NAME……MARKING

SCHEME……CLASS……

INDEX NO…… ADM NO

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231/1
BIOLOGY
PAPER 1
JULY 2018
TIME: 2 HOURS

MOKASA II EXAMINATIONS

(Kenya Certificate of Secondary Education)

BIOLOGY THEORY

Instructions

- Write your name, class and admission number in the space provided above.
- Write the date of the examination and sign in the space provided above.
- Answer ***all*** the questions in the spaces provided.
- You may be *penalized* for wrong spelling especially technical terms.

For Examiner's Use Only

Question	Maximum Score	Candidate's Score
1-29	80	

This paper consists of* 10 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) Name the branch of biology that deals with the study of the following:- (2mks)
   (i) Fungi ……***Mycology;***
   (ii) Insects ……***Entomology;***

(b) Suggest the names of the treaties that were signed and enacted into law to:- (2mks)

i) Fight depletion of Ozone layer

Kyoto protocol;

ii) Manage natural resources e.g. prohibiting poaching of wild animals

Convention against International Trade of Endangered Species;

Accept : CITES

2. In an experiment, it was observed that when maggots are exposed to light, they move to dark areas. On the other hand , Euglena and Chlamydomonas move towards light.
   (a) Name the type of response exhibited by the organisms (1mk)
   ……
   Phototactic/ Phototaxis/ Phototaxism;
   (b) State one advantage of the response shown by Euglena and Chlamydomonas (1mk)
   ……
   ….***To trap light energy for use in photosynthesis;***

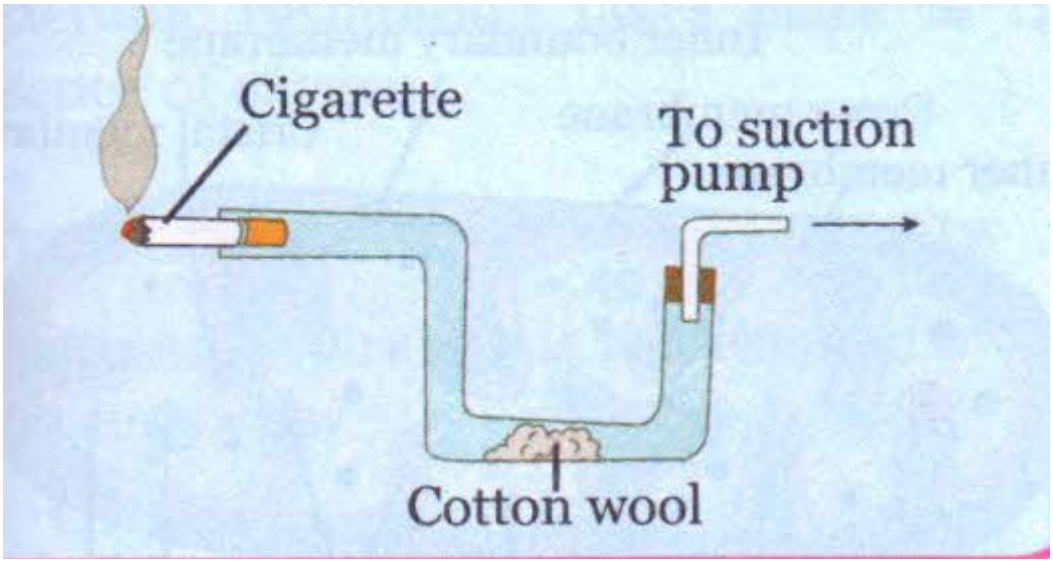
3. The middle ear is air filled and contains three small bones known as ossicles
   (a) Name these small bones (3mks)
   ……
   Stapes;
   Malleus;

Incus;

(b) State any two combined roles of the ossicles
(2mks)
……

Amplify vibrations;
Transmit vibrations to the oval window;

4. The figure below shows the apparatus used for collecting some of the substances in cigarette smoke. As the cigarette burns the cotton wool turns brown.



