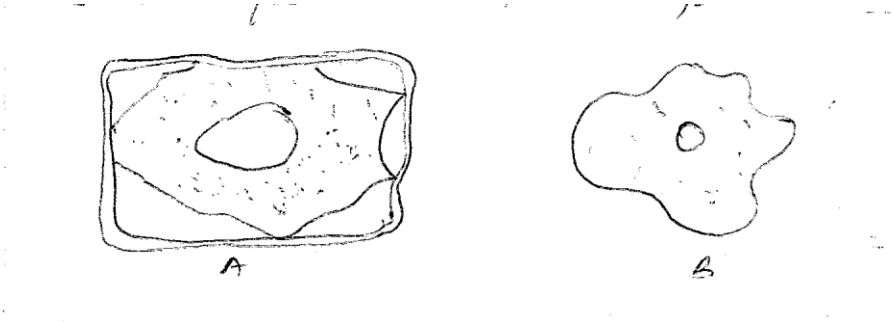
FORM 4 END TERM 2 2020

BIOLOGY PAPER 2

1. The diagram shows two types of cells placed in a certain solution. Study them and answer questions that follow



a. Name the physiological process responsible for the observed results. [1 Mark]

b. Give the correct biological term used to describe cells A & B. [2 Marks]
A –

B –

2. The equation below shows a chemical reaction that takes place in plants.

Carbon (iv) oxide + water → A + water

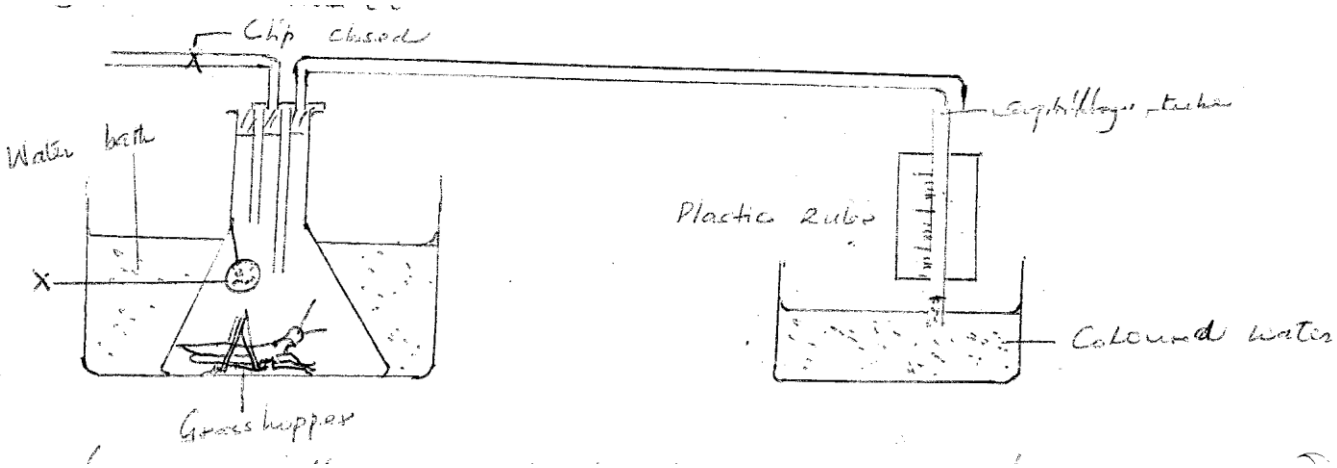
a. Identify substance A. [1 Mark]

b. Name the process represented by the equation. [1 Mark]

c. Other than the reactants state **two** conditions necessary for this reaction. [2 Marks]
i.

ii.

3. The diagram below illustrates an experiment used to determine rate of respiration in a small insect.



a. Name the chemical compound labeled X and state its function. [2 Marks]

Compound –

Function –

b. Why is the conical flask placed in a water bath? [1 Mark]

c. What would happen to the level of coloured water after 5 minutes? Explain: [2 Marks]

d. How can a control experiment be set? [1 Mark]

4. In a biology lesson a student collected the animal in the diagram below. Use it to answer questions that follow;

a. Name the phylum and class to which the organism belongs

i. Phylum _____ [1 Mark]

ii. Class_____ [1 Mark]

b. Give two reasons for your answer in 1 (i), (ii) above [4 Marks]

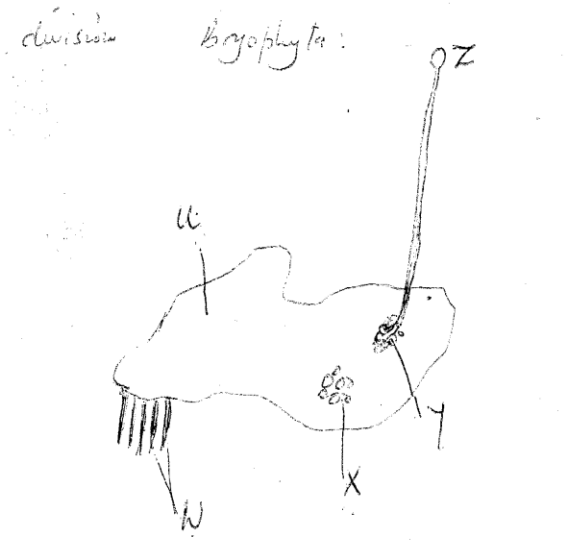
i. _____

_____

ii. _____

_____

5. The diagram below represents a plant in the division Byrophyta:



a. Name the parts labeled [5 Marks]

U

W

X

Y

Z

b. Name one function of part labeled. [3 Marks]

X

Y

Z

6.

a. It is observed that when apical bud of a plant is removed, lateral buds sprouts, where as they do not sprout in presence of the apical bud;

i. What is the biological term used to describe this? [1 Mark]

ii. Give one application of this phenomena in agriculture. [1 Mark]

b. State four roles of IAA in plant growth and development: [4 Marks]

c. In epigeal germination the cotyledon is brought above the soil surfaces; Explain [2 Marks]

7.

a. State 2 structural modifications of nephrons in desert mammals. [2 Marks]

b. State a kidney disease whose symptom is coloured and turbid urine [1 Mark]

8. In a biological experiment; a cross was made between a tall pea plant & dwarfs plants; their progeny was selfed and the resulting plants were in a mixture in the ratio of 3:1. Make a biological cross to show these outcomes. [4 Marks]

9. Explain geographical distribution as evidence of organic evolution. [2 Marks]

SECTION B

Answer Questions 10 (Compulsory) and either question 11 or 12 in the Spaces Provided

10. The table below shows the changes observed in the dry weight in milligrams of a barley seedling, its embryo and Endosperm during the first ten days after the onset of germination.

	Dry weight in milligrams		
Time (days)	Embryo	Endosperm	Whole seedling
0	2	41	45
2	2	39	43
4	7	32	41
6	15	21	38
8	22	11	35
10	35	6	43

a. Using a suitable scale and on the same axis, plot a graph of dry weight of embryo, endosperm and whole seedling against time. [8 Marks]

b. State and account for the changes in dry weight shown by:-

i. Endosperm [4 Marks]

ii. Embryo [4 Marks]

c. Explain the role of water during germination [4 Marks]

11.

a. Describe how the mammalian heart is adapted to its function [10 Marks]
b. How does gaseous exchange take place in terrestrial plants? [10 Marks]

12.

a. How is the Epidermis of a green plant adapted to its function? [6 Marks]
b. Describe how structural factors affect rate of transpiration in plants [8 Marks]
c. Describe how xerophytes adapted to minimize water loss in their habitat. [6 Marks]