



PROVISIONAL MARKING KEY
BIOLOGY I

BIOLOGY CEED MOCK PAPER 1 2024

1. a. water 1 mark
- b. It is when the rate of photosynthesis is equal to the rate of respiration such that gas exchange between the leaf and the atmosphere does not occur. 1 mark
2. a. biotic (animal, -plant-), abiotic (physical factors). (any 2 times 1)
- b. -- Thin cuticle or lacking it, permits them to absorb water, mineral salts and carbon dioxide over whole surface.
- Roots not well developed, but provide anchorage and absorb nutrients.
 - Many air spaces (aerenchyma) that make them buoyant.
- Little xylem and support tissues, to make them less dense in water. (any 2 times 2)
- c. i. --increase surface area for enzymes digestion
- decrease the size of food for easy swallowing
- ii. prevents digestion of the intestinal wall by the enzymes (any 1 time 1)
- d. --ulcers-constipation-diarrhoea-heart burn-nausea-vomiting-indigestion
3. a. (i) A- cortex
- C- Pelvis



(ii) Nephrones.
(1mark).

b. (i) Ureter carries urine from kidney to bladder.
(1mark).

(ii) Renal artery supplies kidneys with oxygenated blood.
(1mark).

c. a pathway of an impulse along the sensory, relay and motor neurones during a reflex
action / a pathway of stimuli responsible for bringing about a reflex action.

(1mark)

d. quick withdrawal of a hand from a hot object / sudden blinking / salivation / coughing
- sneezing / constriction of the pupil / secretion of tears / crying when in danger / running
away from danger any 2
(2marks)

e. The nerve impulse arrives at pre-synaptic membrane or knob which causes release of
neurotransmitter substance like acetylcholine.
- The neurotransmitter diffuses across synaptic cleft to post synaptic membrane causing
post synaptic membrane to depolarise and produce a nerve impulse.
- The neurotransmitter is destroyed by enzymes like cholinesterase, to allow post synaptic
knob repolarise. Mitochondria provide energy for active transport. (3 marks)

4. a. (i) High amount of carbon dioxide in blood leads to increased breathing rate which
triggers increase in oxygen uptake and it's concentration.
(2marks).

(ii) The contraction and relaxation of muscles requires more oxygen, hence
increasing breathing rate and more carbon dioxide produced that is removed from the
body.
(2marks).

b. (i) headache / nausea / abdominal pains / dizziness / cough / cardiac arrest / blurred



vision body weakness.
(2marks).

any 2.

C - Providing awareness (civic education) for carbon monoxide poisoning to people.

- Ensuring adequate ventilation for all burning equipment.
- Monitoring devices can be installed to check carbon dioxide levels in buildings.
- Seeking early medical advice and treatment once symptoms are detected.
- Never burn fuels or run engines in poorly ventilated places.

any 1.

(2marks).

5. a. a sudden change in the genetic constitution of an organism

b. –chromosomal - gene

c. – insect resistant to insecticides

- microbes resistance to antibiotics

- genetic diseases in man (albinism, haemophilia, sickle cell anaemia, colour blindness)

-brings about variations

d (i) –testes/testicles

(ii)- ovary

e.- has acrosome with lytic enzymes that dissolve away vitelline membrane allowing penetration of ovum by sperm

-has large mitochondria to provide energy for swimming

- has a tail that aids in swimming

f.i. stops ovulation from taking place

ii. –prevents/blocks implantation from occurring

6. a. Thyroxine

b. It prepares the body for action



c. Hormones are transported by blood which circulate to different parts of the body/ before carrying the hormones to the target organ.

7. a. Destroys Helper T- cells/ thereby making the body prone to opportunistic diseases.

b. -Cause malfunctioning of affected organ

-Compete with normal cells for nutrients

-Release chemicals the alter body function

(Any 2x1)

8. a(i). P - Umbilical artery

Q - Umbilical vein

(ii). P -contains urea while Q does not contain urea.

Q -contains glucose while P does not contain glucose

Q -contains amino acids while P does not contain amino acids

(Any 2x1)

b. -Has thin walls/to ensure faster diffusion of substances from the mother's blood into the foetal's blood and vice versa

-Has numerous villi/ to increase surface area for diffusing substances.

-It is supplied by a dense network of blood capillaries/ to provide transport for diffusing substances.

-it produces progesterone to sustain pregnancy

(Any 2x2)

9. a. A: Pulmonary artery

B. Vena cava



b. C has thicker muscles than D for it to exert enough force /since it pumps blood to all parts of the body.

c. -blood group match

-rhesus factor

- presence of pathogens that cause diseases

10. a. -Alleles of the same genes do not blend

-Alleles of the same genes are inherited independently.

-Allele of the same genes pass into separate cells during gamete formation.

(Any 1x1)

b. i. parental genotype any letter of alphabet capital and small letter

Tt times Tt

meiosis

Gametes T t T t

Fertilization

Offspring TT Tt Tt tt

ii. by test cross the f1 with the pure line homozygous recessive allele.

11. There is ultrafiltration/ ¹ in the glomerulus / due to high pressure which results in smaller substances being filtered ¹ into the Bowman's capsule. The high pressure is exerted due to the fact that the afferent arteriole has a wider lumen than the efferent arteriole ¹, blood is from the heart and glomerulus has a narrow lumen creating resistance.

The substances filtered across the walls of the glomerulus form glomerular filtrate ¹.



Once the glomerular filtrate reaches the proximal convoluted tubule¹, there is selective reabsorption¹ of useful substances/ from the renal tubules into the blood capillaries by either active transport¹ or diffusion or / in case of water. As the glomerular filtrate continues tricking down along the renal tubule to loop of Henle there is osmosis¹ all the useful substances are taken back into the blood capillaries/. In the distal convoluted tubule there is pH balance¹. the remaining fluid in the renal tubules is collected in collecting duct and is called urine¹.

12.-long¹/to provide large surface area for digestion and absorption of food

- muscular wall to sustain peristalsis¹.

- highly coiled¹ / to slow down flow of food substances giving it more time to be absorbed and digested¹.

- muscular glands¹/ that secrete mucus for lubrication and protection¹.

- inner walls has numerous villi¹/ that offer large surface area for absorption of digested products¹.

- villi has lacteal¹/that absorb and transport fatty acids and glycerol¹/

- villi has a network of blood capillaries¹ to transport the end products¹.

13.- capillarity is the tendency of water to rise inside a narrow tube, in plants the xylem forms these narrow tube helping water to rise to a certain height in plants

- cohesion and adhesion- water molecules attract each other thats cohesion and also have strong attraction to walls of the xylem vessels. These two forces assists water molecules to rise up.

- root pressure forces water to move form roots cells into xylem then pushing the molecules of water up.

- transpiration pull – as water molecules evaporate it pull some water molecules up forming a stream and as such it create a continuous flow.

THE END