(a) Name the substance that causes the cotton wool to change its colour
(1mk)
……
Tar ;

(b) The cotton wool provides a large surface area on which this substance collects . what structures in the lungs does the cotton wool represent
(1mk)
……
Alveoli ;

(c) Explain how smoking affects the amount of oxygen taken up by the blood (3mks)

Smoke deposits tar ; that distorts the alveoli thus impeading / blocking gaseous exchange; Smoke contain Carbon (ii) Oxide that forms Carboxyhaemoglobin that does not

Dissociate even in presence of oxygen ; thus reduces the amount of oxygen transported ;

5. Name three tissues responsible for secondary growth in flowering plants. (3mks)

   .....

   Vascular cambium ;
   Cork cambium ;
   Intercalary meristem ;

6. A certain plant was found to have 22 chromosomes in its calyx cells. State the number of chromosomes in the plants :-
   (2mks)

   a) Egg cell.....***11 chromosomes ;***

   b) Endosperm cell .....***33 chromosomes ;***

7. (a) State one function of the spinal cord
   (1mk)
   - ***Integrates impulses that relates to the limbs and trunk ;***
   - ***Brings about reflex action ;***
   - ***Relays nerve impulses to and from the brain ;***

   b) Name the neuron with:-
   (2mks)
   (i) Long dendrons which arise in the sense organs and terminate in the spinal cord

   Sensory / Afferent ;

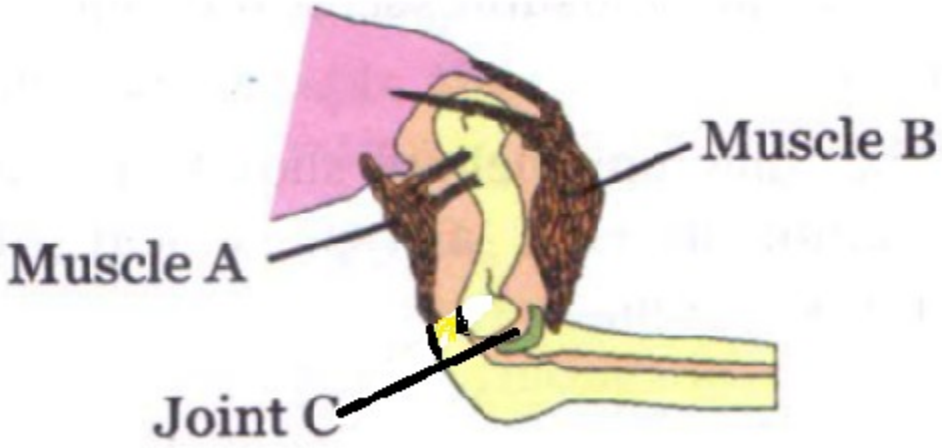
   (ii) Long axons which terminate in muscles
   Motor / Efferent ;

8. Name two substances in human blood that are required for photosynthesis (2mks)

   .....

   Carbon (iv) oxide ;
   Water ;

9. The diagram below shows the bones and muscles of the fore limb



(a) Name the type of joint at point C
(1mk)
……
Hinge joint ;

(b) Describe the roles of muscles A and B in the straightening of the fore limb (2mks)
……
Muscle A contracts ; muscle B relaxes ;

10. Name the mineral taken up by plants from the soil that converts carbohydrates to proteins

(1mk)
Nitrate ;

11. Name two biotic factors that could affect an antelope living in the Masaai Mara (2mks)

Predation ; Parasitism ; Competition ; Diseases ; Availability of food ;

12. State Mendel's first Law- The Law of Segregation
(2mks)

The characteristics of an organism are controlled by genes occurring in pairs ; of such a pair only one can be carried in a single gamete ;

13. Give three ways in which the pollen of insect pollinated flowers differs from the pollen of wind pollinated flowers
(3mks)
……

Insect pollinated	Wind pollinated
Large	***Small***
Few	***Many***
Heavy	***Light***
Sticky surface	***Smooth surface***

14. Name two organelles that would be abundantly present in secretory cells (2mks)
……
Endoplasmic reticula ;
Golgi apparatus ;
Mitochondria ;

15. The diagram below shows part of a starch molecule



(a) State what the circles and the lines joining them represent:-
(2mks)
(i) Circles ……***Glucose molecules ;***
(ii) Lines ……***Glycosidic bonds ;***

(b) Show diagrammatically and name the product when the enzyme Amylase has an effect on this molecule
(1mk)



Maltose ;

16. Two farmers prepared fish ponds and introduced equal number of fish in each pond. The fish one farmers" pond died within two days of being introduced into the pond. Those of the other survived. On

examining the ponds , one was found to be full of Algae and the other had no Algae.

