**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**

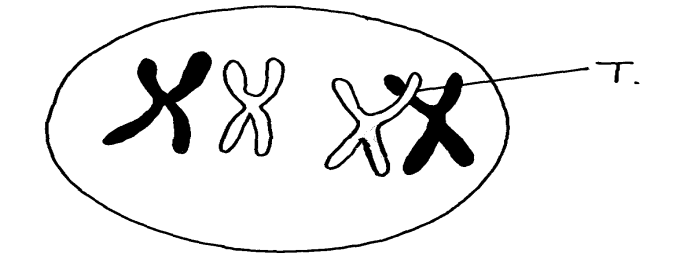
**- Number of wings**

**- 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**

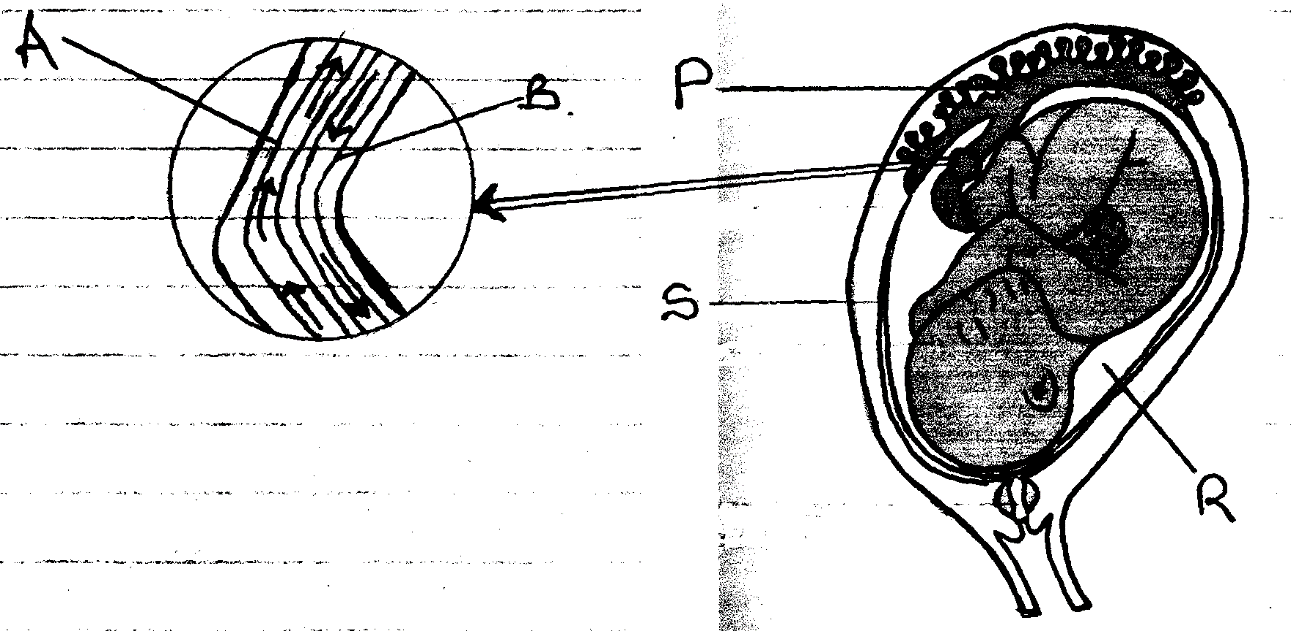
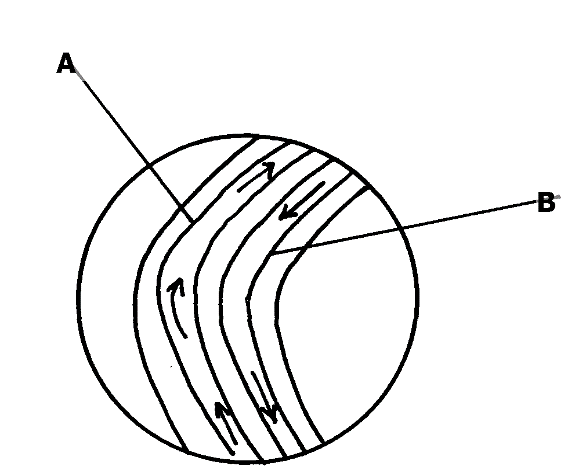
4. The diagram below represents a human foetus in a uterus

**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.**

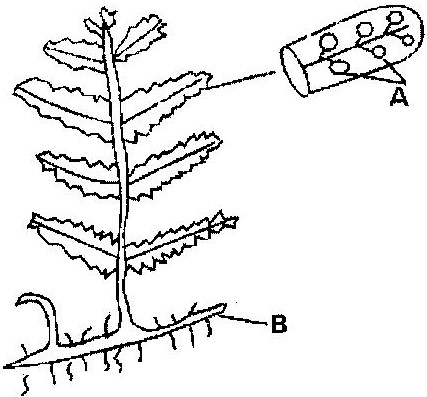
**Umblical artery – rich in CO2 and waste like urea.**

(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**

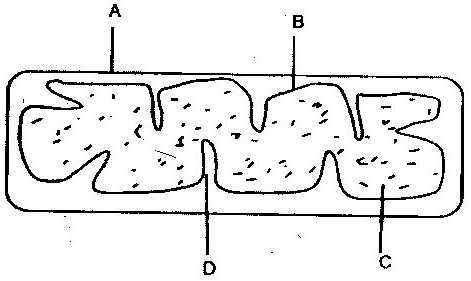
(b) The division which the plant belongs ( 1 mark)

**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 |
| A  B  C | 300  150  02 | 0  200  13 |

(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**

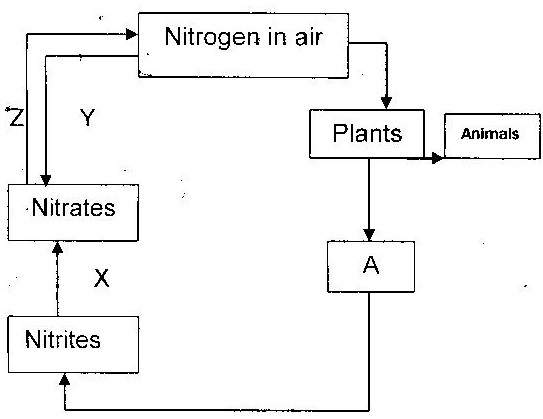
(b) State the modification found in the stomata of leaf C (1mk)

**- 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**

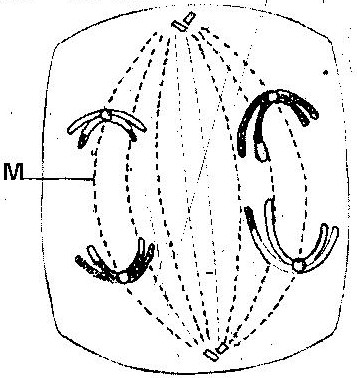
(b) Name the processes (1.5mks)

**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**