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# EXAMINATIONS COUNCIL OF ZAMBIA

Examination for School Certificate Ordinary Level



5090/1

## Biology

Paper 1 Multiple Choice

2020

### Additional Materials:

- Multiple Choice answer sheet
- Soft clean eraser
- Soft pencil (type B or HB is recommended)

**Time: 50 minutes**

**Marks: 40**

### Instructions to Candidates

1. Ensure that the **school/centre name** and **subject paper, subject code, paper number, centre code, your examination number** and the **year** are correctly printed and shaded on the Answer Sheet.
2. There are **forty** questions in this paper. Answer all questions.
3. For each question there are four possible answers: **A, B, C** and **D**. Choose the **one** you consider correct and shade your choice in **soft pencil** on the separate Answer Sheet.
4. **Read very carefully the instructions on the Answer Sheet.**

### Information for Candidates

1. Each correct answer will score one mark. A mark will not be deducted for a wrong answer.
2. Any rough working should be done in this Question Paper.
3. **Cell phones are not allowed in the examination room.**

Answer all the questions

- 1 A living organism absorbs glucose, releases energy in its cells and then passes out carbon dioxide to the atmosphere.

Which characteristics of living things are described in the statement above?

	Excretion	Growth	Nutrition	Respiration	Irritability
<b>A</b>	✓	×	✓	✓	×
<b>B</b>	✓	✓	×	✓	×
<b>C</b>	✓	✓	✓	×	✓
<b>D</b>	×	×	✓	✓	✓

Key  
 ✓ Yes  
 × No

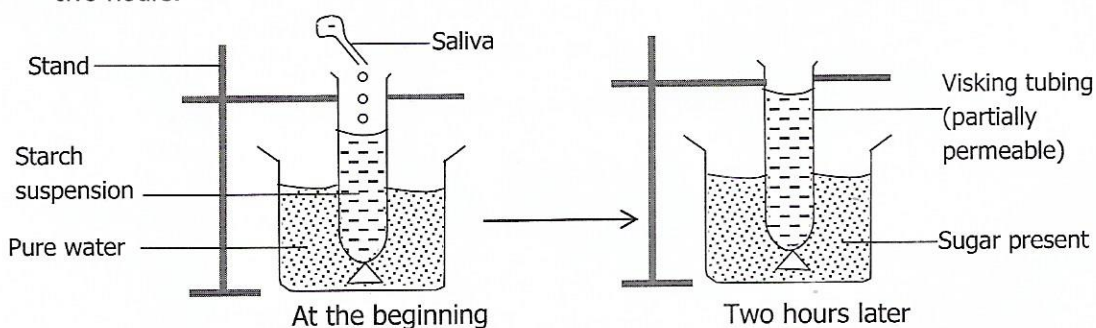
- 2 Three cell structures are listed below.

- 1 – Cell wall
- 2 – Cytoplasm
- 3 – Nucleus

Which structures are found in both palisade cells and liver cells?

- A** 1 and 2
- B** 1 only
- C** 2 and 3
- D** 3 only

- 3 The diagram below shows a piece of visking tubing containing starch suspension, held in a beaker of pure water. Saliva was added to the starch and the experiment was left for two hours.



What does this experiment show?

- A** Saliva is a solvent for starch.
- B** Saliva passes through the visking tubing.
- C** Starch can be changed to sugar.
- D** Starch is soluble in pure water.

- 4 Which of the following is true about all enzymes?

	They are sugars	Effective at pH7	Each enzyme catalyses one reaction
A	×	✓	✓
B	×	×	✓
C	✓	×	×
D	✓	✓	×

Key  
 ✓ Yes  
 × No

- 5 Chemical tests were carried out on a food sample in solution. The table below shows the results.

Test	Result
Biuret	Purple colour
Ethanol	White emulsion
Iodine	Brown colour

What did the food sample contain?

	Fat	Protein	Starch
A	✓	✓	✓
B	✓	✓	×
C	✓	×	✓
D	×	✓	✓

Key  
 ✓ Present  
 × Absent

- 6 The table below shows the mass of some nutrients found in 100g of four different foods.

Food	Carbohydrate/g	Fat/g	Protein/g	Vitamin C/mg	Vitamin D/mg
Beans	10.0	0.4	5.0	3.0	0.0
Bread	48.0	1.5	9.0	0.0	0.0
Cheese	0.0	34.0	25.0	0.0	0.4
Eggs	0.0	11.0	13.0	0.0	1.5

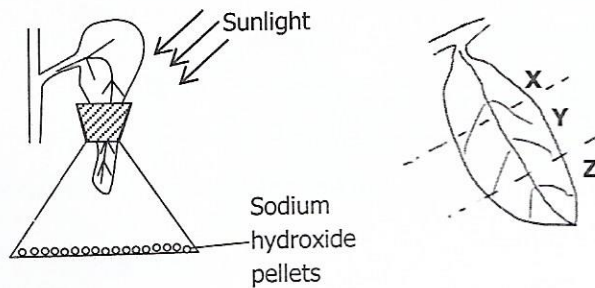
Which foods would best prevent rickets and scurvy?

