

UGANDA CERTIFICATE OF LOWER SECONDARY EDUCATION

S.3 BIOLOGY THEORY

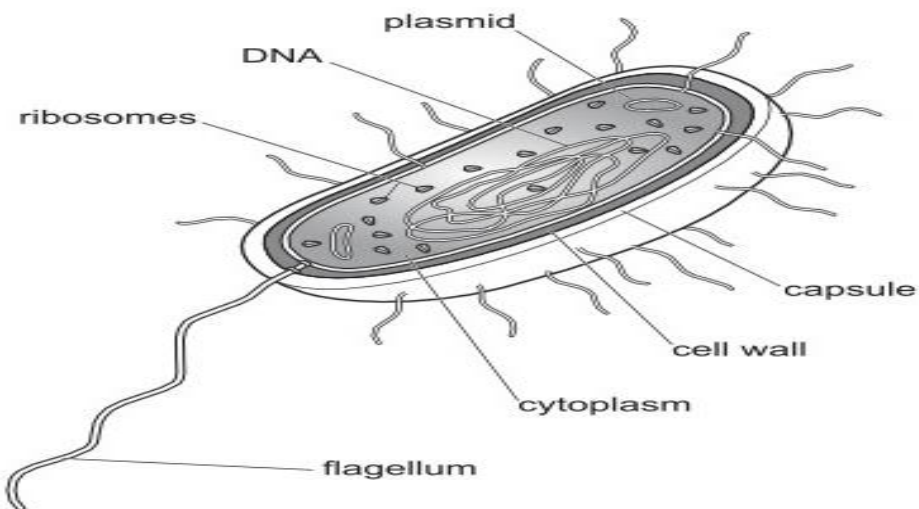
PAPER 1

DURATION:2HOURS

INSTRUCTIONS: ANSWER ALL QUESTIONS IN SECTION A AND ONLY 2 FROM SECTION B

SECTION A

1. The diagram is of *Vibrio cholera*, the bacterium that cause cholera.



- (a) Describe two similarities and two differences between a palisade mesophyll cell and the bacterium cell. (04marks)

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- (b)state two features of bacteria. (02marks)

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(c) Describe two roles played by bacteria in your community (04marks)

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2 a) Alcohol can be made from the Micro-organism yeast

i) Write a balanced equation for production of alcohol by yeast.
(01marks)

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ii) Name the organ that breaks down alcohol in the human body.
(01marks)

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iii) Describe how alcohol is made by yeast. (03marks)

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b) During a study using a computer model it was shown that the alcohol dehydrogenase which breaks down alcohol has a specific fixed shape. Explain why a fixed shape of an enzyme is important. (03marks)

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c) The table below shows the enzyme activity of alcohol dehydrogenase at different temperatures.

Temperature / °C	Enzyme activity
30	115
42	175

- i) Explain why an increase in temperature causes an increase in enzyme activity. (03marks)

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- ii) State two factors, other than temperature that affects enzyme activity. (02marks)

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3. Coronary heart diseases are on the rise as shown by recent surveys and one of its possible causes is too much fat in diet.

- (a) Describe how too much fat may cause coronary heart disease. (03marks)

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(b) Describe and explain how coronary heart diseases can be treated (05)

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(c) State two effects of coronary heart diseases.

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4. The teeth are special structures which aid in digestion

(a) Describe the role of teeth in digestion food digestion. (03marks)

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(b) Explain the consequences of poor dental hygiene. (03marks)

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(c) State the ways of keeping our teeth healthy. (02marks)

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5. a) Write the word equation for photosynthesis.

