Name…… Index No……..
231/1
BIOLOGY **Date……**
(Theory)
JULY 2018 **Sign……**
2 hours

KENYA NATIONAL EXAMINATIONS COUNCIL
(*Kenya Certificate of Secondary education*)

Instructions

- Write your Name and Index Number in the spaces provided above.
- Write the date of the examination in the space provided above.
- Answer all the questions in the spaces provided.

For Examiner's use only

Question	Maximum Score	Candidate's Score
1-25	80	

This paper consists of 8 printed pages.
Candidates should check the question paper to ascertain that all the pages are printed as indicated and no questions are missing.

1. (a). Protoctista/ Protista;

(b)..***Monera;***

Question 2.

- ***collect only the number of specimens needed to avoid wastage;***
- ***donot harm specimens during collection;***
- ***do not destroy the natural habitat of the specimen;***
- ***live specimens should be returned to their habitats after use;***
- ***dangerous|injurious specimens should be handled with care;***
- ***highly mobile animals should be immobilized;***

3.Explain how the following factors hinder self pollination in plants:

(i) Protogyny (1mk)

Stigma matures earlier and is ready to receive pollen grains before the anthers are ready;

(ii) Dioecism (1mk)

Male and female gametes occur in separate plants;

4.(a). Entamoeba histolitica;

(b).Candida albicans;

5.a) Define the term immunity. (1mk)

Ability of the body to identify/ recognize foreign antigens and develop mechanisms of destroying them / ability to resist infection;

b) Distinguish between natural immunity and acquired immunity. (2mks)

Natural immunity is inborn /inherited /passed from parents to offspring while acquired immunity is obtained in life;

c) Identify one immunizable disease in Kenya. (1mk)

Tuberculosis; poliomyelitis; diphtheria; whooping cough; measles;

6. (a) Diffusion;

(b). Starch solution turned blue-black;

(C). Iodine molecules diffused; across the visking tubing into starch solution;(causing the change in colour)

7. Used in respiration/ produce energy;

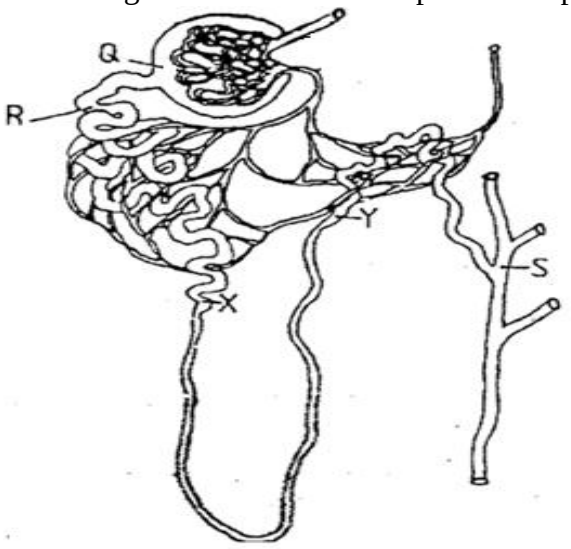
-converted to starch/lipids/sucrose/proteins and stored;

8.-Early maturity;

-high yield;

-resistant to pests/diseases/ drought;

9.The diagram below illustrates part of a nephron from a mammalian kidney.



a) Name the fluid found in the part labeled Q. (1mk)

Glomerular filtrate;

b) Identify the process responsible for the formation of the fluid named in (a) above. (1mk)

Ultra-filtration / pressure filtration;

c) Which two hormones exert their effect in the nephron? (2mk)

Antidiuretic hormone / vasopressin; Aldosterone;

10.

Crustacea	Arachnida
-has 2 pairs of antennae	No antennae;
-has cephalothorax covered with carapace	Cephalothorax not covered;
-has 5 or more pairs of legs	Has 4 pairs of legs;
-use gills for gaseous exchage	Use trachea or lung book for gaseous exchange;
-have a pair compound eyes	Have simple eyes;

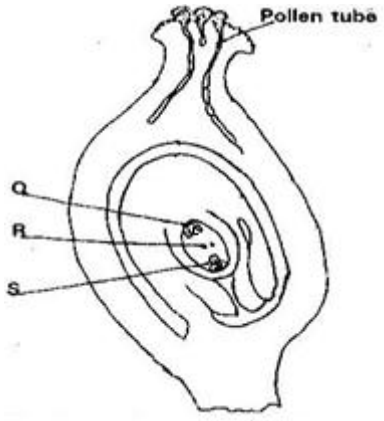
11.-thin walls/ epithelium for faster diffusion of gases;

-moist for gases to dissolve and diffuse in solution form;

-large surface area for maximum diffusion;

-highly vascularized to maintain a steep concentration gradient;

