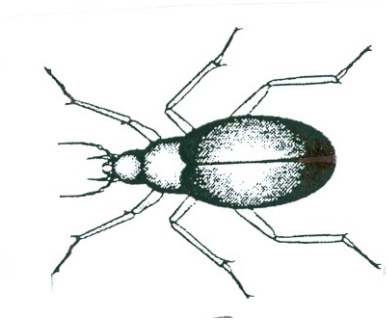


Fig. 3.2

Make a large drawing of the **whole** animal shown in Fig. 3.2.

[3]

(ii) A learner was asked to make a large drawing of the beetle in Fig. 3.2. The length of the learner's drawing was 150 mm.

Calculate the magnification of the learner's drawing.

[3]

(c) State **two** reasons for classifying organisms.

1 .....

2 ..... [2]

[10]

For Examiner's Use

4 A tin of tomato soup had the following information on its label

Nutritional information	
	Amount per 100 g
Energy	243 kJ
Protein	10.0 g
Carbohydrates	7.0 g
Fat	3.0 g
Fibre	0.5 g
Sodium	0.5 g

Ingredients
Water, tomatoes, sugar, modified cornflour, dried skimmed milk, salt, spices.

(a) (i) Calculate the total amount of protein, carbohydrates, fat, fibre and sodium in 100g.

[2]

(ii) Explain why this total in not 100g.

.....

..... [1]

(b) A tin of beef soup had these ingredients.

Ingredients
Water, beef, animal fat, vegetable oil, salt, spices

Show how the nutritional content of the beef soup is different from the tomato soup. Complete the table by ticking in the appropriate boxes.

Nutritional contents	More than tomato soup	About the same as tomato soup	Less than tomato soup
Protein			
Carbohydrate			
Fat			

[3]

For Examiner's Use

(c) Glucose is an example of carbohydrates.

Explain briefly why carbohydrates (glucose) are needed by the body.

.....

.....

.....

..... [2]

(d) Distinguish between organic and inorganic nutrients.

.....

.....

.....

..... [2]

[10]

For Examiner's Use

5 Fig. 5.1 shows an alveolus in which gaseous exchange takes place.

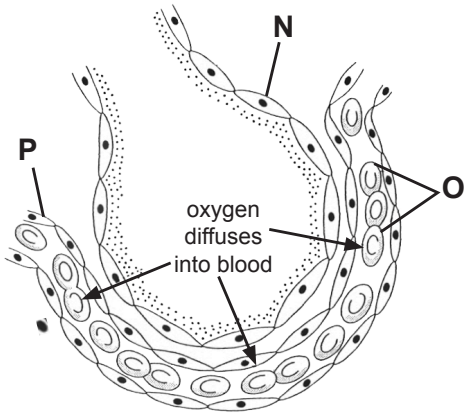


Fig. 5.1

(a) (i) Name the parts labelled **N**, **O** and **P**.

N .....

O .....

P ..... [3]

(ii) List **four** features of gaseous exchange surfaces in animals, such as humans.

1 .....

2 .....

3 .....

4 ..... [4]

(b) Carbon dioxide diffuses from the blood into the alveoli.

Where in the body is this carbon dioxide produced?

.....

..... [1]

(c) Explain how smoking affects the functions of the respiratory systems with regards to the amount of oxygen taken up by the blood.

.....

.....

.....

..... [2]

[10]

For Examiner's Use

6 Fig. 6. 1 shows a section through the heart.

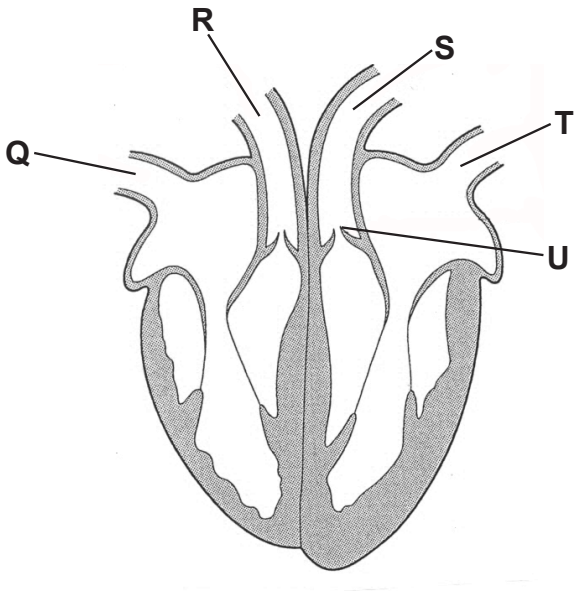


Fig. 6.1

(a) (i) Name the **two** blood vessels **Q** and **R**.