(a) In which of the ponds were the Algae present?
(1mk)

……

The pond where the fish survived / did not die ;

(b) Suggest the possible reason for the death of the fish
(1mk)

……

Inadequate oxygen for their respiration ;

(c) State two importances of Algae and other water plants to fish
(2mks)

……

- ***Replenishes the air by taking in carbon (iv) oxide and releasing oxygen during photosynthesis ;***
- ***Provides food for the fish ;***
- ***Provide shelter for the fish ;***
- ***Breeding site for fish ;***

17. Why is it not advisable to wash vegetables after cutting them (2mks)

……

Washing after cutting removes water soluble vitamins ; i.e vitamin B and vitamin C ;

18. Give three ways in which the gill of a bony fish is adapted to gaseous exchange (3mks)

……

- ***Highly vascularised gill filament..***
- ***Thin membrane on gill filament ..***
- ***Broad surface on gill filament ..***
- ***Numerous gill filaments …***

19. What is the fate of excess amino acids in the human body (3mks)

Deaminated in the liver ; where amino group is converted to ammonia which combines with Carbon (iv) Oxide to form urea ;

Carboxyl group is converted to glucose which is oxidized to produce energy or glycogen for storage in the liver ;

20. Give reasons for each of the following statements:-

(a) Constant body temperature is maintained in the body (2mks)

……

Most enzymes in the body work within a narrow range of temperature ; high temperatures denature enzymes and low temperatures inactivate enzymes ;

(b) Low blood sugar is harmful to the body (2mks)

……

Sugar is a raw material for respiration ; hence low sugar levels leads to low rate of respiration leading to less energy available to the body / low rate of metabolism ;

21. How is the mammalian fallopian tube adapted to its function? (2mks)

……

- ***Ciliated epithelium to push/propel the fertilized egg towards uterus ;***
- ***Muscular wall to propel the fertilized egg ;***
- ***Funnel shaped end to capture the ovulated egg ;***

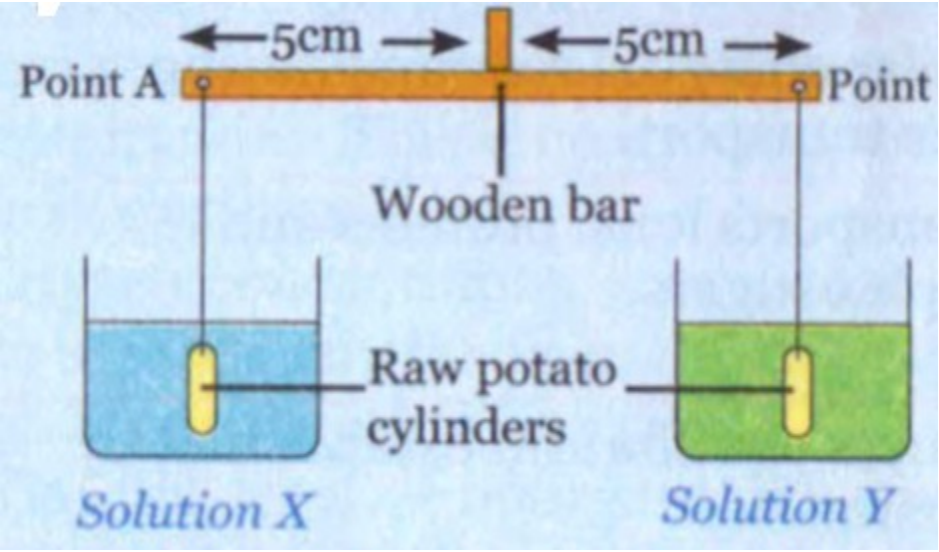
22. State three ways in which ***Homo sapiens*** differ from ***Homo habilis*** (3mks)

