Name's of student……

School Name……

BIOLOGY PAPER II
P530/2
SENIOR FIVE
MARCH- APRIL

COMPREHENSIVE BIOLOGY TRANSFORMATION INITIATIVE.

UACE

S.5 CANDIDATES- 2024

PAPER 2

END OF TERM ONE-2024.

2 HOURS AND 30 MINUTES

INSTRUCTIONS TO THE CANDIDATES:

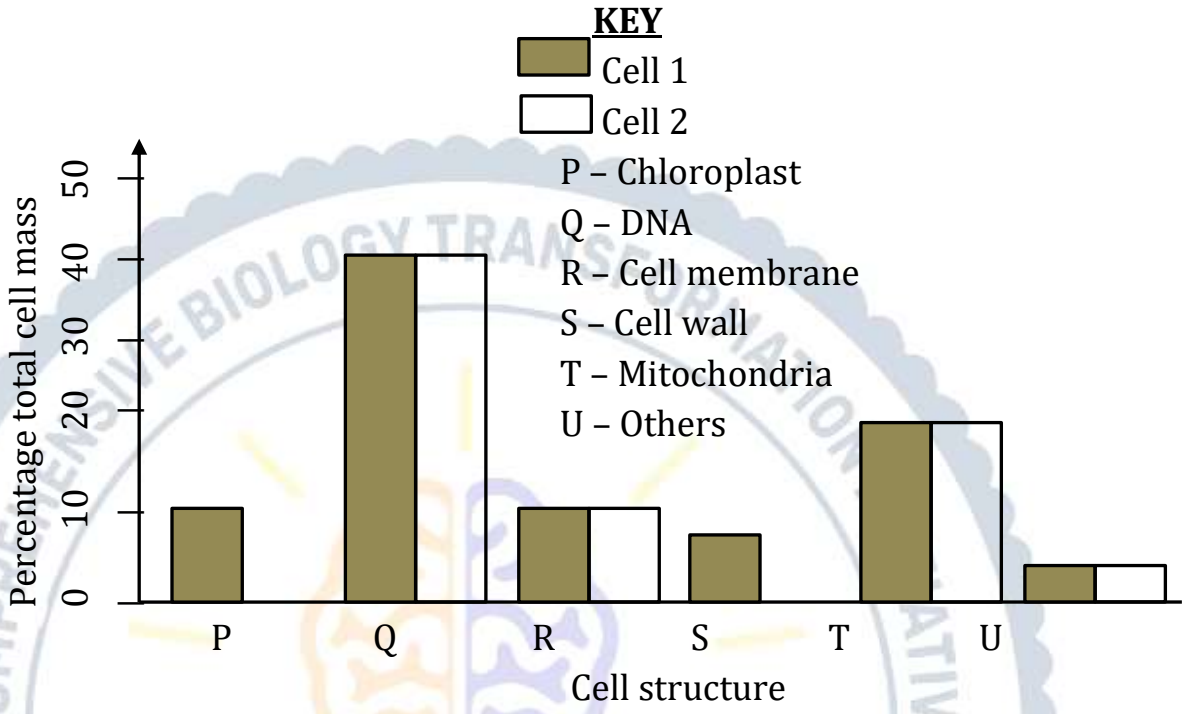
This paper consists of section A and B.

Answer question one in section A plus 3 questions in section B

Candidates are advised to read questions carefully, organize their answers and present them precisely and logically, illustrating with well labelled diagram wherever necessary.

N.B – QUESTION ONE IS COMPULSORY TO ALL STUDENTS.

1. a) The data below was obtained from two different **eukaryotic cells, 1** and **2** as shown in the graph below. Study the graph carefully and answer the questions that follow.



