**MARKING GUIDE**

**END OF TERM III BIOLOGY EXAMINATION FOR SENIOR ONE**

**MAX: 100marks**

**SECTION A: COMPULSORY (70 MARKS)**

Q1. A) ii.

B) iv

C) i

D) iv

E) iv **/5marks**

Q2. a) A motor car can: move, respire ( gives out CO2 and takes in O2) But it cannot **reproduce,respond to changes** and **grow.**

b) i) Grass: **kingdom Plantae**

ii) Yeast: **kingdom Fungi**

iii) Amoeba: **kingdom Protoctista**

iv) Vibrio cholerae: **kingdom Monera**

c) –single-celled/ unicellular

-reproduction by binary fission

- prokaryotic

- They live in colonies

Q3. a) i) – the name was not underlined

-The name of the genus was written in small letter/it should start with capital letter

-The name of the species is written started with capital letter instead of small one.

ii) Bidens

b) –Put information in an organized manner to avoid confusion among scientists.

-Enable scientists to place organisms in their correct group to make easy their study

- To understand the phylogenetic relationships among organisms.

-To identify groups and proper names for newly discovered organisms.

c) –Stay quiet and do not move the bitten part

- tie a wide elastic bandage or clean cloth slightly above the bitten part in order to stop the flow of the venom in the bloodstream.

- If the antivenin is needed, leave the bandage on until the injection is ready.

Q4.

|  |  |
| --- | --- |
| **Name of the life process** | **Description** |
| **Reproduction** | Living things produce offspring |
| **Growth** | Living things get bigger and develop |
| **Movement** | Living thing change the position of their body, or part of their body |
| Respiration | **Provide cells with the energy they need to carry out the various life processes** |
| Feeding or nutrition | **Living things obtain food and use it.** |
| **Irritability or sensitivity** | Detects and respond to changes in the environment. |

Q5.a)

|  |  |
| --- | --- |
| **Communicable diseases** | **Non-communicable diseases** |
| malaria |  |
| typhoid | albinism |
| Ebola | marasmus |
| tuberculosis | diabetes |

b) Measures that might limit the spread:

* Washing hands often with soap and water /Alcohol (ethanol).
* Avoiding close contact with people Who are infected
* Refraining from touching your eyes, nose and mouth.
* Routinely cleaning and disinfecting commonly touched surfaces like bathrooms surfaces
* Isolating the infected and those who are in close contact with patients during an outbreak.
* Ensure that medical personnel who handle Ebola patient use protective gear.

Q6. a) Length of the image: 100mm, magnification: X10 000

Actual size = length of drawing/magnification

Actual size= 100mm/10000=0.01mm

b) i) the magnification was too low, specifically the magnification of objective lens should be higher than that of eye piece lens.

ii) Magnification used/total magnification= magnification of eye piece lens χ magnification of the objective lens, so Tm= (χ15) χ (χ5) = χ75

Q7. a) - No nucleus to provide more space to package Haemoglobin

- Thin- walled to facilitate diffusion

- Biconcave shape to increase their surface area for absorbing Oxygen.

- have a blood pigment Haemoglobin with high affinity for Oxygen, thus fixing and transporting it.

b) i) A: Nucleus, B: cell body, C: dendrites, D: axon, E: myelin sheath, F: node of Ranvier.

ii) It connects one neuron

Q8. a) i) **280 days**

ii) **Ovary**, **oviduct**, **uterus.**

b)

|  |  |
| --- | --- |
| **Physical changes in boys** | **Physical changes in girls** |
| 1. Scrotum, penis and testis enlarge and mature. 2. The larynx or voice box enlarges, which deepens the voice. 3. Hair starts growing on the chest, face and under the armpit. 4. The muscles enlarge 5. Shoulder broadens and enlarges 6. They experience wet dreams 7. Increase in general body weight and height 8. Hair grows around the external reproductive organs (pubic hair). 9. In some boys pimples may appear on the face.   10. Change in body odor | 1. Growth and development of breasts. 2. Pubic and underarm hair growth. 3. The uterus develops and ovaries mature. Menstrual cycle begins. 4. The pelvic girdle widens, changing shape of the pelvis. 5. Body fats is redistributed and increases in hips, thighs and breasts 6. The face becomes smooth, some girls however develop pimples. 7. Much more hair starts to grow on the head and may become silkier. 8. Increase in general body weight. 9. The voice becomes soft. |

c) -Four events happen during menstrual cycle:

