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*2000 Past GCE
Advanced Level
Biology Paper 2*

June 2000

1. (a) Three stages involved in the release of energy from a molecule of glucose are, glycolysis, tricarboxylic acid cycle and electron transfer system. What are the main processes involved in each stage?

(b) Under what conditions will anaerobic respiration occur in;

(i) yeast (ii) a flowering plant and (iii) a mammal

(c) How does exercise improve an athlete's performance during training? „

(11, 7, 2 mks)

2. Discuss the application of biotechnology in

(a) Drug production

(b) Food production

(c) Cell and tissue culture

(d) Enzyme production and

(e) Hormone production

(2, 8, 4, 2, 4 mks)

3. (a) What is a cell?

(b) Describe how the structure of each of the following is related to the functions it performs

(i) Parenchyma cell (ii) a tracheid

(b) Why does specialization of some plant cells often result in the loss of the ability' to divide?

(4,12,4. mks)

4. (a) (i) Why is it necessary for a mammal to dispose of nitrogenous wastes?

(ii) Describe the process of urea formation in the liver.

(b) With the aid of a labelled diagram, explain how the structure of the mammalian kidney nephron is adapted to its functions.

(c) What is the importance of osmotic control?

5. Explain how carbon dioxide expired by a herbivore becomes fixed by green plants and ends up component of glycogen in a herbivore of the same species. (20 mks)

6. (a) Draw and label a diagram of the human eye as seen in the vertical section

(b) Explain the process of accommodation by which light from objects at different distances is brought to focus on the retina.

(c) Explain the trichromatic theory of colour vision.

(6, 10, 4 mks)

7.(a) Why do multicellular organisms need a transport system?

(b) State three features shown by most circulatory systems

(c) With the aid of annotated diagrams, show the pattern of blood flow in (i) single circulation of bony fish

(ii) double circulation of a mammal

(c) State two advantages of a double circulatory system. (3, 3, 12, 2 mks)

8. (a) What is pollution?

(b) Briefly describe the hazards of air and water pollution

(c) You have probably seen an illegal dumping ground in your town. Describe the health hazards posed by such an environment to man. (2, 12, 1 mks)