

K.C.S.E. BIOLOGY PAPER 231/1 2007

SECTION II (20 Marks)

1 (a) What is meant by the term binomial nomenclature? (1 mark)

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(b) Give two reasons why classification is important. (2 marks)

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2 (a) What is the formula for calculating linear magnification of a specimen when using a hand lens? (1 mark)

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(b) Give a reason why staining is necessary when preparing specimens for observation under the microscope. (1 mark)

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3 Plant cells do not burst when immersed in distilled water. Explain. (2 marks)

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4 State three functions of Golgi apparatus. (3 marks)

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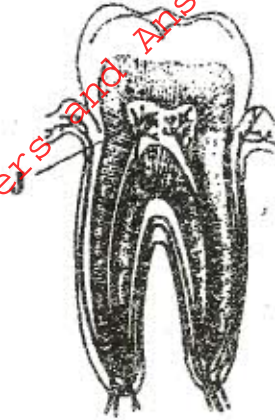
5 Distinguish between diffusion and osmosis. (2 marks)

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6 Describe what happens during the light stage of photosynthesis. (3 marks)

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7 The diagram below represents a section through a human tooth.



(a) (i) Name the type of tooth shown. (1 mark)

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(ii) Give a reason for your answer in (a) (i) above. (1 mark)

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(b) State the functions of the structures found in the part labelled J. (2 marks)

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8 (a) Name a fat soluble vitamin manufactured by the human body. (1 mark)

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(b) State two functions of potassium ions in the human body. (2 marks)

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9 State two ways in which the root hairs are adapted to their function. (2 marks)

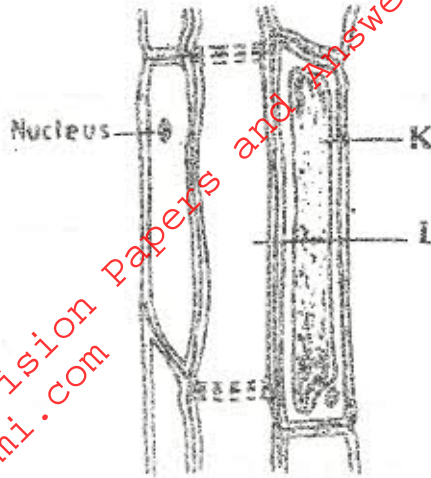
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10 The diagram below represents a plant tissue.



(a) Name the tissue. (1 mark)

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(b) Name the cells labelled K and L. (2 marks)

K

L

(c) What is the function of the companion cell? (1 mark)

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11 (a) What prevents blood in veins from flowing backwards? (1 mark)

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(b) State two ways in which the red blood cells are adapted to their function. (2 marks)

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12 (a) Name two structures for gaseous exchange in aquatic plants. (2 marks)

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(b) What is the effect of contraction of the diaphragm muscles during breathing in mammals? (3 marks)

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- 13 (a) Name the products of anaerobic respiration in
- (i) plants (1 mark)
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- (ii) animals (1 mark)
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- (b) What is oxygen debt? (1 mark)
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- 14 (a) What is the meaning of the following terms:
- (i) homeostasis (1 mark)
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- (ii) osmoregulation? (1 mark)
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- (b) Name the hormones involved in regulating glucose level in blood. (2 marks)
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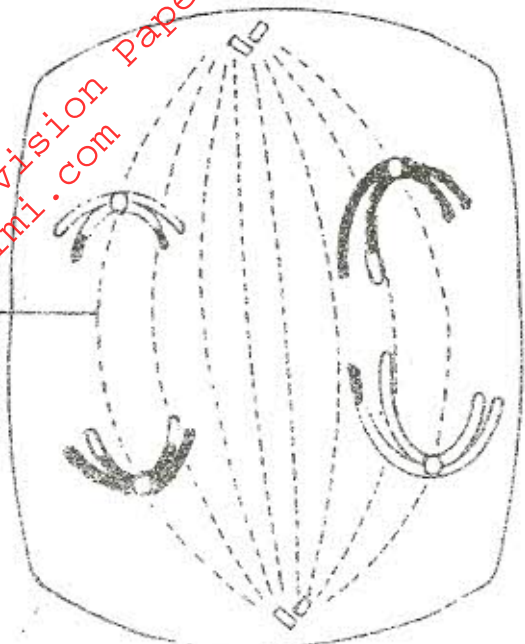
- 15 (a) Distinguish between population and community. (2 marks)
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- (b) Name a method that could be used to estimate the population size of the following organisms:
- (i) fish in a pond (1 mark)
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- (ii) Black jack in a garden. (1 mark)
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16 State two ways in which schistosoma species is adapted to parasitic mode of life. (2 marks)

