

## CHAPTER 5

### EXCRETION AND HOMEOSTASIS

#### PAST K.C.S.E QUESTIONS ON THE TOPIC

1. In an investigation the pancreatic duct of a mammal was blocked. It was found that the blood sugar regulation remained normal while food digestion was impaired. Explain these observations. ( 2 marks)
2. (a) Explain why the body temperature of a healthy human being must rise up to 39<sup>0</sup>c on a humid day. (2 marks)  
(b) In an experiment a piece of brain was removed from rat. It was found that the rat had large fluctuations of body temperatures suggest the part of the brain that had been removed. ( 1 mark)
3. (a) Explain why sweat accumulates on a person's skin in a hot humid Environment. (2 marks)  
(b) Name the specific part of the brain that triggers sweating. ( 1 marks)
4. Explain why some desert animals excrete uric acid rather than ammonia. (2 marks)
5. State the role of the following hormones in the body  
(a) Insulin (3 marks)  
(b) Antidiuretic Hormone (3 marks)
6. What osmoregulatory changes would take place in a marine amoeba if it was transferred to a fresh water environment?
7. Name two components of blood that are not present in glomerular filtrate.

( 2 marks)

8. How would one find out from a sample of urine whether a person is suffering from diabetes mellitus? (2 marks)

9. When is glycogen, which is stored in the liver, converted into glucose and released into the blood? ( 2 marks)

10. A person was found to pass out large volumes of dilute urine frequently. Name the

(a) Diseases the person was suffering from (1 marks)

(b) Hormone that was deficient (1 mark)

11. State the importance of osmoregulation in organisms ( 2 marks)

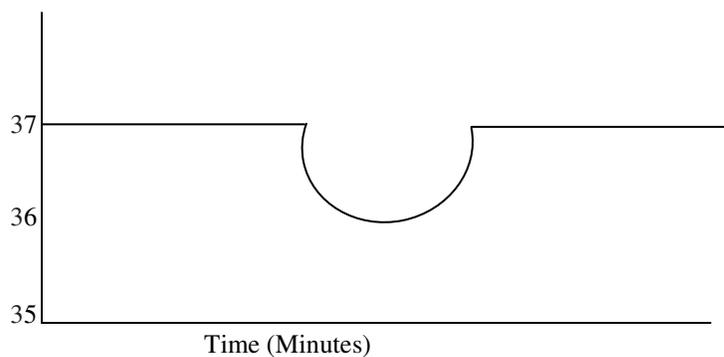
12. What happens to excess fatty acids and glycerol in the body? (2 marks)

13. Give reasons for each of the following

(a) Constant body temperature is maintained in mammals ( 1 mark)

(b) Low blood sugar level is harmful to the body ( 2 marks)

14. The temperature of a person taken before during and after taking a cold bath. The results are shown in the graph



- (a) Explain why the temperature fell during the bath ( 2 marks)
- (b) What changes appeared in the skin that enabled the body temperature to return to normal. (2 marks)
15. (a) Name the fluid that is produced by sebaceous glands (1 mark)
- (b) What is the role of sweat on the human skin? ( 2 marks)
16. State the role of insulin in the human body? ( 1 mark)
17. Describe how the human kidney functions. ( 20 marks)
18. (a) What is the meaning of the following terms:
- (i) Homeostasis ( 1 mark)
- (ii) Osmoregulation ( 1 mark)
19. (a) Explain what happens to excess amino acids in the liver of humans. ( 3 marks)
- (b) Which portions of the human nephrons are only found in the cortex? ( 3 marks)
- (c) (i) What would happen if a person produced less antidiuretic hormone? ( 1 mark)
- (ii) What term is given to the condition described in (c) (i) above? ( 1 mark)
20. Define the following terms
- (a) Excretion
- (b) Secretion
- (c) Egestion ( 3 marks)

21. Name the components of blood that do not enter the renal tubule in mammals

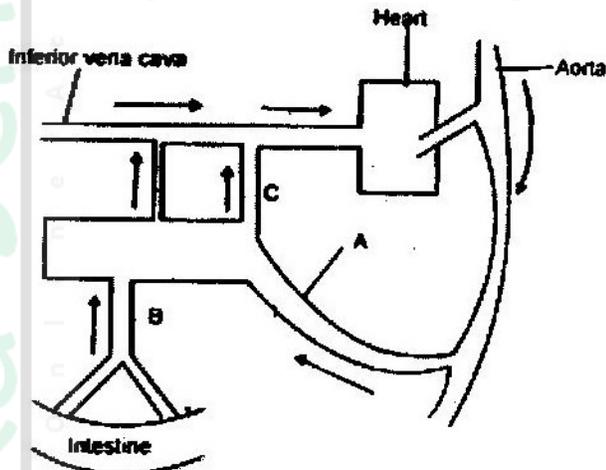
(2 marks)

22. The table below shows the approximate percent concentration of various components in blood plasma entering the kidney glomerular filtrate and urine of a healthy human being.

Component	Plasma	Glomerular	Urine Filtrate
Water	90	90	94
Glucose	0.1	0.1	0
Amino Acids	0.05	0.05	0
Plasma proteins	8.0	0	0
Urea	0.03	0.03	2.0
In organic ions	0.72	0.72	1.5

- (b) Name the process responsible for the formation of glomerular filtrate.
- (c) What process is responsible for the absence of glucose and amino acids in urine?
- (d) Explain why there are no plasma proteins in the glomerular filtrate
- (e) Besides plasma proteins what other major component of blood is absent in the glomerular filtrate.
- (f) Why is the concentration of urea in urine much higher than its concentration in the glomerular filtrate?

23. When the environmental temperature is very high, some animals urinate on their legs or lick the sides of their body. How does this help in temperature regulation?
24. Fish are able to use more of their food intake for growth than mammals. Suggest an explanation for this.
25. Explain the term negative feedback
26. Study the diagram below and answer the questions that follow.



- (a) Name the blood vessels labeled A, B and C.
- (b) If the animal has recently fed on a diet which is rich in proteins and carbohydrates in which of the vessels labeled A, B, and C would you expect to find the highest concentration of:
- Glucose
  - Amino acids
  - Carbon (IV) oxide
  - Oxygen
  - Urea
- (c) During fasting, the level of blood glucose in vessels C may be higher than the level in vessel B explain