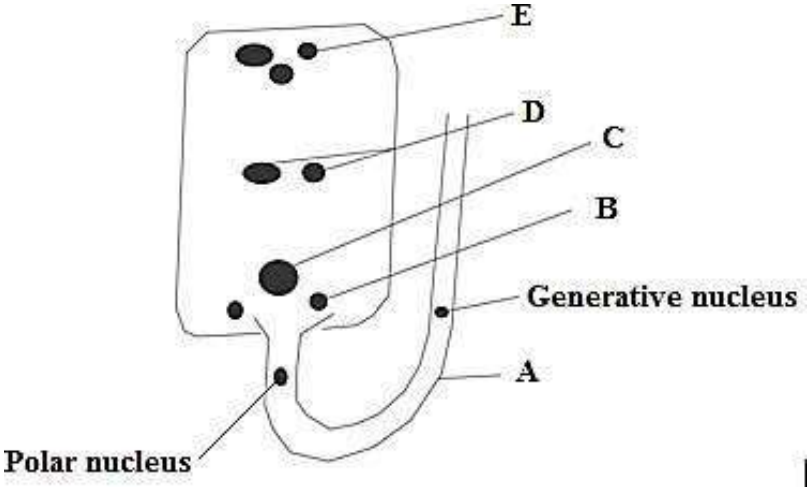
FORM FOUR CLUSTER KCSE MODEL4

BIOLOGY PAPER 2 QUESTIONS

SECTION A (20 Marks)

Answer all questions in the spaces provided.

1. **The figure below represents an embryo-sac before fertilization.**



a) Identify the structures labelled A and B.

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b) Which structures labelled in the diagram will develop into the following after fertilization. Embry

o……Endosperm…… ……

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c) State the ploidy of each of the following nuclei after fertilization.

C……D…… ……

d) Using Generative and polar nuclei explain the process of double fertilization in plants.

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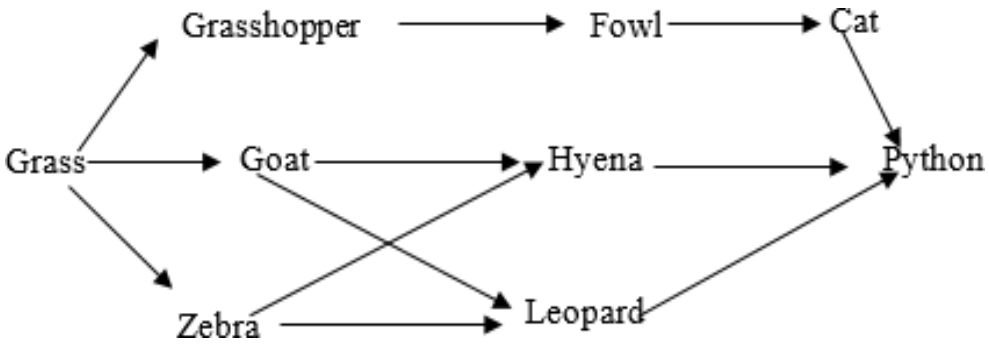
2. **Study the following food relationship below then answer the questions that follow.**



a) Construct a food chain in which the python is a quartenary consumer.

b) Outline what will happen to the cats number of the zebra were removed from the habitat.

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c) Give the organism that is most in danger in the event that pollution increased in the habitat

food relationships.

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d) Describe the importance of using dry mass in ecological studies and not wet mass.

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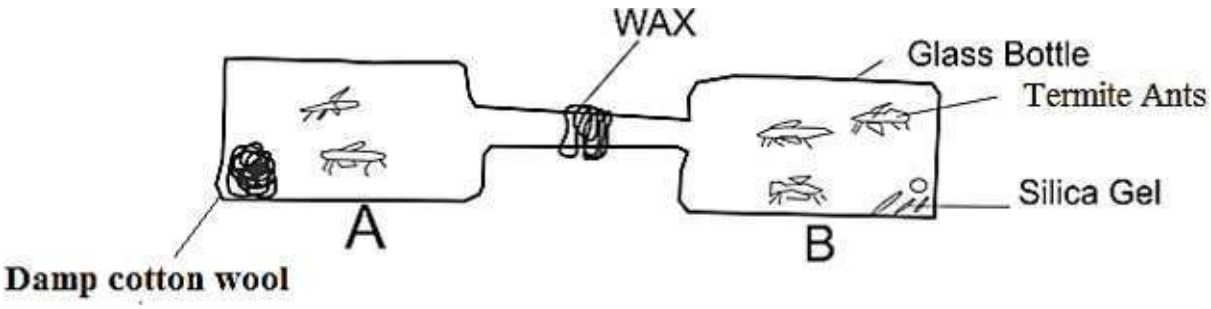
3. The following experiment set – up was made by a student in an experiment.



a) State the functions of the following in this experiment.

i) Damp cotton wool.

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ii) Silica gel

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iii) Wax

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b) What results were obtained from this experiment after 2 hours?

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c) Why is it that the experiment should be carried out in room shade?

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d) Suggest the material that should be missing in the experiment in order to come up with a

control experiment.

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4. In a genetic experiment in an agricultural farm, a garden pea having Red flowers was crossed with

another variety having yellow flowers. All the F1 generation had Red flowers. The total number of

experimental offspring garden peas in F2 were 3214.

a) Give the parental genotypes of the F1 generation.

