**MID TERM 3 2022 EVALUATION TEST**

**BIOLOGY**

 **FORM TWO**

**MARKING SCHEME**

**SECTION A**

Answer all questions

1.Explain the two main branches of biology (4mks).

*Zoology –study of animals*

*Botany –study of plants*

2.State the role of light in photosynthesis (2mks)

*Provide energy required for splitting water molecules*

3.State the functions of the following cell organneles(2mks)

a)Golgi apparatus

*-packaging of synthesed materials*

*-transport of glycoproteins*

*-secretion of synthesed proteins and chydrates*

b)Robosomes

*site of protein synthesis*

4.What are the three end products of anaerobic respiration in plants(3mk)

*-alcohal (accept ethanol)*

*-carbon (IV) oxide - energy*

b)State the economic importance of the products named above(2mks)

*brewing*

*baking*

5.Below is a diagram representing a longitudinal section of a human tooth

a)Name the type of tooth (2mks)  *premolar*

b)Give a reason for your answer in (a) abobe. (1mk)

*-has two roots*

c)Name the structures P,Q, and R (3mks)

P-enamel

Q-nerve fibres

R-blood vessels

6.The diagram below represents a transverse section of a plant part

a)Identify the class from which it is obtained (1mk)  *dicotyledonous*

b)Name parts G and H (2mks)

*G-xylem*

*H-Phloem*

c)Give one role of J (1mk)

*-consists of parenchyma cells that store water and food substance*

d)Name the three types of transpiration (3mks)

*-stomatal*

*-cuticular*

*-lenticular*

e)Name the strengthening material in the vessels (1mk)

*-lignin*

7.Below is a dental formulae of a certain organism. Use it to answer the questions that follow

$$I\frac{0}{3} C \frac{0}{1} PM \frac{3}{2} M \frac{3}{3}$$

i)Calculate the total number of teeth in the mouth of the organism (2mks)

*(3+1+3+2+3+3)x 2= 30 teeth*

ii)Name the organism (1mk) *herbivore (sheep)*

iii)Identify the mode of nutrition of the organism (1mk) *herbivorous*

b)Name the two dental diseases (2mks)

*-dental caries*

*-periodontal disease*

8.Give a reason why glucose does not normally appear in urine even though it if filtered in mammalian Bowman’s capsule (2mks)

*It is actively re-absorbed back to the blood system within the proximal convoluted tubule*

b)A person was found to pass out large volumes of dilute volumes of dilute urine frequently. Name the:

i)Disease the person was suffering from (1mk)

*diabetes insipidus*

ii)Hormone that was deficient

*antidiuretic hormone*

c)Name the hormone involved in salt balance in the human body (1mk) *aldosterone*

9.State one use of each of the following excretory products in plants (3mks)

i)Tannin- *treatment of leather*

ii)Quinine-*treatment of malaria*

iii)Caffeine-*mild stimulant*

10. The figure below represents a transverse section through the human skin

a)Name the structures A to F

*A-cornified layer*

*B-Sebaceous gland*

*C-malphigian layer*

*D-erector pili muscles*

*E-sweat glands*

*F- Dermis*

b)Give two functions of sebum (2mks)

*-keeps hair and epidermis flexible and water proof*

*-has antiseptic properties*

c)Explain the changes that occur in the skin when it is cold (4mks)

*-when it is cold the blood vessels in the skin constrict (vasoconstriction) and blood is diverted to a shunt system, this reduces blood flow to the skin hence reduces heat lose*

*-erector pili muscles contract causing the hair to stand , trap air which is a poor conductor of heat*

11.The diagram below shows a vertical section through a mammalian heart

a)Name the parts labeled A,B,E and F (4mks)

*A-pulmonary vein*

*B-left atrium*

*E-triscuspid valve*

*F-Pulmonary artery*

b)Use the arrows to show direction in which flows in the heart (2mks)

c)Give a reason why the wall of chamber C is thicker than chamber D (2mks)