(02marks)

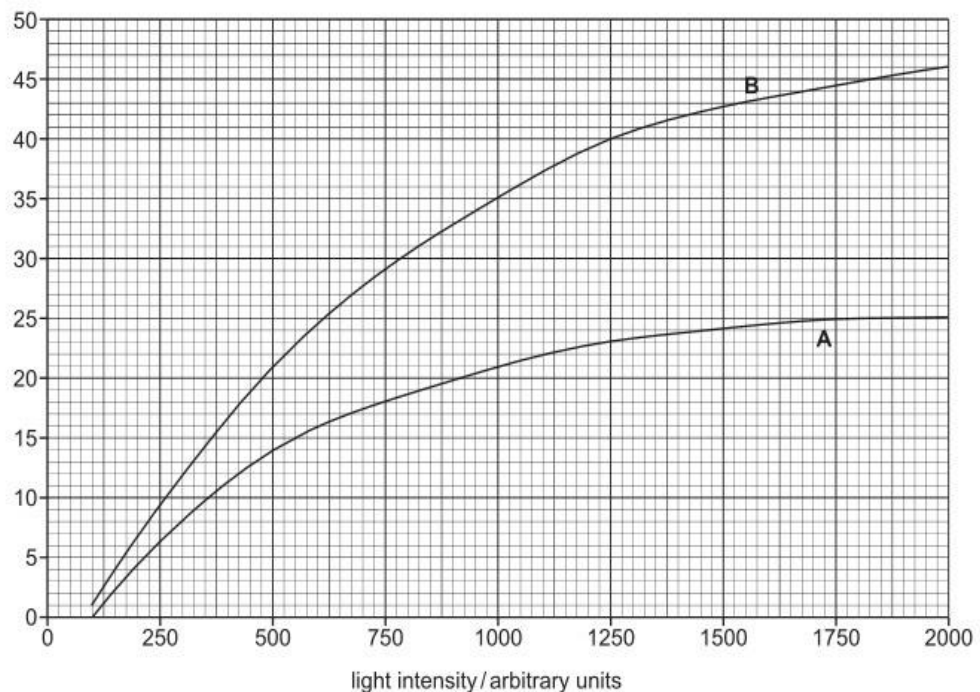
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(b) Scientists investigated the effects of light intensity on the rate of photosynthesis in the leaves of the eucalyptus trees at two different concentrations of carbon dioxide

rate of photosynthesis
/ $\mu\text{mol per m}^2 \text{ per s}$



Key:

A carbon dioxide concentration
140 ppm

B carbon dioxide concentration
1000 ppm

(i) Suggest and explain why scientists kept the temperature of leaves at 20 while they recorded the results. (02marks)

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(ii) Calculate the percentage increase in the rate of photosynthesis at light intensity 1250 arbitrary units when carbon dioxide was increased from 140ppm to 1000ppm. (02marks)

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(iii) Explain the reasons for the increase in (ii). (02marks)

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(iv) Describe the effects of increasing light intensity on the rate of photosynthesis when carbon dioxide concentration was 140ppm.

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6. Using two cubes of different sizes, explain to your brother in primary seven that multicellular organisms need specialised gaseous exchange.

(05marks)

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(b) Explain the effects of smoke of cigarrates on the gaseous exchange surfaces in lungs. (03marks)

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SECTION B

7. Hormones are chemical messengers which send information to particular organs in the body in order to bring about corrective responses which enable an organism to survive. Imbalanced Production of hormones leads to particular disorders. Describe the causes and symptoms of any two common hormonal disorders in your community. (10marks)

(b) How can the above disorders be prevented and treated. (05marks)

8 a) Kidneys filter blood, separate useful materials from excretory wastes and control water content. Outline how the kidney tubule produce urine from the substances in blood plasma. (08 marks)

b) One of the treatments of kidney failure is connecting a patient to a dialysis machine. Describe the operation of dialysis machine. (07marks)

9. Farmers in kasoozo village have had low yields in the recent season and the government specialist has reported that this has been due to reduced soil fertility. As a student of biology in s.3, suggest and describe the steps farmers and gardeners in this village can take to improve and maintain soil fertility for better yields.

(15 marks)

END

BABALANDA SERIES