**FORM THREE BIOLOGY**

 **MID TERM EXAM**

 **TERM 2,2021**

1(a)What is meant by each of the following ecological terms:

 (i) **Population (1mk)**

 **Population- total number of organisms of a given species occupying an**

 **area at a certain trophic level**

 (ii) community (1mk)

 **It is the total number of plants and animals of different species living together in an area**.

 (iii) Ecosystem (1mk)

b)Name the equipment used to measure the following factors in an ecosystem:

 i) light penetration in water. (1mk)

 **Seechi disc**

 ii) Wind velocity (1mk)

 **Anemometer**

 iii) Atmospheric pressure (1mk)

 **Barometer**

2 (a)A millipede,grasshopper and crayfish all belong to phylum arthropoda.

 State **Two** major characteristics that they have in common. (2mks)

 **- Segmented bodies**

 **- Jointed appendages**

 **- Exoskeleton**

 **- Body divided into parts**

 (b)List two characteristics that are used to sub-divide arthropoda into classes. (2mks)

 **- Number of body parts**

 **- Number of legs**

 **- Number of wings**

 **- Number of antennae**

 (c) Name the spore bearing structure in the members of division pteridophyta. (1mk)

  **Sorus**

3 The diagram below shows a phenomenon which occurs during cell division.



1. Name the part labeled **T**. (1mk)

 **Chiasmata**

1. (i) State the biological importance of the part labelled **T**. (1mk)

 **Site of exchange of genetic materials**

 (ii) Identify the type of cell division in which this phenomenon occurs. (1mk)

 **Meiosis**

4. The diagram below represents a human foetus in a uterus

**S**

**PO**

**BO**

**RO**

 (a) Name the part labelled **S** (1mk)

 **amniotic membrane/Amnion**

(b) (i) Name the blood vessels labelled **A** and **B (1mk)**

 **A………Umblical vein**

 **B.............Umblical artery**

 (ii) State one difference in composition of blood found in vessels **A** and **B (1mk)**  **Umblical vein – rich in nutrients and oxygen.**

 **Umblical artery – rich in CO2 and waste like urea.**

 (c) State the role of the part labelled **P (1mk)**

 **Cushions foetus against shock**

 **Supports the foetus**

 **Keeps foetus moist (prevent dehydration**

5. The diagram below represents a fern

Name

(a) Parts labeled A and B ( 2 marks)

 **A ………..Sori**

 **B…………rhizome**

(b) The division which the plant belongs ( 1 mark)

 **Pteridophyta**

An organism with an exoskeleton, segmented body, two pairs of legs per segment, a pair of eyes and a pair of short antennae belongs to the phylum (1mk)

 **Diplopoda**

6. Below is a diagram of an organelle that is involved in aerobic respiration.



 a) Name the organelle (1mk)

 **Mitochondrion**

 b) Name the parts labeled A, B, and C. (3mks)

 **A…….Outer membrane**

 **B…….Inner membrane**

 **C……Matrix/Stroma**

 c) What is the purpose of the folding labeled D? (1mk)

 **Increases surface area for attachment of respiratory enzymes**

 d) Give the chemical compound which is formed in the organelle and

 forms the immediate source of energy (1mk)

 **Adenosinetriphosphate**

7. The figure represents a feeding relationship in an ecosystem

Grasshopper

Grass

Guinea fowls

Termites

Gazelles

Leopards

Vulture

1. Write down the food chain in which the Guinea Fowls are secondary consumers (1mk)

 **Grass Grasshopper Guinea fowls**

 **Grass Termites Guinea fowls**

 (b) What would be the short term effects on the ecosystem if lions invaded the area (1mk)

 **Lions would complete with leopards**

 **Gazelle number would reduce**

 **Grass would be increased**

 (c) Name the organism through which energy from the sun enters the food web (1mk)

 **Grass**

8.(a) Name the class in the phylum arthropoda which has the largest number of individuals **Insecta**  ( 1 mark)

 (b)give two reasons why the organisms named in the class above has the largest population (2mks**) lay many eggs**

 **Inhabit all ecological niches**

 **Wide variety of foods**

9. (a) The specific name of Irish potato is solanum Tuberrasum

 (i) Identify two errors that have been made when writing the name (2mks)

  **-Second name should be in small letter.**

 **- The names should be underlined separately**

 (ii) What is the species name of Irish potato? (1mk)

 **tuberrasum**

1. An ecologist came across a plant with the following characteristics, green in colour, non- flowering, compound leaves and sori on the underside of the leaflets. State the probable division of the plant ? ( 1 mark)

 **Division pteridophyta**

10 .The number and distribution of stomata on three different leaves are shown in

 the table below

|  |  |
| --- | --- |
| Leaf | Number of stomata |
| Upper epidermis | Lower Epidermis |
| ABC | 30015002 | 020013 |

(a)Suggest the possible habitat of the plants from which the leaves were obtained.( 3mks)

**Leaf Habitat**

 **A…………..-Aquatic/Fresh water**

 **B-………….. Forest**

 **C-…………… Arid- Semi Arid**

(b) State the modification found in the stomata of leaf C (1mk)

 **- Sunken stomata,**

 **- Reversed rhythm**

 **- Small stomatal pores**

11.The following is a simplified drawing of nitrogen cycle.



 (a) Identify the compound named A ( 0.5 mk)

 **Ammonia**

 (b) Name the processes (1.5mks)

**X \_\_\_\_\_\_nitrification**

**Y \_\_\_\_\_\_nitrogen fixation by ligtning**

**Z \_\_\_\_\_\_Denitrification**

12.The diagram below represents a stage during cell division



(a) (i) Identify the stage of cell division ( 1 mark)

 **Anaphase 1**

(ii) Give two reasons for your answer (a) (i) above ( 2 marks)

 **- Homologous chromosomes separate at the equator.**

 **Chromosomes start migrating to opposite poles**

 **Sister chromatids attached at the centromere**

(b) Name the structure labeled M ( 1 mark)

 **Spindle fibres**

13. Explain 3 ways through which xerophytes are adapted to their habitat. (3mks)

 **Deep rooted to absorbs water from lower water table**

 **Needle like leaves to reduce surface area of water loss**

 **Few stomata to reduce stomatal transpiration**

 **Thick succulent stem,leaves,roots for water storage**