*-left ventricles ‘C” pumps blood a longer distance to all parts of the body while right ventricle “D”pumps blood to a shorter distance (to the lungs)*

*-left ventricle C exerts more pressure while ventricle D less pressure*

12.Fill in the table below showing reactions of blood type by putting (√) for compatibility and (×)for

Incompatibility (4mks)

|  |  |
| --- | --- |
| DONOR | RECIPIENT |
|  | Ab | Ba | AB | Oab |
| Ab | √ | × | √ | × |
| Ba | × | √ | √ | × |
| AB | × | × | √ | × |
| Oab | √ |  | √ | √ |

b)What are the advantages and disadvantages of having blood group O? (2mks)

*O donate blood to all other*

*O can receive blood only form group O*

c)What is the advantage of having blood group ABC (2mks)

*-can receive blood from all other groups*

13.a)Name the opening to the chamber of the heart of a grasshopper (1mk) *ostia*

b)Study the diagram below

i)Name the parts marked X-Z (3mks)

*X-capillary of gills*

*Y-artrium*

*Z-ventricle*

c)Identify the type of circulation exhibited above and give an example of an organism with the type of circulation (2mks) *single circulation, fish*

d)State any two diseases of the kidney (2mks)

*-nephritis*

*-albuminuria*

*-kidney stones*

*-kidney failure*

14.The diagram below shows how blood glucose in mammalian body is regulated.

Normal glucose level

Less hormone R secreted hormone Z released

Pancreas secretes hormones

Normal glucose level

 R

a)Name hormone R and Z

*R-insulin*

*Z-glucagon*

b)State two ways by which hormone R lowers glucose level in the blood when it rises above 90mg/ 100cm3 (2mks)

*-stimulates the conversion of glucose to glycogen*

*-stimulates the oxidation of glucose to release energy*

*-causes liver to convert sugar to fat*

15.What is the difference between

 i)Homoitherms and ectotherms (poikilotherms) (2mks)

*Homoitherms –regulate their body temperature*

*Ectotherms-cannot regulate their body temperature.*

ii)Vasodilation and vasoconstruction

*vasodilation- dilation of blood vessels to increase blood flow to the skin encouraging heat loss*

*-vasoconstriction-constrict of blood vessels to reduce blood flow to the skin*

16.State differences between aerobic and anaerobic respiration (5mks)

|  |  |
| --- | --- |
| Aerobic  | Anaerobic  |
| *-Occurs in the matrix**-depends on O2**-End pds CO2 +H2O E**-Substance completely broken down**-High output of E(38ATP)**-Products non toxic**-Water molecules released*  | *-occurs in the cytoplasm**-independent of O2**Endd pds E+CO2 + alcohol/LA**-incomplete**-low energy output 2ATP**-products toxic to cells**-water/ molecules not released* |

b)Study the diagram below and answer the questions that follo

i)Identify the cell organelle (1mk)*mitochondrion*

 ii)What is the function of the cell organelle above (1mk)

*respiratory activity*

iii)Label the parts labeled A to D (4mks)

*A-outer membrane*

*B-inner membrane*

*C-matrix*

*D-inner projections (ristae)*

17.Describe the roles of the liver in homeostasis (10mks)

*a)blood sugar regulation- increased blood sugar detected, pancreas secretes insulin, insulin stimulates liver cells to convert glucose to glycogen to glucose*

*b)deamination of excess amino acids, amino group removed, converted to ammonia CO2 added to form urea*

*c)Detoxification- toxic substances made less toxic ie H2O2 H2O+ O2*

*d)Thermoregulation- from various metabolic reactions*

*e)haemoglobin elimination- worn out red blood cells broken down in the liver*

*f)Regulation of plasma protein*

*g)Manufacture of RBC*

*h)Formation and elimination of excess cholesterol*

*i)Storage of blood Vitamin 6 B,C,E*