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17 The diagram below represents a stage during cell division.



(a) (i) Identify the stage of cell division. (1 mark)

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(ii) Give three reasons for your answer in (a) (i) above. (2 marks)

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(b) Name the structures labelled M. (1 mark)

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18 State two disadvantages of sexual reproduction in animals. (2 marks)

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19 (a) State two environmental conditions that can cause seed dormancy. (2 marks)

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(b) Name the part of a bean seed that elongates to bring about epigeal germination. (1 mark)

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20 (a) What is meant by the term allele? (1 mark)

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(b) Explain how the following occur during gene mutation:

(i) deletion (1 mark)

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(ii) inversion. (1 mark)

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(c) What is a test-cross? (1 mark)

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21 (a) What is adaptive radiation? (2 marks)

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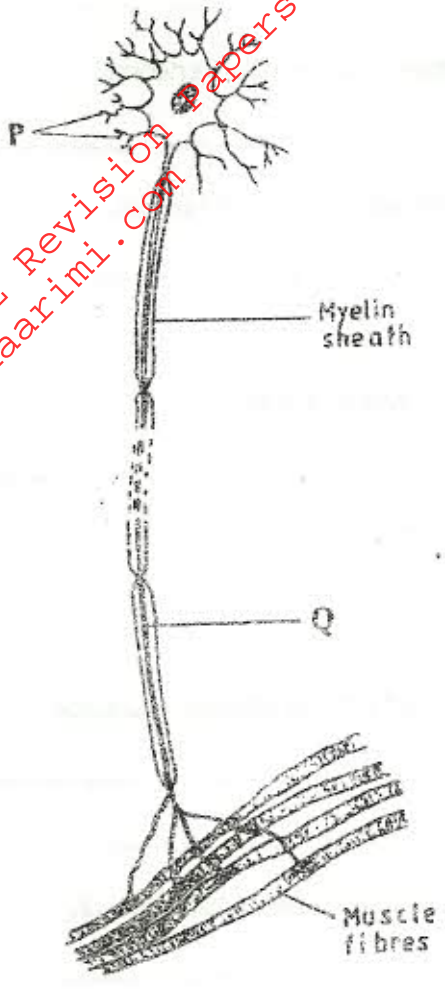
(b) Give a reason why organisms become resistant to drugs. (1 mark)

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22 (a) Where in the human body are relay neurones found? (1 mark)

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(b) The diagram below represents a neurone.



(i) Name the neurone. (1 mark)

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(ii) Name the parts labelled P and Q. (2 marks)

P

Q

(c) State a function of myelin sheath. (1 mark)

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- 23 (a) Name the hormone that is responsible for apical dominance. (1 mark)
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- (b) What is thigmotropism? (1 mark)
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- 24 (a) State a characteristic that is common to all cervical vertebrae. (1 mark)
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- (b) Name two tissues in plants that provide mechanical support. (2 marks)
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- (a) The action of ptyalin stops at the stomach. Explain. (1 mark)
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- (b) State a factor that denatures enzymes. (1 mark)
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- (c) Name the features that increase the surface area of small intestines. (2 marks)
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- 26 State one way by which HIV/AIDS is transmitted from mother to child. (1 mark)
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