

Marking Scheme

231/1 Biology Theory Paper 1 , term 3 2019

1. (a) Cytology; physiology; Anatomy; Biotechnology; Biochemistry;

(b) Pair of Forceps – crabs; Fish net – fish/cray fish; Sweep net – insects; Mark first response

2. (a) In codominance both genes are expressed phenotypically in the heterozygous state (the genes usually have equal dominance) while in incomplete dominance the genes produce an intermediate phenotype in the heterozygous state / they are expressed by blending (neither of the genes completely dominates over the other); Note: Significance given to difference based on products rather than degree of dominance of the allelic genes.

(b) State one major difference between the mitotic telophase of animal cells and that of plant cells. (

In animal cells the cell divides by constriction of the cell membrane while in plant cells a cell plate forms within the cytoplasm and grows to separate the cell into two.

3. (a) Auxins inhibit development of side branches and enhance apical dominance; removal of the shoot tips/pruning removes the auxins reducing the inhibitory effect's and hence the side branches develop increasing productivity

(b) Minimises water loss; Protects the plant against infection by fungi; Protects the plant against mechanical injury;

4 (a) Luteinizing hormone;

(b) Pregnancy didn't occur; At the end of the cycle the level of progesterone reduces due to degeneration of the corpus luteum;

(c) Ovary;

(d) Menstruation;

5. To reduce heat loss; since the feathers trap more air; that acts as insulator against heat loss/that is a poor conductor of heat;

6. (a) Cylindrical body; Body has between 9 – 100 segments; Two pairs of many simple eyes; 2 pairs of legs per segment;

(b) 1 (a) Animal with two body parts -----crab (b) Animal with three body parts -----
----- go to 2 ;

2 (a) Animal with wings ----- House fly (b) Animal without wings -----
----- termite ;

Acc. Correct use of given letters for identity.

7. Skeletal muscles Contract and relax to bring about movement; Thermogenesis/production of heat through shivering; Provision of support Sclerenchyma tissue Provide mechanical support in plants;

8. (a) Structural modification of a cell to perform a particular function;

(b) Elongated axon for impulse transmission; Presence of nodes of ranvier to speed up/propagate impulse transmission; Myelin sheath provide electric insulation; Dendrites for transmission of impulses to/from adjacent neurons; Schwann cell secretes myelin sheath for electric insulation; Mark 1 st two

9. Ensure that the objective lens is clicked into position with the eye piece lens; Adjust the mirror; Ensure that the diaphragm is fully open; Mark 1st 2 responses

10. Animals are more active hence fast accumulation of metabolic wastes; Animal waste is more/highly toxic; Most animal wastes are in liquid or solid form and cannot be excreted by simple diffusion; Mark any 2 responses

11. (a) Other factors like carbon (IV) oxide and temperature ; Become limiting/they cannot support a higher rate of photosynthesis;

(b) Carbon (IV) oxide concentration; Temperature; Availability of water; Chlorophyll concentration;

12. (a) It is the hidden pressure a solution has to draw water molecules from distilled water (which only becomes real) when the two are separated by a semi permeable membrane. / The potential /ability of a hypertonic solution to draw water from a hypotonic solution across a semipermeable membrane;

(b) Plants absorb mineral salts by active transport; change in pH affects respiratory enzymes; hence amount of energy produced for active transport;

13. (a) Not all the energy in one trophic level is passed on to the next. Some is lost to the environment by excretion, defecation, respiration, decay and decomposition.

(b) It hinders aeration of water/oxygen penetration; and clogs respiratory surfaces of organisms hence may lead to death of other animals and plants.

14. (It influences behavior of organisms and affects their distribution in the habitat) Extreme temperatures may denature/inactivate enzymes; and hence organisms live in environments with temperatures close to their optimum.

(b) Cannot be used for immobile organisms e.g. the plants May be inaccurate due to migration or other animal behavior

15 Penetration of light in water Secchi disc; Light intensity Photographic light meter;

16. (a) Hepatic portal vein;

(b) The bodies of some people react to allergens like bee sting by over producing antibodies; An antigen – antibody reaction occurs causing cells to burst to release histamine; which causes blood vessels to be dilated

lowering pressure, inflammation increased permeability of epithelial cells which causes swelling and inflammation
OWTTE

17. Long, conical/curved canines to hold/kill/tear the prey; Has premolars specialized into carnassial teeth with smooth sides and sharp edges to slice through flesh and crush bones;

18.. (a) To compare the number of root nodules of plants growing in soils of different nitrogen fertility/concentrations;

(b) Plants growing in tray B had more nodules than those growing in soil rich in nitrogen; root nodules have Rhizobium bacteria that fix nitrogen in the soil;

19. The mature parent cell forms an outgrowth/projection/bud; the nucleus divides into two and one of the nuclei moves to the bud; the bud grows and develops into a new independent cell;

20. Apocarpous has gynoecium whose carpels are free while syncarpous has gynoecium whose carpels are fused.

(b)

fruit	Type of fruit	Agent of dispersal
Black jack	Cypsela	Animal
Coconut	Drupe	Water

21. (a) Name Juvenile (hormone);

(b) Adult All stages; Correct arrows; Pupa egg

Larva

22. (a) The vertebrate forelimbs; The beak of birds; The feet of birds;

(b) Some parasites have a gene/mutate to acquire the gene for resistance to the drugs used; (the ones without the gene are wiped by the drug). The ones with the resistant gene survive to maturity and their offspring inherit the genes; A new population of resistant parasites is hence developed; OWTTE

23. (Descending limb of the) Loop of Henle; Distal convoluted tubule;

24. (a) Pyruvic acid/pyruvate;

(b) Increase surface area for attachment of respiratory enzymes;

(c) Glucose; If soluble hence easily transported to respiratory sites; requires less oxygen to oxidize; any one reason for 1 mrk

25. The continents were once a large land mass Pangaea; The land mass broke up into parts which drifted from each other; causing isolation of the different animals; The isolated animals evolved along different lines resulting into speciation; 4 max 3 marks

26. Down's syndrome; Klinefelter's syndrome; Turner's syndrome; Rej incorrect spellings