

2020 FORM 4 TERM 1 ENRTY EXAMS

231/1

BIOLOGY

Paper 1

(Theory)

Marking Scheme

- 1. a) Nucleolus;
- b) Nuclear membrane;
- c) Lysosome; 3 marks
- 2. a) Entomology b) Cytology 2 marks
- 3. a) Carbon(IV) oxide, hydrogen ions / atoms 2 marks
- b) Oxygen gas
- 4. – thick cuticle
- Stomata on lower side of the leaf
- Fewer stomata
- Small stomata pore
- Needle like leaves 3 marks
- 5. a) Active transport / diffusion 1 mark
- b) Difference between number of molecules on the region of high concentration and the region of low concentration.
- 6. a) An enzyme is a biological/organic catalyst that speeds up to slows down the rate of biochemical reactions in living organisms. 1 mark
 - PH - substrate concentration - Temperature
 - Enzyme concentration - co-factors and co-enzymes. 1 mark
- 7. - Thrombosis
- Varicose veins
- Arteriosclerosis.
- Hypertension acc. high blood pressure.
- Cerebral/vascular/coronary thrombosis.
- b. - Regulation of body temperature.
- Regulation of PH of body fluids.
- defences against diseases causing organism/ pathogens/infection.
- prevent excessive bleeding by enhancing clotting/prevent excessive loss of blood. 1 mark
- 8. - Stomata are found on upper epidermis; for efficient gaseous exchange;
- Presence of large air spaces/ aerenchyma tissues; to enable it float/ for buoyance;
- presence of large air spaces; for storage of air; 4 marks (any two)
- 9. a) Rises upwards; and outwards; 2 marks
flattens 1 mark
- 10. a) Anaerobic respiration 1 mark
- b) Plants 1 mark
- c)
 - Baking of bread.
 - brewing of alcohol.
 - production of biogas and gasohol.
 - manufacturing of dairy produces.
 - treatment of sewage

- Production of silage.
- production of organic products e.g. citric acid. 1 mark
- 11. Vitamins, minerals; water; rej cellulose/ roughage. 3 marks
- 12. i) Treatment of leather 1 mark
- ii)
 - causes polyploidy 1 mark
 - used in treatment of cancer 1 mark
- iii) Quinine- used as anti-malaria drugs 1 mark
- 13. a) Stroma 1 mark
- ii) Provides a large surface area for maximum packages of chlorophyll hence photolysis/splitting of water molecule.
 - Bearing photosynthetic pigments of chlorophyll molecules hence site for light dependent reaction.
 - Where light is trapped for photolysis 1 mark
- 14. a) Metaphase I (1 marks)
- b) Association of homologous chromosomes.
 - Homologous chromosomes lie side by side on the equator of the spindle fibres (2 marks)
- c) P-spindle fibre (1 marks)
- 15. a) Slow down movement of food allowing time for digestion and absorption;/ be able to fit the abdominal cavity; 1 mark
- b) To increase surface area for maximum absorption of food;
- 16. a) Afferent arteriole
- D- Bowman's capsule 2 marks
- b) A-wider lumen
- B-narrow lumen 1 mark
- c) Proteins
- Blood cells 2 mark
- 17. a) This is because the role of secreting progesterone which maintain pregnancy is taken over by the placenta ; 2 marks
- 18. a) Have cell wall made of Murein
 - Genetic/ nuclear material not surrounded by a nuclear membrane hence prokaryotic
 - Lack most organelle/have few organelles/mitochondria absent. 2 marks
- b) Class insecta
- 19a) M-male nuclei
- N- Tube nucleus
- b) One of male nuclei fuse with egg cell to form a diploid zygote; the other male nucleus fuses with polar nuclei; to form a primary endosperm nucleus. 2 marks
- 20 a) Plantae (Reject small p)
- Bryophyta(Reject small b) 1 mark
- b. -Formation of spores 1 mark
- c. -Anchorage
- Absorption of water mineral salts 1 mark
- 21 a) Change in body form during the life cycle of an organism; 1 mark
- b) In the larval stage there is vigorous feeding; hence the insect obtain enough nutrients/ food 2 marks
- 22 i) Hypertonic (1 mark)
- ii) Plasmolysed cell

iii) water molecules moved out of the cell by osmosis due to hypertonic solution therefore the cell membrane detached from the cell wall (2 marks)

23 The surface area to volume ratio is higher in calves; hence adults retain more heat than the calves hence need to have other ways to lose heat./ the surface area to volume ratio is lower in adults than in calves; hence calves lose more heat than adults.(2 marks)

B Elimination of uric acid requires less water than ammonia, hence (more) water is conserved; uric acid is less toxic than ammonia hence safer to excrete where there is less water; (2 marks)

24 Ability of a seed to retain viability while having restricted metabolic activity;/ state during which a viable seed cannot germinate when conditions are suitable;(1 mark)

b) Abscissic acid; (1mark)

c) Epigeal-Cotyledons, brought above ground level; hypocotyl elongates faster while in Hypogeal cotyledons remain below ground level, epicotyl elongate faster 2 marks

25 a) Candida albicans 1 mark

b) Treponema pallidum 1 mark

26 $P = \frac{fm \times sc}{MR} = \frac{60 \times 72}{10}$; 432 *tilapi* 2 marks