

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

SECTION I (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)

.....  
.....

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

.....  
.....

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

.....

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

.....  
.....

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)

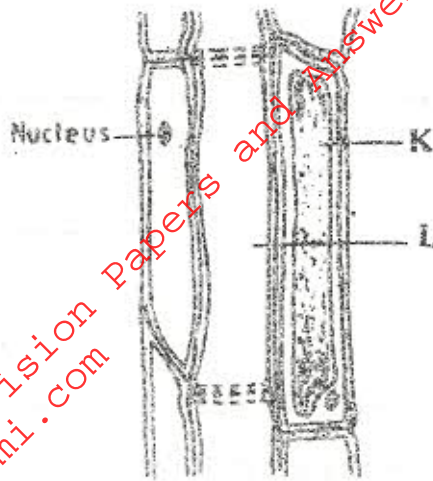
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10 The diagram below represents a plant tissue.



(a) Name the tissue.

(1 mark)

(b) Name the cells labelled K and L.

(2 marks)

K

L

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

(1 mark)

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

(1 mark)

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

(2 marks)

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

(2 marks)

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

(3 marks)

- 13 (a) Name the products of anaerobic respiration in
- (i) plants (1 mark)  
.....
  - (ii) animals (1 mark)  
.....
- (b) What is oxygen debt? (1 mark)  
.....

- 14 (a) What is the meaning of the following terms:
- (i) homeostasis (1 mark)  
.....  
.....
  - (ii) osmoregulation? (1 mark)  
.....  
.....

- (b) Name the hormones involved in regulating glucose level in blood. (2 marks)  
.....  
.....

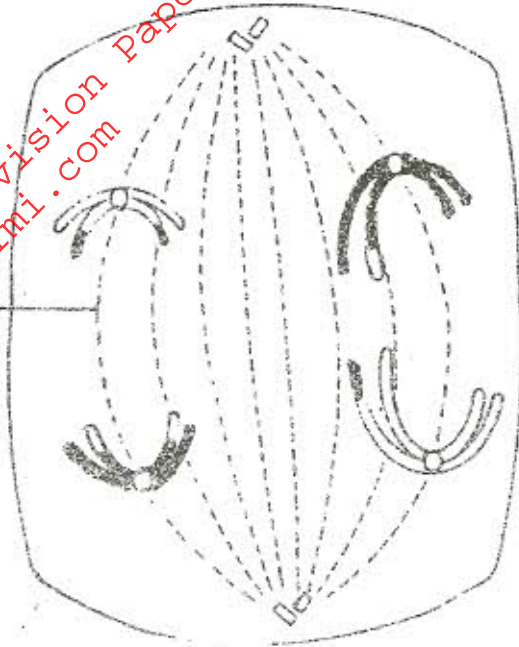
- 15 (a) Distinguish between population and community. (2 marks)  
.....  
.....  
.....

- (b) Name a method that could be used to estimate the population size of the following organisms:
- (i) fish in a pond (1 mark)  
.....
  - (ii) Black jack in a garden. (1 mark)  
.....

16 State two ways in which schistosoma species is adapted to parasitic mode of life. (2 marks)

.....  
.....

17 The diagram below represents a stage during cell division.



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

.....

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

.....

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

.....

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

.....  
.....

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

.....  
.....

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

.....

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

.....  
.....

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

(i) deletion (1 mark)

.....  
.....

(ii) inversion. (1 mark)

.....  
.....

(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)

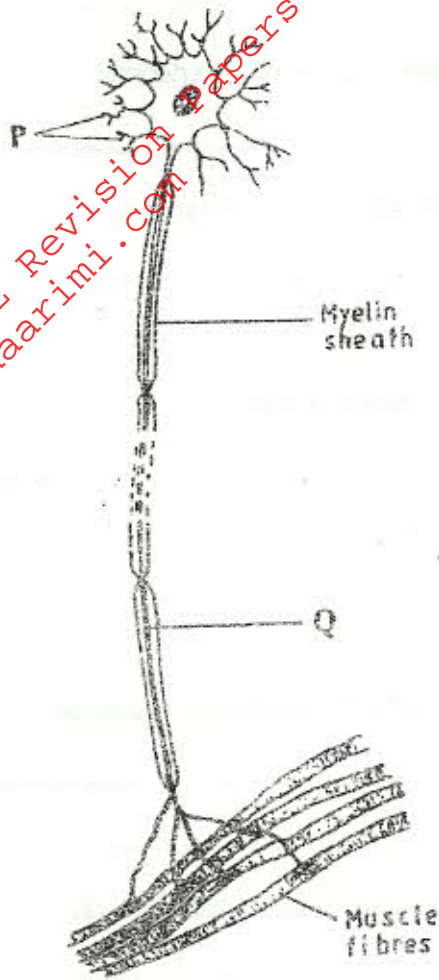
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22 (a) Where in the human body are relay neurones found? (1 mark)

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(b) The diagram below represents a neurone.



(i) Name the neurone. (1 mark)

.....

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

P .....

Q .....

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

.....

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