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BIOLOGY

PAPER 1

MARKING SCHEME

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THE KENYA NATIONAL EXAMINATION COUNCIL

KENYA CERTIFICATE OF SECONDARY EDUCATION

BIOLOGY

PAPER 1

MARKING SCHEME

(CONFIDENTIAL)

1. Species;
2. a) (Asexual) reproduction; Rej sexual
b) Irritability / Response (to stimulus/sensitivity)
3. Form canopies/ shadows / Shade; which prevent light from reaching grass; grass die / fail to flourish due to their inability to photosynthesize.
4. - Cell wall is fully permeable while cell membrane is semi permeable (cell wall has larger pores while cell membrane has smaller pores)

- Cell wall is (mainly) made up of cellulose fibres while cell membrane has a (double) protein layer sandwiching a lipid layer; Acc Lipoprotein ;
- Cell wall is rigid/tougher (cannot burst) while cell membrane is weaker (bursts);

5.

- a) Fungi; Acc fungi
- b) Saprophytism/Saprophytic / food on dead decaying (organic) matter; Rej saprophyte
- c) (i) Hypha; Hyphae ; Acc Mycellium, Rhizoids
(ii) Secretes digestive enzymes (for external digestion);
Anchors the organism / mushroom (firmly) onto the substrate; Acc. Anchorage)
Absorbs digested food material/ Absorbs water and mineral salts/ ions;

6.

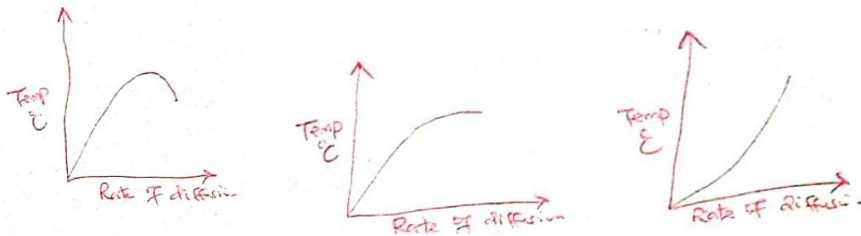
Increases the surface area for (efficient) exchange / transport of respiratory gases (oxygen and carbon (iv) oxide) ;

7.

Haemophilia; Acc Hemophilia

8.

a)



- b) The rate of diffusion increases with the increase in temperature; Increase in temperature increases the kinetic energy of the (diffusing) molecules (increasing the rate of diffusion)

9.

- a) Plants are less active than animals, hence require process;
- b) During germination (to generate energy required for the process)
During rapid growth/ cell division (at the tip of the roots/shoots)
During active uptake / transport of substances (through the roots);

10.

Waterlogging submerges the plant root system; cutting off supply of oxygen to the roots/ soil surrounding the roots; (aerobic) respiration in the roots is hampered; active uptake / transport of materials is affected (leading to the death of the affected plants);

11.

- K Ulna
- L Radius

12. a) Rapid absorption of water by (germinating) seed through the micropyle / seed coat
b) During germination stored food in the endosperm is broken down /hydrolysed / oxidized; to provide nutrients for the growing embryo;
13. Presence of cones
Naked seeds/ seeds not enclosed in fruits
Xerophytic characteristics / needle like leaves / thick waxy cuticle / sunken stomata
14. a) Intermittent /stair case (growth curve)
b) Arthropoda; correctly spelt, Acc arthropoda / Athropoda
15. a) Missing links due to complete decomposition of some organisms; Acc some parts decompose;
Distortion of parts during sedimentation
Destruction of fossils by geological activities (earthquakes/ faulting / mass movement of earth's surface / volcanicity
b) Presence of similar cell organelles (mitochondria, Ribosomes, lysosomes);
Similar biological chemicals (ATP /Proteins/DNA); Similar blood pigmentation in tissues of some groups of animals show they have a common phylogenetic origin
16. a) Ovulation;
b) Follicle Stimulating Hormone Rj FSH/
Oestrogen / Estrogen
Luteinizing hormone Rj LH
c) Sickness
(Drastic) change in weather / environment;
Pregnancy / implantation/ conception rej fertilization;
Emotional instability (anger, stress, anxiety)
17. Renal artery branches directly from (dorsal) aorta whose blood under high pressure; afferent arteriole / supplying blood is broader than efferent taking out blood;
18. a) Insulin
b) Pancreas
c) Diabetes mellitus
19. a) S Pepsin; Acc. Rennin, Chymosin
T Trypsin;
b) (i) Duodenum;
(ii) In the duodenum the medium is alkaline/basic; favouring the optimal working of the enzyme (T) as illustrated;
20. To completely kill/ contain the (targeted) pathogens; since failure to take full dose accords the pathogens an opportunity to develop resistance to the drug ; the pathogen mutates (overtime) giving rise to new strains ; finally the drug becomes ineffective)

21. They lack ovaries
Have small uterus
Less number of chromosomes
22. a) A circular area seen (onstage) when focusing / viewing through the eye piece of a microscope
b) Holds the revolving nose piece / objective lens in place ;
Holds the ocular / eyepiece (lens) in place;
c) To avoid rusting
To avoid interference with the visibility of the lens;
23. Constrict during cold/ low temperature to conserve heat
Dilate during hot/ high temperature ; to facilitate heat loss;
24. a) i) Juvenile (hormone)
ii) Prothoracic (gland)
b) Ecdysone (hormone) causes metamorphosis; or causes the larval stage (of an insect) to change / metamorphosize into pupa and pupa into adult;
c) i) Complete metamorphosis;
ii) During moulting (the tough /hard impermeable) exoskeleton is shed; allowing the (soft permeable) larvae to take in air/water leading to rapid growth (which in turn results to increase in size of the organism);
25. a)
- | Part | Adaptation |
|------------|--|
| Cambium | Small cells with a dense cytoplasm to enable rapid mitotic division / giving rise to secondary growth; |
| Parenchyma | Have a thin wall for faster passage of materials ;
Have large vacuole / irregular shape for storage / provide space for packing |
- b) Sisal is a xerophyte) the thick cuticle enables it to conserve water reduce water loss; it is shiny to reflect light, minimizing evaporation by radiation.
26. The individuals blood has both antigens A and B; which will coagulate / agglutinate with antibodies a and b; found in individuals with blood groups A, B and O; OWTTE
27. a) i) Photosynthesis;
ii) Starch;
- b) Respiratory enzyme s
Absence/ Little oxygen
- c) Optimum temperature
Light
Water
Moisture