……

Homo sapiens	**Homo habilis**
Standing / upright / erect posture	***Stooped posture / less upright***
Communicate through speech	***Speech absent but had a form of communication***
High / bigger intellectual	***Low intellectual capacity***

capacity	
Larger brain capacity	***Smaller brain capacity***

23. The diagram below represents a set –up used to investigate a certain biological process in plants. After seven hours the wooden bar was found to be tilting downwards at point A



Give an explanation on the tilting of the wooden bar downwards at point A (3mks)

……

Solution X is hypertonic to the cell sap of cells in the potato cylinders ; water molecules moved in to the cells of the potato cylinders by osmosis ; thus making the cylinder in solution X heavier than cylinders in solution Y hence the tilting ;

24. State three applications of genetics in Medicine (3mks)

……

- ***Production of vaccines i.e of Hepatitis B***
- ***Production of hormones e.g Insulin***
- ***Medicinal proteins in milk***
- ***Gene therapy***

25. State what can be measured in the following manner using a Potometer (2mks)

(i) Directly

……

Rate of water uptake ;

(ii) Indirectly

……

Rate of transpiration ;

26. A set of triplets were separated at birth and were brought up under different conditions. The table below gives information about them when they met after 18years.

Character	**James**	**John**	**Jacob**
Weight	71kg	70kg	65kg
Height	1.82M	1.85m	1.75m
I.Q	124	124	123
Blood group	A	O	A

a) Which of the triplets could have been identical (1mk)

……

James and Jacob ;

b) Give a reason for your answer (1mk)

……

Both have same blood group which can not be changed by environmental conditions ;

27. (a) State two regions within a cell where the second phase of respiration occurs (2mks)

.....

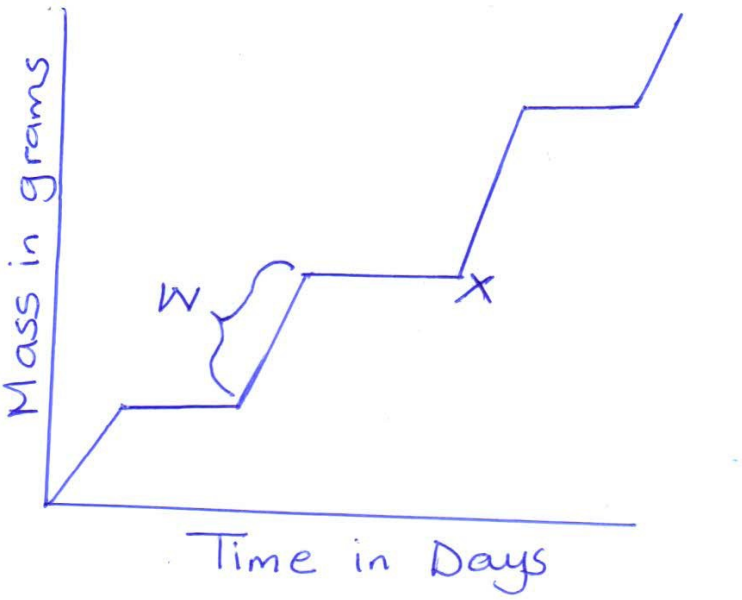
Cytoplasm ;

Matrix of mitochondria ;

c) Give two uses of energy released during respiration (2mks)

- ***Cell division ;***
- ***Secretion of substances ;***
- ***Transmission of nerve impulses ;***
- ***Muscle contraction during movement ;***
- ***Re-absorption of substances in the kidney ;***

28. The graph below represents the growth of animals in a certain phylum



(a) Name the type of growth pattern shown on the graph
(1mk)

.....

Intermittent growth pattern ;

(b) Identify the process marked X
(1mk)

.....

Moulting / Ecdysis ;

(c) Name the hormone secreted by the neurosecretory cells in the brain which stimulates the production of the hormone responsible for the process in (b) above (1mk)

.....

Moulting stimulating hormone ;
Prothoracicotropic hormone ;

29. Give three reasons as to why biological control is preferred to chemical control in the control of pests and parasites
(3mks)

- ***No resistance is developed ;***
- ***No pollution of soil , water and air ;***
- ***No poisoning of human beings and other animals ;***

- ***Vital microbes such as fungi and some bacteria that are decomposers are not killed as with chemical control ;***