**[9.0.0  Excretion and Homeostasis (42 Lessons)](http://www.elimu.net/Secondary/Kenya/KCSE_Student/Biology/Form2/Excretion/KCSE%20Biology%20Curriculum%20Form%20I-Excretion.htm)**

1. Explain the role of insulin in blood glucose regulation. (2 marks)

2. Name **three** methods by which plants eliminate their waste. (3 marks)

3. In an investigation two people M and N drunk some amount of strong glucose solution. Their blood sugar levels were immediately determined and thereafter at one hour intervals for the next six hours. The results were shown in the table below.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Time (hours ) |  | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
| Glucose level in mg/100ml of blood. | Person M | 90 | 220 | 160 | 110 | 100 | 100 | 90 |
| Person N | 110 | 340 | 320 | 300 | 260 | 245 | 215 |

1. In the grid provided, plot a graph for the blood glucose level against time for person M and N. (8 marks)
2. In man the normal blood sugar level is about 90ml/100ml of blood. Explain the change in the sugar level in person M during.
   1. The first 4 hours. (2marks) ii) The 6th hour. (2marks)
3. i) Suggest a possible reason for the high blood sugar in person N. (1mark) ii) How can the high blood sugar in person N be controlled. (1 mark)
4. The pancreas and the liver work together in the regulation of glucose in the blood.
   1. State the role of these organs when the concentration of glucose in blood is below normal. (2 marks)
   2. What would be the effect of removing the pancreas from the body? (1 mark)

iii) Distinguish between diabetes mellitus and diabetes insipidus. (2marks)

4. Name **two** substances that are excreted through diffusion process in plants. (2mks)

5. (a) Arrange the following nitrogenous waste products in order of decreasing toxicity:

urea, uric acid and ammonia. (1mk)

(b) Explain why desert animals excrete their nitrogenous wastes in form of uric acid. (1mk)

1. Name **one** waste product that is transported in the blood but not removed by the kidneys. (1mk)
2. The table below compares the approximate concentration of certain substances in plasma glomerula filtrate and urine.

|  |
| --- |
|  |
|  | Substance | % in plasma | Glomerular filtrate | % urine |  |
| Water | 90 | 90 | 94 |
| Protein | 6.5 | 0 | 0 |
| Urea | 0.03 | 0.03 | 1.8 |
| Glucose | 0.1 | 0.1 | 0 |

* 1. Account for the absence of
  2. Glucose in urine. (1mk)
  3. Protein in glomerular filtrate. (1mk)
  4. Why is percentage of urea highest in urine? Give **two** reasons. (2mks)
  5. How would the composition of urine differ from the one given above in case of:
  6. High protein diet. (2mks)
  7. Streneous exercise. (2mks)

8. Describe the regulation of blood sugar level in man. (10mks)

9. (a) Given a sample of urine, name one test you would carry out to determine if it was obtained from a person suffering from diabetes mellitus. (1 mark)

* 1. What results are expected if one is diabetic? (2 marks)
  2. Explain why sugar appears in the urine of a diabetic. (2 marks)

10. (a) State **three** processes by which flowering plants excrete waste products and for each process name **two** waste products that are eliminated. (6 marks)

11. a) What is diabetes mellitus? (1mk) b) How can it be controlled ? (1mk)

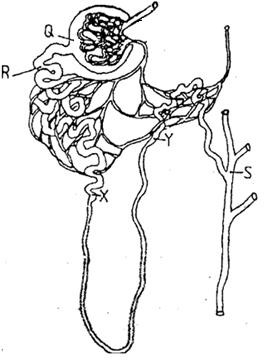
12. Explain what happens to excess amino acid in the liver of humans (3marks)

13. Explain why plants do not require specialized excretion organ (2marks)

14. Explain the role of human skin in;-

1. Thermo regulation (14marks)
2. Protection (6marks)

15. The diagram below illustrates part of a nephron from a mammalian kidney.



* 1. Name the fluid found in the part labeled Q.(1mk)
  2. Identify the process responsible for the formation of the fluid named in (a) above. (1mk)
  3. Which two hormones exert their effect in the nephron? (2mk)

|  |  |
| --- | --- |
| 16. a) Identify the source of urea that is removed via the kidneys in a healthy human being. | (1mk) |
| b) Explain why a pregnant woman excretes less urea compared to a woman who is non- pregnant. | (2mk) |

1. a) Explain what happens in humans when the concentration of glucose in the blood rises above the normal level. (3mk)

b) Describe the process of urea formation. (7 marks)

18. Name **two** processes by which flowering plants excrete waste products. (2mks)

19. Describe how excretion takes place in the

i) Mammalian kidney (10 marks)

ii) Green plants (10 marks)

20. (a) Explain why glucose does not appear in urine of a healthy person even though it is filtered in the

Bowman‟s capsule of a mammal. (2mks)

* 1. In a certain person, glucose appeared in urine. State the disease the person was suffering from. (1mk)