**KENYA HIGH SCHOOL**

**POST MOCK EXAMINATIONS**

**FORM 4**

**2021**

*Kenya Certificate of Secondary Education*

**231/1**

**BIOLOGY**

**PAPER 1**

**MARKING SCHEME**

1. (a) iodine solution;

(b) Benedicts solution;

(c) DCPIP;

**2**. (a) photosynthesis;

(b) Respiration;

(c) Protein synthesis;

**3**. Total mg = eye piece magnification X objective lens magnification;

400 = 40 X x;

400/40 = x;

10 = x

Eye magnification is X10;

**4**. (a) Prevents collapsing of trachea;

(b) Traps dust / bacteria;

(c) Propels solid particles/dust towards pharynx;

**5**. (a) Using an organism to control other organisms;

(b) Because energy is lost between trophic levels; due to respiration; /excretion/urination; and defaecation;

Some remains locked up indead bodies;

**6**. - Cohesion and adhesion; - Transpiration pull;

- Capillarity; - Root pressure;

***Rej cohesion, adhesion alone any 3x1 = 3 marks***

**7**. (a) Oxyhaemoglobin;

(b) (Weak) carbonic acid/carbaminohaemoglobin/hydrosa carbonate; ***acc*** bicarbonate ions HCO -3

(c) Carboxyhaemoglobin.

**8**. (a) bacteria;

(b)

- transmits diseases;

- used in fermentation of milk;

- add nitrogen to the soil through nitrogen fixation; e.g. Rhizobium

- Help in decay hence circulate nutrients;

***Mark first three 3 x1 = 3 marks***

(c) Nucleus /organelles are not membrane bound;

**9**. - Lignified walls to prevent it from collapsing;

- Narrow to facilitate upward movement of water by capillary action;

- No cross walls to facilitate formation of continuous water column;

- Have bordered pits for lateral movements of water;

***Mark first three 3x1= 3 marks***

**10**. To increase oxygen supply; to tissues which oxidizes lactic acid;

(Lactic acid is poisonous and must be removed)

**11**. (a)

- Maintaining proper personal hygiene

- Boiling /treating water;

- Depositing stools in deep latrine;

- Treating sewage; ***mark any 2***

(b) Clearing bushes; sleeping under mosquito nets; draining stagnant water; rearing fish in fish ponds; use of mosquito repellant jells/mosquito coil/insecticides; ***mark any 2***

**12**. (Chitinous) exoskeleton; segmented bodies; jointed appendages ***mark first three***

**13**. (a) Glucose; ***Rej. Starch1 mark***

(b) Traps light; used in photolysis/to break water into oxygen gas and hydrogen ions; (***2 marks)***

**14**. (a) Protandry; OWTTE

(b) (i) Protogyny;

(ii) Heterostyly ***mark first 3***

**15**. - manufacture of alcohol/wines/beer;

- baking;

- Fermentation of milk;

- Manufacture of Ethanoic acid/vinegar;

- Treatment of sewage; ***mark fist three***

**16**. To increase surface area; for attachment of respiratory enzymes;

**17**. For storage of carbohydrates/glycogen;***Rej glucose,*** detoxification; Deamination of excess amino acids;

**18** (a) Glucose

(b) Gland - Pancrease;

Hormone – Insulin;

(c) Diabetes mellitus; ***Rej diabetes inspidus and diabetes alone***

**19.** Procreation;

Improves the quality of a species;

**20**. (i) Desert /semi - desert/arid areas /semi arid areas;

(ii) Fresh water;

(iii) Marine /salty water;

**21**. (a) Have cusps; are ridged with flat surface; increased surface area; for chewing food; ***mark any two***

(b) Dental carries; gingivitis; pyorrhea; ***mark first two***

**22**. - has a long tail that aids in locomotion;

- Middle piece has many mitochondria to generate energy (for locomotion)

- Acrosome has lytic enzymes to dissolve ovum wall for penetration of sperm;

- Large nucleus preserves genetic material; ***mark any three***

**23**. (a) K is smooth while L is rough;

(b) K – wind; L – Insect;

**24**. Water vapour accumulates in the depression of stomata; lowering water vapour concentration gradient ;( leading to reduced rate of transpiration)

**25**. (a) Mammalia; *Rej mammal*

(b) Insecta; *Reg insect/ insector*

(c) Arachnida; *Reg arachnid* ***Reg wrong spelling for all***

**26.** (a) synapsis /pairing of homologous chromosomes;

(b) crossing over ;hence variation in offspring;

**27**. Salt exerts osmotic pressure on the cells of grass; Water is drawn from the cells by osmosis; the cells loose turgidity/become flaccid; further water loss dehydrates cells ;( hence kills the plant) 4 marks max 3 marks.