SCHOOL BASED FORM FOUR EXAMINATION JULY/AUG 2017
Biology 231/1
Marking Scheme

1. i) Exoskeleton; Rej. External skeleton
ii) Endoskeleton; Rej Internal skeleton
2. Chordata;
3. Have large and numerous air spaces;
Hence facilitation buoyancy;
4.a) nucleous;
b) nuclear membrane/pore; Acc. Tonoplast
c) lysosomes;
5.a) Motor neurone; It cells body is situated at one end of the axion;
b) Transmittes impulses from the CNs to the effector organs;
6) - Sieve tubes have perforated cross walls to allow passage of materials;
- Companion cells supply energy to the sieve tubes for translocation;
- They have cytoplasmic strands to facilitate movement of translocated materials;
- Presence of plasmodesmata to allow lateral movement of materials;
7.a)i) - are those structures that have ceased to be functional over along period of time and hence reduced in sizes;
ii) - Appendix;
- Caecum;
- Coccyx or tail/ tail bone; body hair;
b) Disease causing organism mutates; pass gene to offspring through reproduction; become resistant;
8.a) Submandibular/ submaxilarry; sublingual;
b) Lubricate food; soften food; moisten food; dissolves food; provide alkaline medium; Mark the first 2
9. a) Catalyses the breakdown of toxic hydrogen peroxide; to harmless water and oxygen (in active tissues);
b) Very low temperature;
10. a) Repiration;
b) Remove/ absorbs CO_2 from atmospheric air;
c) L – lime water remains clear because carbon (IV) oxide has been removed;
N – lime water forms white precipitate because the respiring germinating peas produces carbon (IV) Oxide;
Rej: milky/ cloudy
11. Diabetes mellitus – the pancrease is unable to produce adequate amount of insulin this lead to very high level of glucose in blood above normal result to glucosyria;
Diabetes insipidus – the pituitary gland is unable to produce adequate amount of ADH this leads to the production of large amounts of dilute urine (dieresis); (mark as whole)
12.i) Study of different species of organisms interacting among themselves within a community;
ii) The maximum number of organism an area can comfortably support without depletion of the available resources;
iii) The members of a given species in a particular habitat;
13. Lead to accumulation of moisture in substomatal air spaces leading to low diffusion gradient; thus reducing transpiration rate;
14. a) The smaller an organism is the higher is its surface area to volume ratio; vice versa is correct.
b) K;
c) Smaller organism have a considerably higher surface area to volume ratio than larger ones thus diffusion along is sufficient to transport materials in and out of the organism;
15. - Bodies are covered with feathers for insulation and flight;
- They have beaks;
- They have hollow bones;
- They lay yolk eggs with calcareous shells;
16.a) - Scapular;

- Humerus;

ii) Ball and socket joints;

c) - Have large surface; for the attachment of muscles (that move the arm); (mark as a whole)

17. Desert mammal — Fresh water fish
- Few — - Many;
- Small glomeruli — - large glomeruli;

18. - Is highly vascularised to supply the eye with oxygen and nutrients;
- Pigmented enabling it to absorb scattered light thus reducing reflection within the eye;

19. Magnification = $\frac{\text{Drawing length}}{\text{Objective length}}$

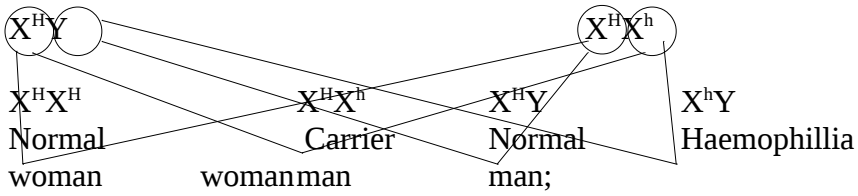
$= \frac{5}{10}$;

= X 0.5;

Rej – if X is not there
- If units are indicated

20. Parental phenotype – Normal man Carrier woman

Parental genotype X^HY X X^HX^h



21.a) Avoid collapse of trachea during breathing movement/ keep trachea open throughout for passage of air;

b) For maximum diffusion of gases/ maximum gaseous exchange;

22.i) Intermittent (growth) curve;

ii) P – Q
- Shed off exoskeleton/ moulting/ ecolysis;

Q – R
- Hardening of exoskeleton/ formation of exoskeleton;

23. a) Storage of sperms;

b) Produces a clear alkaline fluid which neutruses acidity of urethra;

c) Enclose testes loosely;
It hangs testis outside body providing optimum temperature for spermatogenesis;

24. Control learning and intelligence;
- Control voluntary body movements;

25. - Production of alcoholic drinks;
- Baking;
- Processing of dairy products eg. Cheese and yoghurt;
Rej. Brewing alone.

26. - Light intensity decreases with increase in depth;
- Oxygen concentration decreases with increase in depth;
- Water temperature decreases with increase in depth;
- Carbon (iv) oxide concentration decrease with depth hence lowering productivity;

27. - Immature embryo/ not yet fully developed;
- Presence of chemical inhibitors that inhibit germination in seeds; Acc correct example abscisic.
- Impermeable seed coats to air and water;(Rej. Impermeable seed coat alone)
- Presence of germination inhibitors;

28. a) - Osmosis;
- Antiduretic hormone; Acc vasopressin.
Rej.ADH.

b) Urea;

Uric acid;
Ammonia;