Q .....

R ..... [2]

(ii) Which of the blood vessels **Q**, **R**, **S** or **T**, carry oxygenated blood?

..... [1]

(iii) Name valve **U** and state its function.

name .....

function .....

..... [2]

For Examiner's Use

(b) Study Fig. 6.2 of a human blood smear and answer the questions that follow.

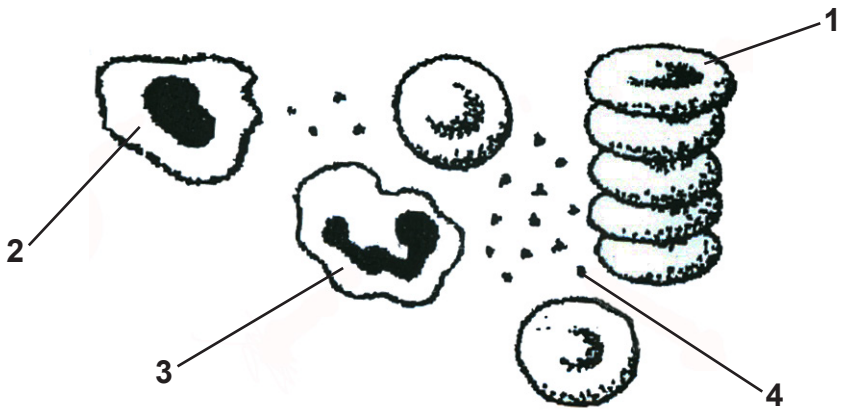


Fig. 6.2

(i) Identify the blood component numbered **4**.

..... [1]

(ii) Distinguish between components numbered **2** and **3** by referring to their structure.

Component **2** .....

.....

Component **3** .....

..... [2]

(iii) State a function of the parts numbered **1** and **2** respectively.

1 .....

.....

2 .....

..... [2]

[10]

7 Fig. 7.1 shows a kidney.

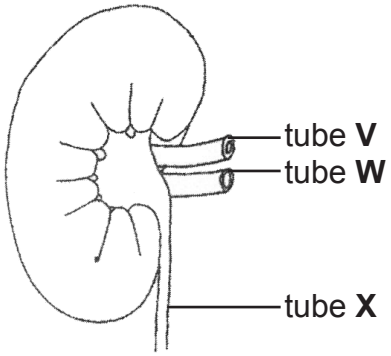


Fig. 7.1

(a) Define *excretion*.

.....

..... [1]

(b) Name the tubes labelled **V**, **W** and **X**.

V.....

W.....

X..... [3]

(c) Name the main nitrogenous waste product excreted by the kidney.

..... [1]

For Examiner's Use

(d) In the table below, state two main ways other than urinating in which a person loses water and for each, state why it is important.

method	importance
1	....
2	....

[4]

(e) Water is a component of urine.

Explain why water is eliminated when in excess in the blood.

.....

..... [1]

[10]

For Examiner's Use

8 Fig. 8.1 shows a reflex arc.

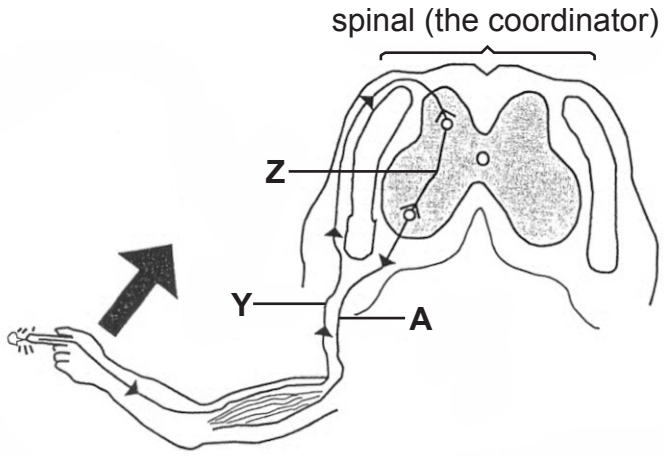


Fig. 8.1

(a) Identify the neurons labelled **Y**, **Z** and **A**.

Y.....

Z.....

A ..... [3]

(b) Name the junction (gap) between **two** neurons.

..... [1]

(c) Name the glands responsible for

(i) producing insulin,

..... [1]

(ii) controlling the activity of other glands,

..... [1]

(iii) increasing heartbeat in a frightening situation.

..... [1]

For Examiner's Use

(d) Fig. 8.2 shows bones and muscles in the upper part of the arm and shoulder blade.