	Rickets	Scurvy
A	Beans	Bread
B	Bread	Cheese
C	Cheese	Eggs
D	Eggs	Beans

- 7 Which of the following people needs the most energy daily?

- A Male manual worker  
 B Pregnant woman  
 C 14 year old teenage boy  
 D 8 year old girl

- 8 Which mineral nutrient is required by plants for proper formation of roots?  
**A** Magnesium  
**B** Nitrogen  
**C** Phosphorus  
**D** Potassium
- 9 The diagram below shows an arrangement of apparatus for an experiment on photosynthesis left in sunlight for five hours. The leaf was then tested for starch.



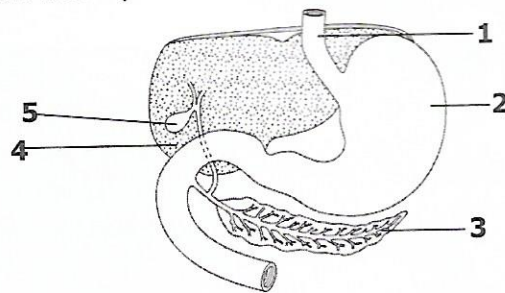
After the experiment, what were the colours of the regions **X**, **Y** and **Z**?

	<b>X</b>	<b>Y</b>	<b>Z</b>
<b>A</b>	Blue-black	Blue-black	Brown
<b>B</b>	Blue-black	Brown	white
<b>C</b>	Brown	White	Blue-black
<b>D</b>	Blue- black	Brown	Brown

- 10 The dental formula of a certain carnivore is:  
 $i: \frac{3}{3}, c: \frac{1}{1}, pm: \frac{1}{2}, m: \frac{2}{1}$   
 What is the total number of teeth in the lower jaw of this carnivore?

- A** 7  
**B** 14  
**C** 28  
**D** 32

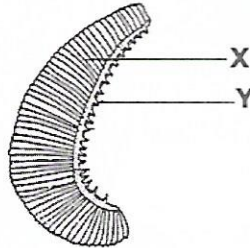
- 11 The diagram below shows part of the alimentary canal.



Which two structures produce substances involved in the digestion of lipids?

- A 1 and 5
- B 2 and 3
- C 3 and 4
- D 4 and 5

12 The diagram shows the structure of a gill.



What are the functions of the parts labelled X and Y?

	X	Y
A	For attachment	For gaseous exchange
B	For gaseous exchange	To remove solid particles
C	To remove solid particles	For attachment
D	To remove solid particles	For gaseous exchange

13 Which substances are produced in muscles by aerobic and anaerobic respiration?

	Aerobic respiration	Anaerobic respiration
A	Carbon dioxide and water	Ethanol
B	Carbon dioxide and water	Lactic acid
C	Lactic acid	Ethanol
D	Lactic acid	Carbon dioxide and water

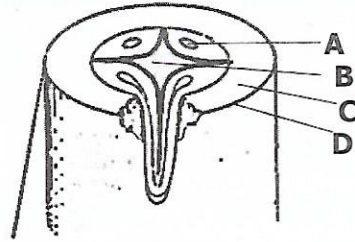
14 Below is a list of signs and symptoms of a disease.

- 1 Severe diarrhoea
- 2 Dehydration
- 3 Abdominal pain
- 4 Nausea
- 5 Vomiting

Which disease is characterised by the above signs and symptoms?

- A Bilharzia
- B Cholera
- C Malaria
- D Tuberculosis

15 The diagram shows a cross section through the root of a plant.



Which tissue transports water and mineral salts to different parts of the plants?

16 The diagrams show three types of blood cells.



P



Q

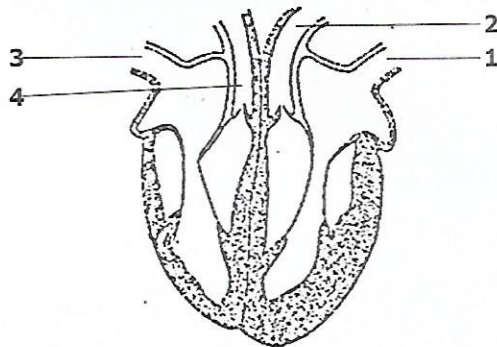


R

Which of these cells produces antibodies, engulfs bacteria and are involved in blood clotting?

