

NAME:.....CLASS/NO.....

INSTRUCTIONS

Attempt all the questions in section A and B and one C in the spaces provided

ANSWERS TO SECTION A

1	7	13	19	25
2	8	14	20	26
3	9	15	21	27
4	10	16	22	28
5	11	17	23	29
6	12	18	24	30

FOR OFFICIAL USE ONLY

SECTION A	
SECTION B	
SECTION C	
TOTAL	

SECTION A

- Which one of the following is the best description of respiration?
 - Breathing in oxygen and breathing our carbon dioxide.
 - Absorption of oxygen in the alveoli.
 - Release of energy in the cell
 - Gaseous exchange
- Which one of the following processes needs energy?
 - Absorption of water by root hairs.
 - Gaseous exchange in the alveoli.
 - Loss of turgidity by plant cell.
 - Absorption of mineral salts by root hairs.
- By which one of the following processes does carbon dioxide leave the blood capillaries into the alveoli?
 - Osmosis
 - Active transport
 - Diffusion
 - Capillary

4. In one –day old tadpoles, gaseous exchange is performed by
- A. lungs
 - B. external gills
 - C. internal gills
 - D. skin of the tail.
5. An athlete has just finished a race. The phrase “oxygen debt” refer to
- A. the amount of oxygen originally present in the muscles of the athletes before the race.
 - B. The amount of oxygen taken in after the race and used to complete the combustion of some of the lactic acid.
 - C. The total amount of oxygen taken in during panting after the race.
 - D. The amount of oxygen needed by the lungs after the race for combustion of glucose.
6. Which of the following are respiratory surfaces in toads and frogs?
- A. The mouth, webbed toes and skin
 - B. Nostrils, mouth and skin
 - C. Webbed toes, lungs and mouth
 - D. The mouth, lungs and skin.
7. Which one of the following forms part of the insect respiratory system?
- A. Trachea, trancheoles and bronchioles.
 - B. Spiracle, trachea and tracheoles.
 - C. Spiracles, trachea and bronchioles.
 - D. Trachea, bronchus and bronchioles.
8. Which one of the following is not a characteristic of a respiratory surface
- A. They have a dense network of blood capillaries
 - B. They are moist
 - C. They are ventilated
 - D. They have a thick epithelium
9. The changing of nitrogen into more reactive forms is called?
- A. Nitrogen fixation
 - B. Nitrification
 - C. Nitrogen cycle
 - D. Ammonification
10. Which one of the following process leads to reduction of carbon dioxide in the atmosphere during carbon cycle?
- A. Photosynthesis
 - B. Combustion
 - C. Respiration
 - D. Decay

11. Which one of the following types of bacteria cause the conversion of ammonia into nitrites and nitrates?

- A. Nitrifying bacteria
- B. Denitrifying bacteria
- C. Putrefying bacteria
- D. Nitrogen fixing bacteria.

12. The results of an experiment to determine percentage of water in a sample of soil are shown below:

Mass of crucible	=	15g
Mass of crucible plus soil	=	30g
Mass of crucible plus soil after drying.	=	25g

What is the percentage of water?

- A. 33.3%
- B. 18.7%
- C. 66.7%
- D. 20.0%

13. Which part of irish potato plant is used in its vegetative reproduction?

- A. Stem
- B. Root
- C. Leaf
- D. Flower

14. Which one of the following plants has leaves modified as spines?

- A. Cactus
- B. Bongainvella
- C. Passionfruit
- D. Onion

15. Which part of the bulb stores food?

A. Underground roots

B. Underground stem

C. Leaves

D. Aerial stem

16. Water is important in all living organisms because it

A. is a universal solvent

B. acts as a solute

C. is produced during photosynthesis

D. regulates body temperature

17. Lacteals in the villi of small intestines.....

A. Absorb soluble waste products

B. Secrete fat digesting enzymes

C. Transport absorbed fatty acids and glycerol

D. Store fats

18. Which of the following sugars is not a reducing sugar?

- A. Maltose
 - B. Fructose
 - C. Galactose
 - D. Sucrose
19. Which one of the following is common to respiration and photosynthesis?
- A. Energy is released.
 - B. Both occur in all living cells.
 - C. Food oxidations is common to both.
 - D. Oxygen, carbon dioxide and water are involved.
20. What is the purpose of boiling the leaf in methylated spirit before flooding it with iodine when testing for starch in the leaf?
- A. To kill the leaf cells
 - B. To soften the leaf for iodine to penetrate it
 - C. To remove the chlorophyll
 - D. To destroy any fungus or bacteria
21. The initial uptake of water by seeds during germination is carried out by a process called.
- A. Osmosis
 - B. Active transport
 - C. Diffusion
 - D. Imbibition .
22. The force which mostly help water to move up a tall plant are
- A. osmosis and diffusion
 - B. capillarity and transpiration.
 - C. osmosis only.
 - D. capillary and osmosis.
23. Which of the following conditions increase the rate of transpiration?
- A. High temperatures, windy conditions and high humidity.
 - B. Low temperatures, windy conditions and high humidity.
 - C. High temperatures, low humidity and windy conditions.