**a) The healing and repair of the endometrium (uterine lining**)

After the endometrium has been shed from the uterus, the ovary secretes the hormone Oestrogen that leads to the growth and replacement of the uterine lining with new tissues.

**b) Ovulation**

Ovulation is the release of the ovum from the ovary. Rising levels of luteinizing hormone in blood triggers the process of ovulation. This takes place around the 14th day of the cycle.

**c) Thickening of the endometrium**

Hormones secreted by the ovary after ovulation causes further thickening of the endometrium. During this period, it is enriched with blood capillaries for the preparation of embryo to be implanted in case of fertilization.

**d) Menstruation**

If the egg is not fertilized in about 10 to 12 days, the secretion of hormones by the ovary stops. The endometrium lining can no longer be maintained or protected. This leads to the capillaries breaking up and the endometrium is lost from the uterus with some blood hence menstruation and the cycle repeats itself

Q9. a) Plant cell is represented by letter B

b) - It has a big vacuole

- It has a cell wall

- It is regularly shape

- Nucleus is not central

c) (i) Nucleus (ii) Chromosomes, (iii) Genes, (iv)tissues (v) organs, (vi) organisms.

Q10. a) – growth and maintenance of the body

- Replace worn out and damaged tissues

-protection against diseases

- electrical transmission of nerve impulse

- contraction and relaxation of muscles

- maintenance of a relatively constant body temperature

b) i) Scurvy

iii) Vitamin C deficiency

iv) Researchers will advise the mother of the boy to feed him with food rich in vitamin C (**Spinach, red meat, and predominantly in orange and citrus fruit**)

Q11. a) ii.

b) i) A: Bronchus; B: Trachea/windpipe; D: Bronchioles; E: Alveoli/air sacs.

ii) Cilia occur in B (trachea) and A (bronchus). They trap dust and germs that may be mixed with inhaled air.

iii) E (Alveoli) **receive** the incoming air from bronchioles and transport it through diffusion to the blood capillary and from here to the body cells for a respiration to take place.

Its adaptation are:

* They are one cell thick for faster diffusion
* They are thin and moist to enhance diffusion gases in solution form
* They are surrounded by a rich dense network of capillaries
* They are so many in numbers to increase the surface area for gas exchange.

Q12. A) Tropic response is a movement of parts of a plant in response to, and directed by an external stimulus.

b) i) The seedling/coleoptiles will grow bending towards the direction of sun light entering through a single opening.

ii) The phenomenon investigated is phototropism.

iii) There is no bending of the coleoptile.

iv) Roots grow downwards into the soil in the direction of gravitational forces so they exhibit positive gravitropism and a negative phototropism while shoots show a negative gravitropism and positive phototropism because they grow upwards to expose themselves to sunlight.

Q13. a) A balanced diet is a diet containing all the food values (nutrients ) in their right amounts.

b) N (Nitrogen)

c) Fill in the following table.

|  |  |
| --- | --- |
| **Food substance lacking in the diet** | **Deficiency disease** |
| Calcium | **Rickets** |
| **Vitamin C** | Scurvy |
| **Vitamin A** | Night blindness |
| B1 | B**eriberi** |
| Iodine | **Goitre** |
| Iron | **Anaemia** |
| **Vitamin B3** | Pellagra |
| Vitamin D | **Rickets** |

**SECTION B (30 marks).**

Q14. (a) A - Oviduct

B - Ovary

C - Umbilical cord

D - Placenta

E - Amniotic cavity (or amniotic fluid)

F - Amnion

(b) Embryo developing in the uterus

(c) **B**- Produces ova

**C**- A vein carrying blood rich in oxygen and food to the embryo and an artery carrying blood rich in waste products from the embryo pass through it.