(i) With reasons, identify which cell is **most likely** to be from plants. **(03 marks)**

(ii) Account for the percentage total cell mass of **structure Q and T**. Basing on the percentage total cell **mass of structure T,** with reasons state which **cell(s)** could be studied in this experiment. **(07marks)**

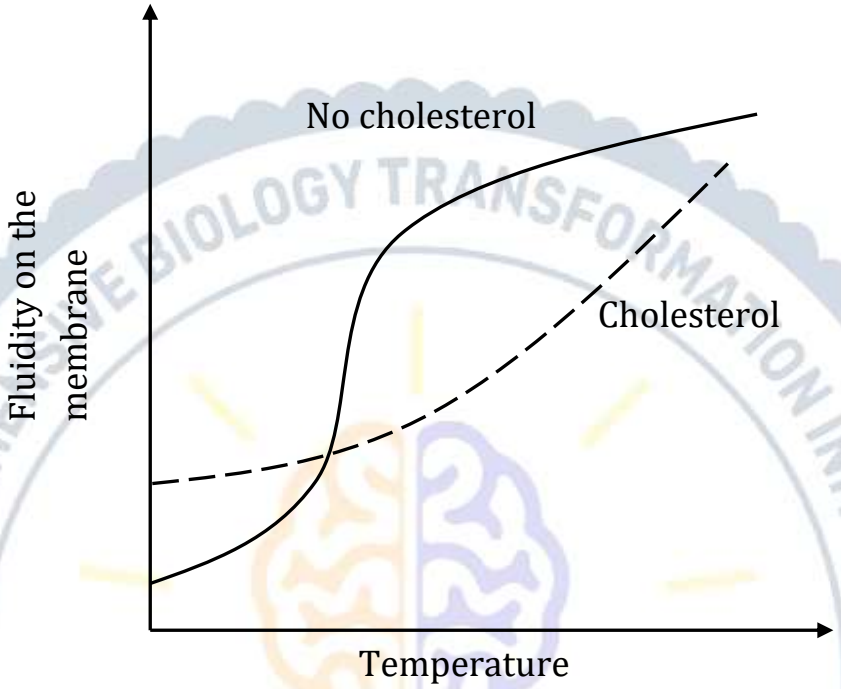
(iii) State the structural differences in the **chemical** compositions of cell structure **R** and **S**. **(04marks)**

b) Explain the **adaptations** of the following cell structures to their functions. **(05 marks)**

(i) S

(ii) P

c) In the study of the **ultra-structure** of the **plasma membrane**. An investigation was made by scientists concerning fluidity in two different **Phospholipid bilayers** at varying **temperatures**. **One bilayer had cholesterol** while the **other lacked cholesterol**. The results of the investigation were plotted on the graph below. Study the graph carefully and provide suitable answers.



(i) Describe the **effect of temperature** on the fluidity of the phospholipid bilayer in the **presence** and **absence** of cholesterol. **(05marks)**

(ii) Account for the **differences** in fluidity of the two plasma membranes with varying temperatures. **(07marks)**

(iii) Why is **Fluidity** important in the plasma membrane? **(04 marks)**

SECTION B (60MARKS)

Attempt any three questions from this section.

2. a) With examples, describe how the **properties** of **globular** proteins suit to their functions in organisms. **(06marks)**

b) (i) Describe the **chemical bonds** that **maintain** the **three dimensional** structure of globular proteins. **(08marks)**

(c) Explain the effect of the following factors on the chemical compositions of enzymes. **(06marks)**

(i) **Acids and bases**.

(ii) **Heat.**

3. a) Describe the **structure of the plasma membrane** according to the **fluid mosaic model**. **(10marks)**

b) Explain the role of the **chemical** components of the plasma membrane. **(10marks)**

4. a) Outline the process of **transcription** in the nucleus. **(10marks)**

b(i) Compare the structure of **Deoxyribonucleic acid (DNA)** and **Ribonucleic acid(RNA).** **(05marks)**

(ii) Suggest reasons that make **DNA a suitable genetic material**. **(05 marks)**

5. a) With examples, explain the meaning of the following concepts in biology.

(i) **Cell specialization**. **(06marks)**

(ii) **Levels of cellular organizations.** **(05 marks**

b) Explain the adaptations of **epithelial tissues** to their roles. **(09marks)**

6. a)(i) Using illustrations, explain the cause of the **dipolarity** of a **water** molecule. **(05marks)**

(ii) Explain how the properties of water account for its transport function in organisms? **(06marks)**

b) Explain the significances of **acids**, **salts** and **bases** in our bodies. **(09 marks)**

END

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Contributions made by ONYANGA ISMAIL and the EXECUTIVE COMMITTEE of CBTI.