

FORM FOUR CLUSTER KCSE MODEL5

BIOLOGY PAPER 1 ANSWERS

1. After vigorous activity/when blood sugar level falls below normal.
2. (i) Mesophyll cells/spongy mesophyll/palisade mesophyll/substomata/ space
(ii) Lenticel
(iii) Cuticles
3. (i) Hypo secretion of insulin
(ii) Hyposecretion of Antidiuretic hormone
4.
$$P = \frac{FM \times SC}{MR} = \frac{375}{80} \times 400 = 1870$$
5. a)
(i) Feeding and growth
(ii) Reduces competition within the species.
b)
(i) Adult and larvae exploit different food.
(ii) Adult and larvae don't compete for food.
(iii) Pupa can survive adverse conditions
(iv) Pupa being a non-feeding state enables organisms to go through adverse condition.
6. The surface areas to volume ratio is higher in calve than in adults; hence adults retain more heat. /Surface area to volume ratio in adults is lower than the calves hence calves loose more heat per unit area more than the adults.
7. a) Golgi apparatus/Golgi bodies
b) Synthesis and packaging of secretion
Transport of Glycoproteins
Formation of lysosomes
Formation of materials that form new cell walls
8. (a)When organisms of same origin become modified (adopted) in different ways in order to fit in the environment.
(b)The organisms are separated due to natural factors.
9. a)
(i) Ovule
(ii) Axile placentation
b) Orange/any citrus plant

$$\begin{aligned} \text{a)} \quad RQ &= \frac{\text{Carbon(iv)Oxide concentration produced}}{\text{Oxygen consumed}} \\ &= \frac{9.3\text{cm}^3}{9.1\text{cm}^3} = 1.02 \end{aligned}$$

b) Carbohydrate

10. (i) RNA

(ii) Has the base uracil

(iii) C—T—G—A—T—C—T—G—C

11. a) Molecules move passively from a region of high concentration to a region of low concentration

b) -Presence of metabolic poison.

-Low concentration of oxygen.

-Low glucose concentration.

12. Cephalothorax; prosoma.

13. -Numerous chloroplasts to absorb light

-Large air spaces/aerenchyme tissue for air storage.

-No cuticle to facilitate exchange of gases.

14. a) Increase thoracic cavity volume/reduces pressure inside the thoracic cavity/intake of air into the lungs.

b) -Pneumatophores

-Aerenchym tissue

15. a) The placenta takes the role of the ovary to produce the hormone progesterone which maintains pregnancy.

b) Production of gametes/ spermatozoa / male sex cell

16. a)

i) Ethanol , 2 CO and ATP energy

ii) Lactic acid, CO₂ and ATP energy

b) Extra oxygen taken into the body to break lactic acid.

17. a) Zone of cell elongation.

b) Protect the delicate apical meristem.

c) -Lack vacuoles.

-Have thin cell walls.

-Are small.

-Are actively dividing.

18. a) Mechanical support.

b) Enables plant to obtain water and mineral salts.

19. a) Sucking small insects/Animals for barks of trees and rocks.

b) Trapping small crawling animals.

20. a) Deletion

Inversion

Duplication

Non disjunction

Translocation

b) Y -Premature baldness

-Hairy nose/ears

X -Colour blindness

-Haemophilia

21. Acquired characteristics are not inherited;

Inherited characteristics are only found in reproductive cells.

22. a) Deamination

b) Removal of excess amino acids /

c) Proteins

23. a) Sporangium

b) Absorption of nutrients

Anchorage

24. -Emulsification/breaking down of fats into tiny droplets.

-Creating alkaline medium for digestive enzymes/neutralizing acidic chyme for the stomach.

25. i) Oxidation of stored food to provide energy for germination.

ii) Protect plumule/store food necessary for germination.

iii) Hydrolyze stored food/activate enzymes/breaks dormancy/soften the testa/seed coat/used as a solvent or transport media.

26. Lungs

Urea/ammonia/ urea; nitrogenous wastes/digested food/water mineral salts/ vitamins

27. a)

- i) Closely packed granna to increase surface area for photosynthesis.
 - ii) Presence of enzymes in stroma to facilitate photosynthesis process.
- b) Iodine solution

28. a)

- i) Diffusion
- ii) Active transport b)

-Concentration gradient between sodium ions in the sap and those in the pond.

-Energy in form of ATP/ Oxygen and food in the living tissues for respiration to provide energy.