(d) Amnion, Amniotic fluid and the uterus wall

(e) A pregnant woman must do the following:

* Take a balanced diet
* To do physical exercises everyday
* Avoid drugs and smoking
* Visiting a healthcare personnel regularly

Q15. (a) Malaria is spread by a female anopheles mosquito.

(b)

* Prevent the breeding sites of female mosquito by draining marshes and stagnant water near our homes.
* Spraying light oil containing insecticides on stagnant water that cannot be drained.
* Spraying walls of houses with long lasting insecticides
* Introducing fish-eating mosquitoes into stagnant water to feed on larvae and pupa.
* Clearing bushes around homes.
* Sleeping under a treated mosquito net.
* Screening windows with mosquito proof wire mesh
* Close windows and doors at the evening to prevent the entrance of mosquitoes.

(c)

* Spraying of households with insecticides to control mosquitoes (Indoor residual spraying).
* Distribution of free insecticides –treated nets to the people
* Improvement of health facilities with trained personnel and medicine for the sick.
* Affordable medical cover that enables people to get treatment in case of Malaria attack.
* Involve people in communal cleaning of their localities through UMUGANDA program.

Q16. a) A: leaf; B: Stem; C: flower; D: Shoot system; E: Root system.

b) Adaptation of a leaf for photosynthesis:

* **Large surface area –** to maximize light harvesting
* **Thin-**To reduce distance for carbon dioxide to diffuse through the leaf and to ensure light penetrates into the middle of the leaf.
* **Air spaces-** to reduce distance for carbon dioxide to diffuse and to increase the surface area of the gas exchange surface inside the leaf.
* **Stomata-** pore to allow carbon dioxide to diffuse into the leaf and water to evaporate out (transpiration).
* **Presences of veins- veins contain** xylem tissue (carries water and minerals to the leaf from the roots) and phloem (transport sugars and amino acids away from the leaf).
* **Chloroplasts-** mesophyll cells and guard cells contain many chloroplasts which contain light harvesting pigment chlorophyll and are where all reactions of photosynthesis occur.

c) Functions of roots:

- absorb water and mineral from the soil to the shoot system

-Provide an anchorage that keeps the plant or tree in the soil.

d) Modified stems: -rhizome, stolon, tubers, bulb, corms,…

Q17. a) There 3 types of carbohydrates:

* **Monosaccharides** which are simple sugars, they are sweet and soluble in water. Eg: glucose, galactose, fructose.
* **Disaccharides** made of two simple sugars join by glycosidic bond; they are sweet and soluble in water. Eg: sucrose, lactose, maltose.
* **Polysaccharides** made of many simple sugars; they are not sweet and are insoluble in water. Eg: starch, glycogen, cellulose.

b) Carbohydrate provides energy for the bod, protection.

c) Test of reducing sugars:

* Reagent used: Benedict’s reagent (blue in colour).
* Mix equal amount of the reagent and solution to be tested in a test tube.
* Heat the mixture and observe change in colour.
* If the reducing sugar is present colour changes from blue to green to yellow and finally to orange or red.
* If absent no colour change.

Q18. Dichotomous key: **(5marks)**

1. a) Compound leaves ……………………………………………. Go to 2

b) Simple leaves………………………………………………….. Go to 3

2. a) Leaf with five leaflets…………………………………….**Specimen C**

b) Leaf with more than five leaflets………………………**Specimen E**

3. a) Leaves with network veins …………………………………. Go to 4

b) Leaf with parallel veins………………………………….**Specimen B**

4. a) Leaf with smooth margin……………………………....**Specimen A**

b) Leaf with serrated margin………………………….….**Specimen D**

**Steps followed for identification**

|  |  |
| --- | --- |
| **Steps followed** | **Specimen/type of leaf** |
| 1b, 3a, 4a | A |
| 1b, 3b | B |
| 1a, 2a | C |
| 1b, 3a, 4b | D |
| 1a,2b | E |

(**5marks)**