**BA SANGAM COLLEGE**

**YEAR 13**

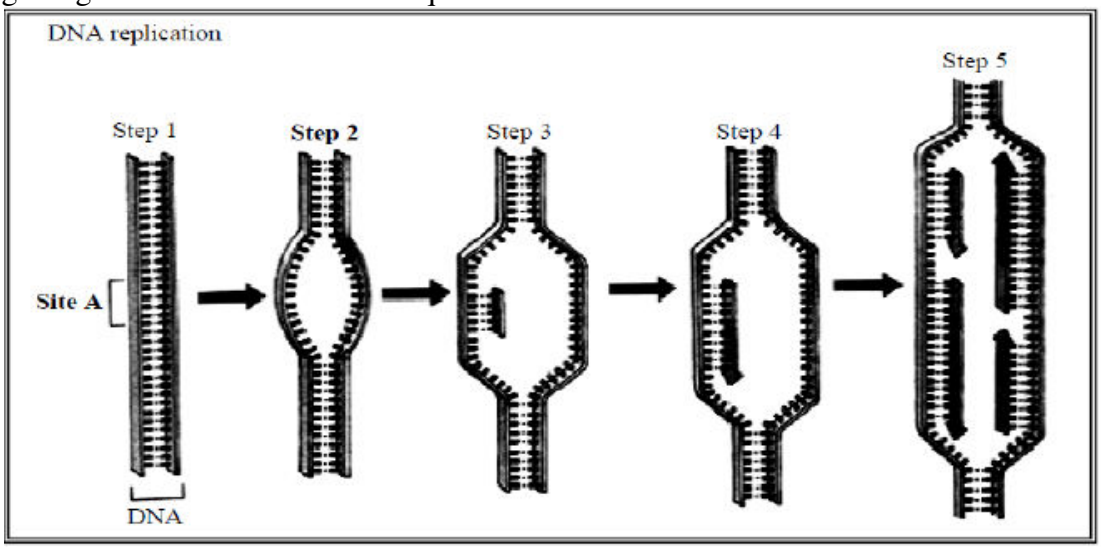
**BIOLOGY**

**WORKSHEET 3**

**Instructions:**
Students/Parents are requested to use this as a supplementary activity during extended holidays. Students can simply answer the questions in their respective subject books (from the back) after downloading this document.

**STRAND 1 STRUCTURE AND LIFE PROCESSES**

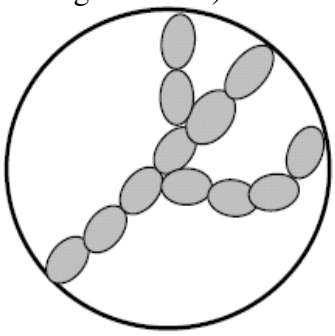
1. Use the diagram given below to answer the questions that follow.




(i) Name **Site A** and the enzyme used in **Step 2**.
(ii) Explain how the above named enzyme separates the strands of DNA in **Step 2**.

2. In most natural populations, the gene frequencies are unlikely to remain constant from one generation to the next. List **two** reasons why this occurs

3. Diagram given below shows a filamentous alga viewed under a compound microscope. It is magnified 40x and the field of view diameter is 1.5mm (40x magnification).



Estimate the size of one cell. Give your answer in microns.

4. In a practical class, you are required to prepare a wet mount of a small piece of newsprint containing letter **e**.
(i) Identify the steps involved in preparing the wet mount.
(ii) Three observations were made for letter **e** under the microscope. One of which was that it was **magnified**. State the other two observations that were made.

5. Some Form 7 students measured the leaf lengths of 30 mango leaves in one of their experiments. The results are tabulated below:

| Class Boundary (cm) | Class Midmark (cm) | Total Number of Leaves |
|---|---|---|
| 5 – 10 | 7.5 | 4 |
| 10 – 15 | 12.5 | 10 |
| 15 – 20 | 17.5 | 9 |
| 20 – 25 | 22.5 | 4 |
| 25 – 30 | 27.5 | 3 |

Sketch a **histogram** of the results .

6. A class of 35 students carried out an exercise to calculate the gene frequencies for two traits in their class.

| Tongue Rollers | Non-Tongue Rollers | Ear Lobes Attached | Ear Lobes Not Attached |
|---|---|---|---|
| 29 | 6 | 31 | 4 |

(i) Calculate the frequency of the recessive non-tongue rolling allele.

(ii) Suggest why the frequencies of the two recessive alleles would differ.

7. Two unlinked loci affect mouse hair colour. Mice with genotype **AA** or **Aa** are grey. Mice with genotype **aa** are albino because all pigment production is blocked. At the second locus, the **B** allele (grey coat) is dominant to the **b** allele (black coat).

**Note:**

- **A ___ B___** = Grey Coat
- **___ ___ b b** = Black Coat
- **a a** = Albino

(i) Complete the punnet square in the **Answer Book** to show the cross between two grey mice with the genotype **AaBb** and the type of interactions shown above.

## SHORT ESSAY

**Write an essay of about 100 – 150 words the question given below.**

(a) Describe the importance of genetic engineering.