D. Low temperatures, low humidity and still air

24. By which one of the following processes does carbon dioxide leave the blood capillaries into the alveoli?

A. Osmosis

C. Diffusion

B. Active transport

D. Capillary

25. Water loss in plant is most rapid when conditions are?

A. Wet, windy, and cold

B. Wet, windy and warm

C. Dry, windy and warm

D. Dry, still and warm

26. Transpiration is least affected by

A. Light intensity

B. Wind speed

C. Air temperature

D. Air oxygen consumption

27. Which one of the following is a characteristic that applies to arteries

A. Thin walls

B. Contain valves

C. End as capillaries

D. Blood in them flows under low pressure

28. Which one of the following organisms does not use blood to carry oxygen within its body?

A. Fish

B. Bee

C. Snake

D. An earthworm

29. Which one of the following cells could have their functions adversely affected by the AIDS virus?

A. Red blood cells

B. Blood platelets

C. Leucocytes

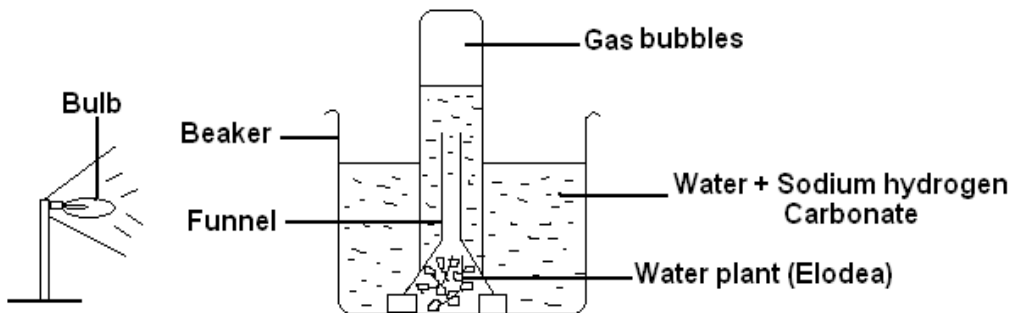
D. Nerve cells.

30. Which one of the following occurs during exhalation in a mammal?

- A. The diaphragm relaxes.
- B. The inter-costal muscles contract.
- C. The volume of the chest cavity increases.
- D. The ribs move upwards and outwards.

Section B

31. Figure below shows a set-up of an experiment to study the relationship between light intensity and the rate of photosynthesis. Five similar set ups each with different distance from the source of light was carried out. Numbers of gas bubbles released in 1 minute was recorded.



The table below shows the results obtained.

Distance of light source from the beaker (cm)	10	20	30	40	50	60
Number of bubbles per minute	25	21	17	14	8	5

a. (i) Draw a suitable graph to represent the above data.

(6marks)

(ii) What is the relationship between the light intensity and the distance of light from the beaker? (2 marks)

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(iii) What conclusion can you make on the rate of photosynthesis with light intensity? (2 marks)

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(b) What is the role of the following in experiment

(i) Light (2marks)

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(ii) Sodium hydrogen carbonate

(1mark)

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(i) What gas collected in the test tube?

(1mark)

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(ii) Name the product of photosynthesis.

(1mark)

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(iii) Name another process that is being carried out by the plant.

(1mark)

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(c) state the similarities and differences between photosynthesis and respiration

Similarities (2 marks)

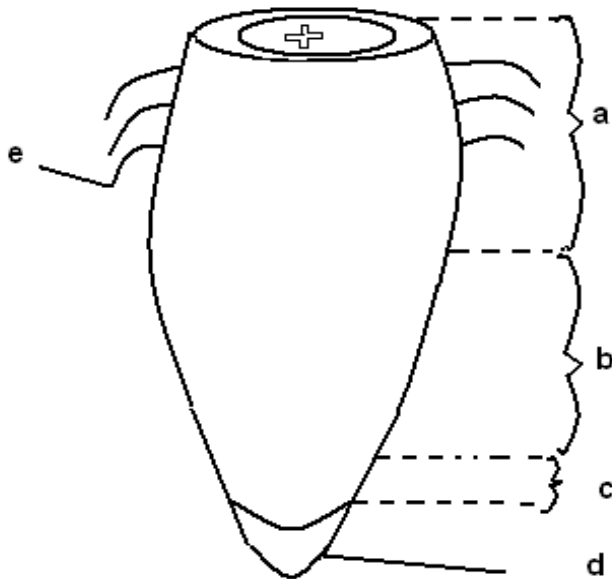
1.

2.

Differences (3 marks)

Photosynthesis	Respiration

32. The figure below shows a root apex.



(a) (i) Name the regions (2 marks)

a.

b.

c.

(ii) which parts are labelled (2 marks)

e.....

d.....

(b) What are the functions of parts labeled? (2 marks)

e.....

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d.....

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(c) Give any three ways in which part e is adapted to the function stated in (b) above (3 marks)

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33.(a) What is soil erosion? (1 mark)

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(b) Name four types of soil erosion. (4 marks)

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(c) State the causes of soil Erosion. (3 marks)

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(d) How does mulching help the farmer in

(i) water conservation? (1 mark)

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(ii) soil conservation? (1 mark)

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Section C

34. (a) Outline the mechanism gaseous exchange in a bony fish (10 marks)

(i) Inspiration

(ii) Expiration

(b) How are gills adapted for gaseous exchange in a bony fish? (3 marks)

(c) State three differences between aerobic and anaerobic respiration (2 marks)

35. (a) List the substances transported by blood

(5marks)

(b) Explain the importance of transporting each of the substances mentioned in 37(a) above (10marks)

36. Describe an experiment to show that germinating seeds produce heat during respiration (15 marks)

END