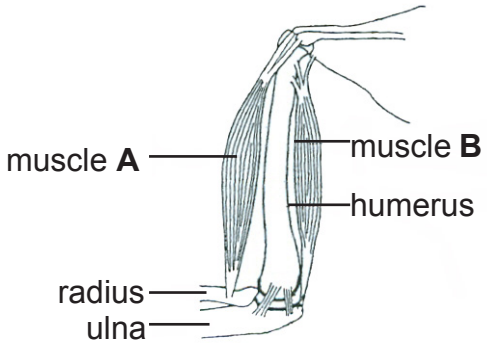


Fig. 8.2

(i) Name the mineral ion needed for the strengthening of bones.

..... [1]

(ii) Which muscle will cause the lower part of the arm to move up when it contracts.

..... [1]

(iii) Explain why this movement of the lower part of the arm occurs when the muscle contracts.

..... [1]

[10]

For Examiner's Use

9 Fig. 9.1 shows the means of attachment of the foetus to the mother during development.

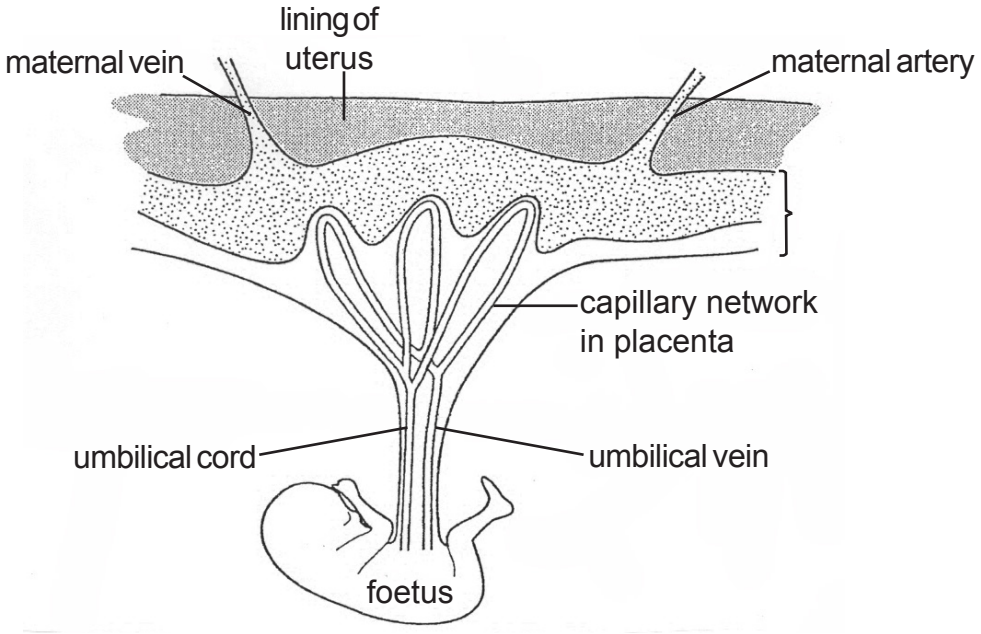


Fig. 9.1

(a) Indicate, on the diagram, by using arrows , the direction of blood flow in the vessels of the umbilical cord. [2]

(b) Finger-like extensions of the placenta extents into the tissue of the mother.

What is the advantage of this arrangement in the process of diffusion?

.....

..... [1]

(c) Diffusion of substances occurs between the blood of the mother and that of the foetus.

(i) Name **two** useful substances which normally pass from the blood of the mother to that of the foetus.

1 .....

2 ..... [2]

(ii) Name **one** substances which normally passes from the blood of the foetus to that of the mother.

..... [1]

For Examiner's Use

(d) (i) What will the sex of a baby be when a sperm cell containing an Y chromosome fertilise an egg cell?

..... [1]

(ii) Give a reason for your answer in **(d) (i)**.

.....

..... [1]

(e) A married couple decided after the third child not to have any more children.

Explain what method of contraception can be recommended to the couple.

Method .....

Explanation .....

..... [2]

[10]

For Examiner's Use

10 **(a)** Distinguish between the greenhouse effect and global warming.

.....

.....

.....

..... [2]

(b) Explain how the burning of fossil fuels can cause global warming

.....

.....

.....

..... [2]

(c) List **four** effects of global warming.

1 .....

2 .....

3 .....

4 ..... [4]

(d) Name a greenhouse gas which also damages the ozone layer.

..... [1]

(e) State the importances of the ozone layer.

..... [1]

[10]