

THE ELDORET EAST INTER SCHOOL EXAMINATION – 2010

231/1

BIOLOGY PAPER 1

FORM FOUR

MARKING SCHEME

- 1.- In solving environmental problems e.g. shortage of food, poor health services, pollution
 - Entry into careers such as medicine, agriculture, public health, veterinary practice
 - The scientific skills that are developed while studying biology such as observing, identifying, recording and classifying are useful in every day life.
 - The biological knowledge acquired is useful in international co-operation in such cases as joint development on HIV/AIDS fight to save ozone layer e.g.
2. Trim ethylamine oxide. Acc. Triemethylamine
 - ie requires small amounts / little water is eliminated
3. (a) Papa in; cocaine, Quinine ,Nicotine, caffeine
 - (b) Exudation; Transpiration of excess water; guttation; deposition; diffusion
- 4.(a) – Has thick inner wall and thin anther walls to control opening and closing of stomata
 - Has chloroplasts to carry out photosynthesis/ manufacture of glucose that alters osmotic pressure bringing about opening and closing of stomata
 - (b) Large air spaces to store gases
5. (a) The first letter in the genetic name was not written in capital letter
The two names were not underlined separately
 - (b) Species
6. Flagellum rej. Flagella
7. Discontinuous variation
- 8.- DNA
 - Absence of uracil
 - C A A U C G A C U
9. a) Vestigial structures
 - b) Analogous structures
- 10.- Cell biology
 - Geographical Anatomy
 - Comparative Embryology
 - Fossil record
 - Comparative serology
- 11.(a) Maintenance of a constant internal environment of cells and tissues
 - (b) Higher temperature affects enzyme activity/ denatures enzymes thus affecting body processes.
12. Ammonia is toxic. Requires a lot of water to dilute land animals need to conserve water thus do not produce nitrogenous waste as ammonia
- 13.(i) Manipulate food/roll food into boluses/push food to the back of the mouth
 - (ii) Its muscles contract and relax causing peristalsis / movement of food along the esophagus

14. Glycogen is usually inactive and can be stored without changing the osmotic pressure of body fluids

15 Vitamins

Minerals

16(a) Carry out photosynthesis

- (b) (i) Numerous grana to increase surface area for photosynthesis
- (ii) Stoma has numerous enzymes

17. Staining helps to highlight structures in a cell so that they can be clearly seen

18 (i) Taking in of water by the seed through the micro Pyle

(ii) Moulting / shedding of the exoskeleton in insects

19. (i) Allows for larval stages to continue / inhibits moulting to pupa or adult

(ii) Corpora allota

20.(a) Seminal vesicles cowpers and prostate gland

(b) Interstitial cells

21. (a) They rely on external fertilization which requires water for transportation of sperms

(b) used in respiration to provide energy for active transport

22. (a) Antigen(A and B)

(b) Rhesus

23. (a) (i) Carbonic anhydrase

(ii) Responsible for breaking down sodium bicarbonate

(b) (i) Malaria sickle cell anemia

(ii)Aids leukemia

24 (a) (i) As the volume of hydra increased, the rate of oxygen absorption decreases

(ii) Because as hydra grew the surface area to volume ratio increases

(b) Tar

25. (a)(i) The total dry weight of living organisms(at a particular trophic level)

(ii) Part of the atmosphere inhabited by living organisms

(b) – Light intensity decreases with depth hence photosynthesis decreases

- Temperature decreases hence enzymatic activities decrease

26. (i) Self sterility

(ii) Heterostly

(iii) Protandry

(iv) Protogyny

(v) Dioecious plants

(b) (i) X-meiosis

Y-Mitosis

(ii)-Anthers

- Ovary

27 (a) scientific system of naming organisms using its genetic and specific species name

(b)-placing/ grouping of living organism into correct group/taxa for identification

purposes

-Easy to study organisms according to groups

-Helps in understanding of evolution relationships

- Monitoring the disappearance and appearance of organisms/ predict the characteristics of organisms

28.(a) –oxygen

-Hydrogen

(b) (i) condensation-lose of water

(ii) Hydrolysis-addition of water

29. (a) (i) The walls are strengthened by deposition of lignin material that prevent the collapsing

2. Bordered pits on the xylem vessels permit the passage of water in and out of the lumen into the neighboring cells

3. The narrow lumen of vessels and tracheids enhances capillarity force

4. Presence of pits on the lignified walls allows for lateral movement of water e.g. from vessel to vessel or from vessels to living cells

(b) (a) Water vapor accumulates in the pits this reducing transpiration

(b) To reduce the surface area over which transpiration occurs

30. (a) It is the minimum rate of respiration of an organism that is required when it is at rest

(b) –Brewing industry-making beer wines fermentation

-Bread production-Carbon (iv) oxide released during fermentation rises the dough

- Production of biological and gasohol used as a source of energy

- Fossil fuel formation e.g. coal oil and natural gas

-manufacture of dairy products such as butter cheese and yoghurt

© Adenosine triphosphate (ATP)

(d) Energy ethanol alcohol

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231/3
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MARKING SCHEME

(a)

Cylinder in	observation on length
Air	No change /30mm
Solution K	Reduction/ Decrease/28mm=1mm
Solution B	Increase/32mm=1mm

K-Hypertonic solution/Highly concentrated

B-Hypotonic/less concentrated/ lowly concentrated

Act as a control (experiment)

(i)Solution K

The solution is more concentrated/ hypertonic than the potato cells therefore the water molecules moved out of the potato cells by osmosis making the cells flaccid hence a decrease in the length of the cylinders

(ii) Solution B

The solution is less concentrated/Hypotonic than the potato cells water molecules moved into the potato cells by osmosis making the cells turgid hence an increase in length of the cylinder

Osmosis

(i) There would be no change in length

(ii) Boiling kills the potato cells and denatures/ destroys the cell membranes hence osmosis will not occur

Anthropoda

- Have jointed appendages
- Body covered with a hardened exoskeleton
- Are segmented
- Body divided into head, thorax and abdomen
- Bilaterally symmetrical
- Head well developed with eyes and sensory structures

(i) Insects

(ii)- The body is divided into 2 parts, head, thorax and abdomen

- The head has one pair of antennae
- The head has a pair of compound eyes

P

With wings

The hind legs modified for jumping

Has a hard body cover

Has a pair of compound eyes

Three mouth parts

Q

Without wings

All pairs are walking legs

Has a soft body cover

Has no eyes

Two mouth parts

Members make honey

Some members help in pollination

Some members food for some communities (rich in protein)

Biological control of water hyacinth

(a) A-Mitochondrion Rej. Mitochondria B-Nucleolus C nuclear membrane D nuclear pore

(b) E-protein F- Allows passage of material into nucleus

© A-Has cristae- provide large surface area for attachment for respiratory enzymes

D- Tubular channels - for transportation of protein materials

(d) Stage –Non-living stage

Reason- Prominent nucleus

(e) Length of A =8 cm

1mm=1000mm

80000 microns

80000 x 1

40000

=2 microns