NAME……..COMB:…….

P530/2

BIOLOGY

PAPER 2

2 Hours 30 minutes

MERRYLAND HIGH SCHOOL ENTEBBE

UGANDA ADVANCED CERTIFICATE OF EDUCATION

PRE-UNEB REGISTRATION EXAMINATIONS

BIOLOGY

PAPER 2

2 Hours 30 Minutes

INSTRUCTIONS

Question ONE in SECTION A is compulsory. Attempt Three other questions from Section B.

SECTION A

1. Samples of 20 cm^3 of stomach contents of a normal person were removed when a meal was given and at 30 minute intervals thereafter. The Table below shows the volumes of a 0.1 mol dm^{-3} solution of sodium hydroxide needed to neutralize the acid in the samples.

Time / Minutes	Volume of 0.1 mol dm^{-3} solution of sodium hydroxide needed to neutralize $20cm^3$ of stomach content / cm^3
Meal given	60
30	40
60	90
90	120
120	100
150	94
180	60
210	54
240	52
270	60

(a) Plot the information in a suitable graph. (7 Marks)

(b) Explain the pattern of acid level of the stomach contents as shown in your graph. (10 Marks)

(c) What was the sodium hydroxide equivalent of the basal acid level of the stomach contents? (1 Mark)

(d) Describe the various mechanisms responsible for the increase in acid secretion shortly after the meal. (7 Marks)

(e) What cells in the stomach produce acid? (1 Mark)

(f) Explain the importance of the acid in the stomach. (4 Marks)

(g) Name two substances other than acid which are commonly found in the gastric juice of a normal person. (2 Marks)

(h) What cells in the stomach produce the substances you have named in (g) above? (2 Marks)

(i) Explain the terms (i) Chyme and (ii) Emulsify (2 Marks)

(j) Name a bile salt. (1 Mark)

(k) Why are bile salts not classified as enzymes? (3 Marks)

SECTION B

2. (a) Give an account of the chemical nature and variety of carbohydrates. (10 Marks)
   (b) Outline the role of carbohydrates in the life of living organisms. (10 Marks)

3. Describe the mechanisms by which water passes through a plant from the soil to the atmosphere, showing how the various cells along its path are adapted for their function. (20 Marks)

4. (a) Describe how you would carry out an experiment to determine the action spectrum for photosynthesis. (9 Marks)
   (b) Explain precisely how three named factors can be limiting in photosynthesis. (7 Marks)
   (c) Distinguish between C_3 and C_4 plants. (4 Marks)

5. (a) With examples differentiate between aestivation and hibernation (2 Marks)
   (b) Differentiate between ectotherms and endotherms. (10 Marks)
   (c) Explain the advantages of endothermy over ectothermy. (8 Marks)

6. (a) Explain the term **edge effect**. (2 Marks)
   (b) What is the ecological importance of ecotons in various ecosystems? (4 marks)
   (c) Why should the government of Uganda encourage the conservation of wetlands? (14 Marks)