

FORM TWO BIOLOGY MARKING SCHEME

1. Define the following terms (4mks)

a) Excretion

-The process by which organisms get rid of waste products which result from chemical process which occur in living cells

b).Secretion

-The process by which organisms produce substances which are useful to the body,

By glands

c).Egestion

-Removal of indigestive materials from the body.

d).Homeostasis

-Maintenance of constant internal environment

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

*Insulin stimulates liver cells to convert the excess **glucose** to **glycogen** or fats for storage, increase oxidation of glucose, inhibit conversion of glycogen to glucose lowering blood sugar level to normal/ optimum level.*

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

Transpiration.

Diffusion

Deposition/storage in non toxic form

Tissue/organ fall

Exudation

Guttation

4. 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	Person M	90	220	160	110	100	100	90

mg/100ml of blood	Person N	110	340	320	300	260	245	215
------------------------------	---------------------	------------	------------	------------	------------	------------	------------	------------

a) In the grid provided, plot a graph for the blood glucose level against time for person M and N. (7 marks)

b) In man the normal blood sugar level is about 90mg/100ml of blood. Explain the change in the sugar level in person M during.

i) The first 4 hours. (2marks)

- ✓ Intake of strong glucose solution resulted to rise of blood sugar level. Hypothalamus detected the change and an impulse was sent to pancreas which secreted insulin hormone into blood stream. gradually excess glucose was converted to glycogen towards normal range

ii) The 6th hour. (2marks)

- ✓ insulin hormone converts excess glucose to glycogen hence glucose level fall to normal

c) i) suggest a possible reason for the high blood sugar in person N. (1mark)

- ✓ inadequate secretion of insulin hormone

ii) How can the high blood sugar in person N are controlled. (1 mark)

- ✓ regular injections of insulin hormone

d) The pancreas and the liver work together in the regulation of glucose in the blood.

i) State the role of these organs when the concentration of glucose in blood is below normal. (2mks)

- ✓ Pancreas secretes glucagon hormone into blood stream. Glucagon hormone in the liver initiate conversion of glycogen to glucose

ii) What would be the effect of removing the pancreas from the body? (1 mark)

- ✓ diabetes mellitus

iii) List excretory organs of mammals (4mks)

- ✓ -Kidney excretes urea, water and salts
- ✓ -Skin excretes Water, slats and urea
- ✓ -Lungs excrete carbon Iv oxide and water
- ✓ -Liver excretes bile salts

4.) State the structural modification of nephron in the desert mammals.

(2mks)

- Small Bowman's capsule/Glomerus;
- Long loop of Henle

5. Name the hormone responsible for ;(4mks)

a) Conversion of glycogen to glucose.

- ✓ Glucagon

b) Conversion of excess glucose to glycogen

- ✓ Insulin

c) Reabsorption of sodium ions

- ✓ Aldosterone

d) Reabsorption of water in the kidney tubules

- ✓ anti-diuretic hormones

7. The table below compares the approximate concentration of certain substances in plasma glomeruli 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

(a) Account for the absence of

(i)Glucose in urine.

(1mk)

- ✓ Reabsorption at proximal convoluted tubule; insulin converts excess glucose to glycogen

(ii) Protein in glomerular filtrate.

(1mk)

- ✓ Protein made up of large molecules hence cannot be filtered into glomerular filtrate

b) What hormone controls the concentration of urine produced in the kidneys?

- ✓ Anti-diuretic hormone

Where is it produced?

(2mks)

- ✓ Adrenal glands

8. State the functions of the liver (4mks)

- ✓ **Deamination**
- ✓ **Detoxification**
- ✓ **Blood sugar regulation**
- ✓ **excretion**

9. Explain why students tend to visit the latrines more frequently on cold days than on hot days. (2mks)

- ✓ Increased metabolic activities to generate heat hence lots of waste
- ✓ no sweating

10. Name one kidney diseases. (1 marks)

- ✓ Nephritis
- ✓ Kidney stones
- ✓ Kidney failure

From the diagram above;

A. Name the fluid found in the part labeled Q and the process by which it's formed (2mks)

- ✓ glomerular filtrate
- ✓ Ultra filtration

b). which two hormones that exert their effect in the nephron?

(2marks)

- ✓ antidiuretic hormone
- ✓ aldosterone hormone