12.The diagram below shows a stage during fertilization in flowering plant.



a) Name the parts labeled Q, R, and S. (3 mk)

Q – ***Antipodal cell(s);***

R – ***Polar nucleus / body;***

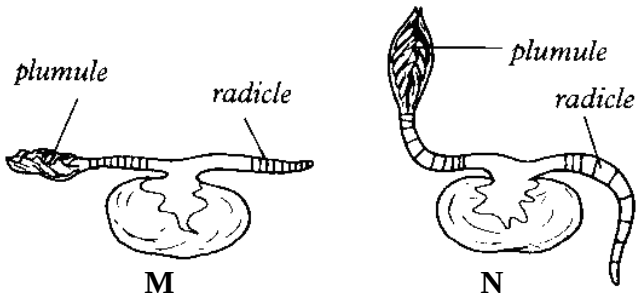
S – ***Functional egg cell;***

b) State the function of the pollen tube. (1mk)

pathway through which male nuclei reach the embryo sac / improves efficiency of fertilization; its tip produce lytic enzyme which dissolves the embyo sac wall to allow entry of male nuclei;

13. (a) Cytoplasm;
(b). Pyruvic acid;

14.An experiment was set to investigate a certain aspect of response. A seedling was put on a horizontal position as shown in figure M below. After 24 hours, the set up was as shown in figure N.



M **N**

a) Name the response exhibited. (1mk)

Geotropism;

b) Explain the curvature of the shoot upwards. (3mk)

Gravity causes high concentration of auxins on the lower part of the shoot; this causes faster elongation of cells on the lower part compared to the upper part; making the shoot to curve upwards;

15 The paddles of whales and the fins of fish adapt these organisms to aquatic habitats.

a) Name the evolutionary process that may have given rise to these structures. (1mk)

Convergent evolution;

b) What is the name given to such structures? (1mk)

Analogous structures;

16a) Name a protein and vitamin involved in blood clotting.

i) Protein. (1mk)

Fibrinogen;

ii) Vitamin (1mk)

(Vitamin) K;

b).Recipient has antibody a in the blood plasma and will correspond with antigen A in the donors; hence there will be antigen –antibody reaction;/ agglutination

17. (a). promote cell division ;

-promotes cell/intermodal elongation;

- promotes pathenocarpy;

(b). Food stored is used for respiration/growth;

18.(a) Explain the importance of transport in plants. (2mk)

Supplies water and mineral ions to the (photosynthetic) cells; conduct products of photosynthesis / nutrients to all parts of the plant / translocation;

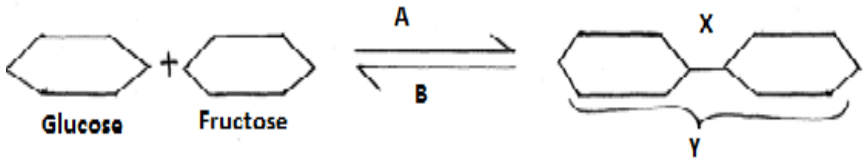
b) What is the role of root hairs in plants? (1mk

Absorption of water and mineral ions from the soil;

19. Explain why a pregnant woman excretes less urea compared to a woman who is non-pregnant. (2mk)

Amino acids are used in the formation of foetal tissues; thus has less excess to be eliminated;

20. Study the reaction below and answer the questions that follow.



a) What biological processes are represented by A and B? (2mk)

A – ***Condensation;*** B – ***Hydrolysis;***

b) Identify the product Y. (1mk)

Sucrose;

c) State the bond represented by X***. Glycosidic;*** (1mk)

21. (3mk)

Light energy is s absorbed by chlorophyll molecules; used to split water molecule into oxygen and hydrogen atoms/ ions; light energy is converted into chemical energy (ATP) and stored;

22.Explain what happens in humans when the concentration of glucose in the blood rises above the normal level. (3mk)

Insulin is produced which increases oxidation of glucose; facilitate conversion of glucose into glycogen / fats for storage; inhibits conversion of glycogen into glucose;

23.

; has thin cell wall ;

-has large air spaces;

24.

(a). lactic acid;

(b). Ethanol; rej. Alcohol

-carbon(IV)oxide;

-energy;

25.

(a). to make the specimen turgid;

(b). –to make cells distinct;/ more clearer

©. –to avoid distortion/ damaging cell organels;

26. (a).Arteriosclerosis/ antheroma/ coronary thrombosis;

(b). Varicose veins;

27.

4.0-0.04 X 100;

0.4

3.96X100=

0.04

990%;

(b). oxygen concentration reduces because its used in respiration to produce energy; carbon(IV)oxide increases greatly because its produced during respiration as a by-product; Nitrogen gas concentration remained constant its neither used nor produced by the body;