	Engulfs bacteria	Involved in blood clotting	Produces antibodies
A	P	Q	R
B	P	R	Q
C	Q	P	R
D	Q	R	P

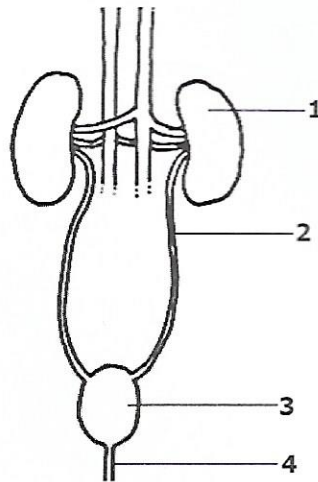
17 The diagram shows a longitudinal section through a mammalian heart.



Which labelled blood vessels carry deoxygenated blood?

- A 1 and 2
- B 1 and 3
- C 2 and 4
- D 3 and 4

18 The diagram shows part of the excretory system of a mammal.



What are the numbered structures?

	1	2	3	4
A	Bladder	Ureter	Kidney	Urethra
B	Bladder	Urethra	Kidney	Ureter
C	Kidney	Ureter	Bladder	Urethra
D	Kidney	Urethra	Bladder	Ureter

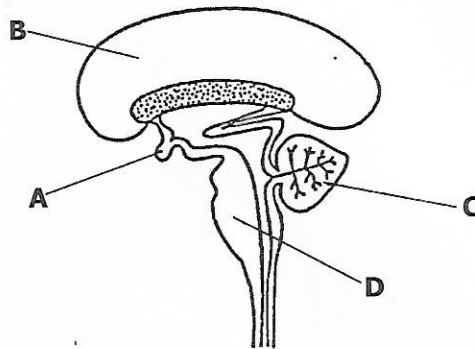
19 Where is the hormone insulin produced and what is its site of action?

	Site of production	Site of action
A	Adrenal glands	Liver
B	Adrenal glands	Body muscles
C	Pancreas	Liver
D	Pancreas	Ileum

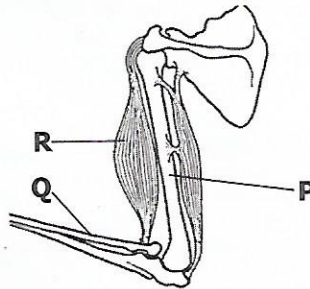
20 A conditioned reflex differs from a spinal reflex because the conditioned reflex ...

- A does not involve nerves.
- B does not involve the brain.
- C has been modified by past experience.
- D is faster.

- 21 The diagram below shows a section of the human brain. Which of the labelled parts is responsible for memory?



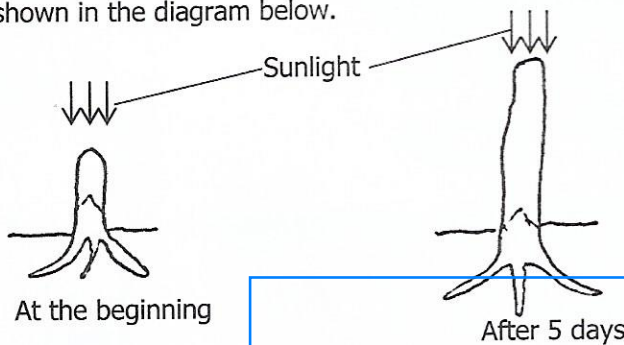
- 22 Which part of the ear transmits vibrations from the outer ear to the inner ear?  
 A Cochlea  
 B Eustachian tube  
 C Ossicles  
 D Pinna
- 23 The diagram below shows muscles and bones of the upper arm.



Which of the following correctly identifies bones P and Q and muscle R?

	P	Q	R
A	Humerus	Radius	Biceps
B	Radius	Humerus	Triceps
C	Radius	Ulna	Triceps
D	Ulna	Humerus	Biceps

- 24 An experiment was carried out to investigate growth response in a maize seedling as shown in the diagram below.

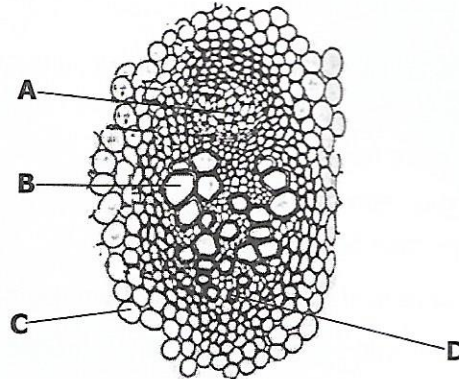


What type of response was being investigated above?