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b) Work out for F2 generation and give the F2 phenotypes. (4marks)

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c) How many of the F2 garden pea offsprings grew up having yellow flowers. (2marks)

5. a) State the role of the following cells in the body.

i) Phagocytes

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ii) Lymphocytes

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b) i) Explain the mechanism of blood clotting in the body when there is a cut.

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ii) State two Homeostatic role of the blood clotting mechanism.

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SECTION B (20 Marks)

ANSWER QUESTION 6 (COMPULSORY) AND EITHER 7 OR 8

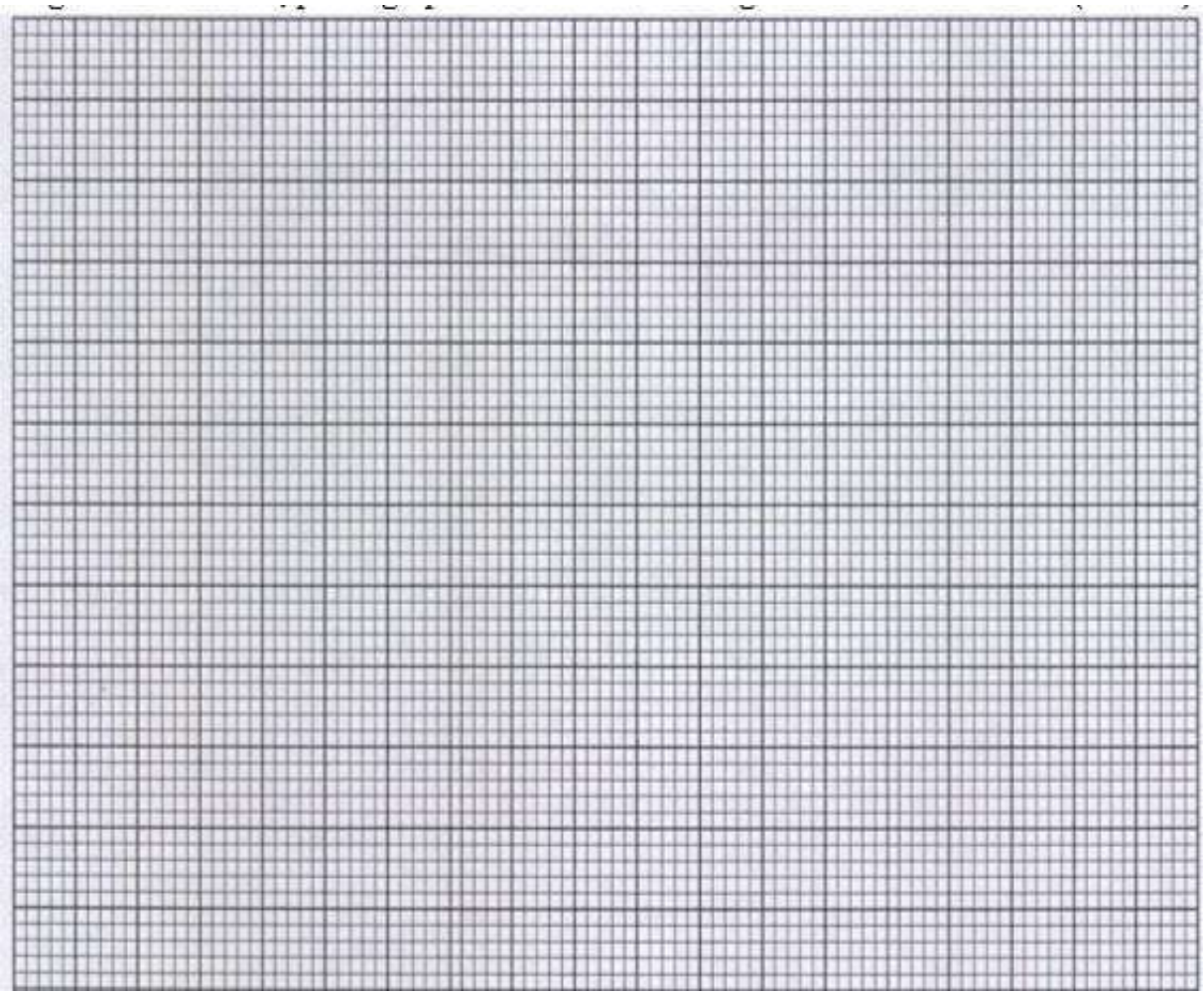
6. In an experiment, the population growth of yeast cells in a petridish was determined over a period

of 75 minutes. The results obtained were tabulated as below.

a)

TIME (MINUTES)	NUMBER OF YEAST CELLS
0	4
5	6
10	8
15	10
25	30
30	50
35	80
40	120
45	140
50	150
55	160
65	166
75	166

a) Using a suitable scale, plot a graph of number of cells against time in minutes. (6marks)



Name the type of curve you have drawn above in (a). (1mark)

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c) Determine the number of yeast cells after 37 minutes. (2marks)

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d) After how long was the population of yeast cells 144. (2marks)

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e) Work out the rate of cell division between 32 and 42 minutes. (2marks)

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f) Account for the shape of the graph between 45th and 60th minute. (2mar

g) What two factors would maintain the population of yeast cells at the carrying capacity? Give a

reason for each answer. (4marks)

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7. a) Describe the mechanism of inhalation in man. (10marks)

b) Using photosynthesis theory explain the mechanics of opening of stomata. (10marks)

8. Discuss in support that organic evolution take place in living organisms.

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