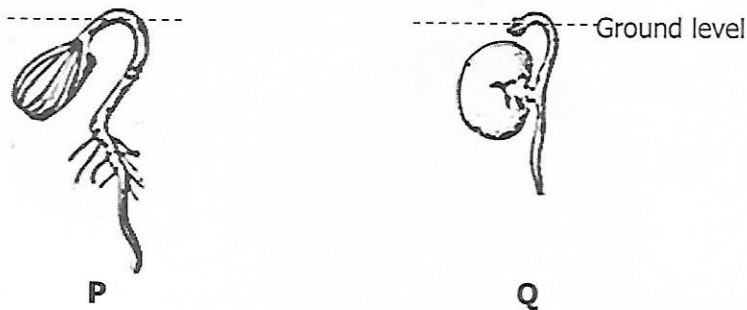
- A Negative geotropism
- B Negative phototropism
- C Positive geotropism
- D Positive phototropism

25 The diagram below shows differentiated cells.



Which of the cells **A**, **B**, **C** and **D** above are the parenchyma cells?

26 The diagram shows two germinating seeds.



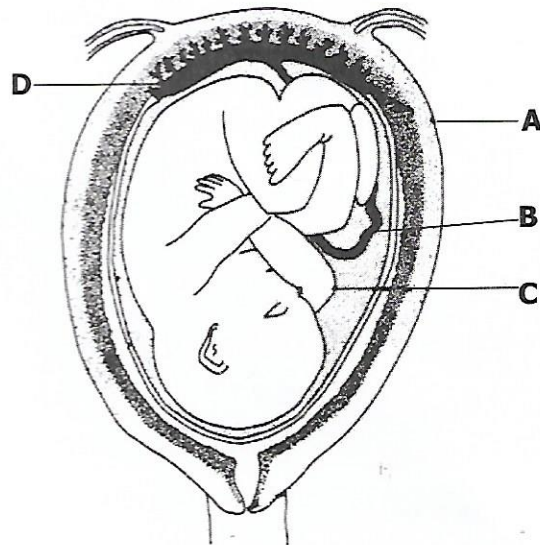
What type of germination is illustrated in **P** and **Q**?

	<b>P</b>	<b>Q</b>
<b>A</b>	Epigeal	Epigeal
<b>B</b>	Epigeal	Hypogeal
<b>C</b>	Hypogeal	Epigeal
<b>D</b>	Hypogeal	Hypogeal

27 Which of the following asexual methods of reproduction is used in propagating sweet potatoes?

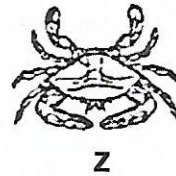
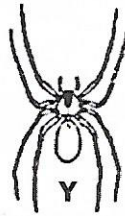
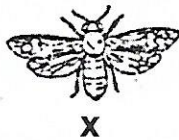
- A Rhizomes
- B Root tubers
- C Stem tubers
- D Suckers

- 28 After a plant has produced flowers, which of the following is the correct sequence of events that follow?
- A Fertilisation → pollination → seed formation
  - B Pollination → fertilisation → seed formation
  - C Seed formation → fertilisation → pollination
  - D Seed formation → pollination → fertilisation
- 29 Which of the following is an important reason for seed dispersal?
- A It causes the development of a fruit.
  - B It makes seeds more fertile.
  - C It prevents asexual reproduction.
  - D It reduces competition between seedlings.
- 30 Which of the following causes of infertility results from having multiple sexual partners?
- A Blocked oviduct
  - B Fibroids
  - C Ovulation disorders
  - D Sexually transmitted infections
- 31 The diagram below shows a developing foetus in the uterus. Where does foetal blood become oxygenated?



- 32 Which of the following birth control methods can affect the secretion of the Follicle Stimulating Hormone (FSH) in the pituitary gland?
- A Intra-uterine device
  - B Oral contraceptive pill
  - C Rhythm method
  - D Tubal ligation

- 33 Which of the following results from meiosis?  
 A Asexual reproduction  
 B Growth of stems and roots  
 C Production of gametes  
 D Repair of tissues/cells
- 34 The genotype of a human albino is recessive. Two normal parents have an albino child. What is the percentage of their next child also being an albino?  
 A 25%  
 B 50%  
 C 75%  
 D 100%
- 35 The diagram shows organisms which belong to the phylum arthropoda.



Which classes do these organisms belong to?

	Arachnida	Crustecea	Insecta
A	X	Y	Z
B	X	Z	Y
C	Y	X	Z
D	Y	Z	X

- 36 Which of the following correctly identifies the causes of loss of soil fertility?

	Deforestation	Late burning	Leaching	Weeding
A	✓	✓	✓	✓
B	✓	✓	✓	×
C	×	×	✓	✓
D	✓	×	✓	×

Key  
 ✓ Yes  
 × No