Year 11 Human Biology - Excretory System Test Mark:_____/48

Name: ANSWER KEY Teacher:_____

PART A: MULTIPLE CHOICE (TOTAL 10 MARKS)

1. The removal of metabolic waste products from the body of a mammal is known as
   a. Egestion
   b. Excretion
   c. Secretion
   d. Defecation

2. Which four of the following function as excretory organs?

I	Lungs	IV	Pancreas
II	Spleen	V	Liver
III	Kidneys	VI	Skin

   a. I, II, IV, VI
   b. I, III, V, VI
   c. II, III, IV, VI
   d. II, III, IV, V

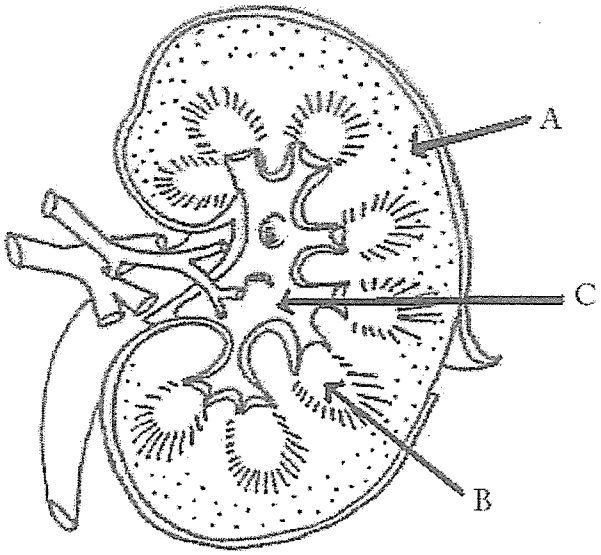
3. The composition of blood **leaving the kidney** is compared with the blood entering it. Which of the following is most likely?

	GLUCOSE	CARBON DIOXIDE	UREA	OXYGEN
a.	Same	More	More	Less
b.	Slightly less	Less	More	More
c.	Slightly less	More	Less	Less
d.	More	More	Less	More

4. Which of the following is **not** a function of the kidneys?
   a. Regulating the composition of the body fluid
   b. Regulating the water balance of the body
   c. Regulating the body temperature
   d. Removing the excess salts

5. Alcohol has a direct effect on the pituitary gland in that it causes the suppression of ADH secretion. The final result will cause
   a. More water being reabsorbed by the Bowman's capsule
   b. More water being reabsorbed by the collecting tubule
   c. Less water being reabsorbed by the Bowman's capsule
   d. Less water being reabsorbed by the collecting tubule and the distal convoluted tubule

6. The diagram below is of a longitudinal section through the human kidney



a. A is the medulla, B is the cortex, C is the renal pelvis
b. A is the renal pelvis, B is the cortex, C is the medulla
c. A is the cortex, B is the medulla, C is the renal pelvis
d. A is the cortex, B is the renal pelvis, C is the medulla

7. Which of the following cannot be found in the glomerular filtrate inside the Bowman's capsule:

1. Amino acids
2. Proteins
3. Glucose
4. Glycerol
5. Red blood cells

a. All except 2
b. All except 5
c. 2, 3 and 5 only
d. 2 and 5 only

8. After a student has run a race on a hot day, what change/changes can be found in the contents of the fluid present in the collecting tube?

1. The concentration of urea will increase
2. A small volume of fluid is produced
3. The amount of glucose will decrease
4. More water will pass out of the collecting tube to increase heat loss

a. 1 only
b. 2 only
c. 1, 2 and 3 only
d. 3 and 4 only

9. Normally, concentrations of metabolically important substances are:
   a. High in the glomerular filtrate and low in urine
   b. Low in the glomerular filtrate but high in urine
   c. High in both the glomerular filtrate and urine
   d. Low in both the glomerular filtrate and urine

10. The path of the filtrate through the kidney is:
   a. Cortex, medulla, renal pelvis, ureter, bladder, urethra
   b. Cortex, medulla, renal pelvis, urethra, bladder, ureter
   c. Medulla, cortex, renal pelvis, ureter, bladder, urethra
   d. Cortex, renal pelvis, medulla, ureter, bladder, urethra

PART B: VOCABULARY (TOTAL 8 MARKS)

11. The nephrons are the functional units of the kidney. This is where the urine is created. (1)

12. The glomerulus filters the blood. small molecules pass through the semi-permeable membrane into the tubule while large substances remain in the bloodstream. (2)

13. The nephron is supplied with blood by the afferent arteiole. Blood is taken away by the efferent arteiole. (2)

14. The movement of water through the cell membrane against a concentration gradient is called osmosis. (1)

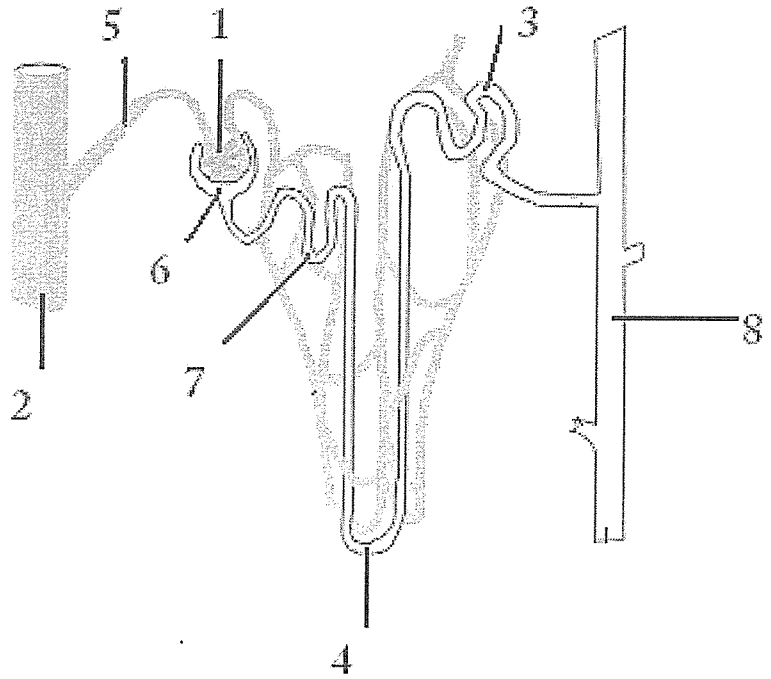
15. There are parts of the nephron that can be influenced by the hormone called Anti diuretic hormone.

The parts of the nephron that are influenced by this hormone are the distal convolted ~~tut~~ tbule and the collecting duct. (2)

PART C: SHORT ANSWER (TOTAL 30 MARKS)

Question 1.

Label the following diagram of a nephron. (8)



1. glomerulus
2. renal artery
3. distal convoluted tubule
4. Loop of Henle
5. afferent
6. Bowman's capsule
7. proximal convoluted tubule
8. collecting duct

b. What is the function of structure 6? (2)

filtration

c. How is the composition of fluid in structure 8 different to the composition of the fluid inside structure 5? (2)

8: no red blood cells, no protein, more urea more water, more wastes

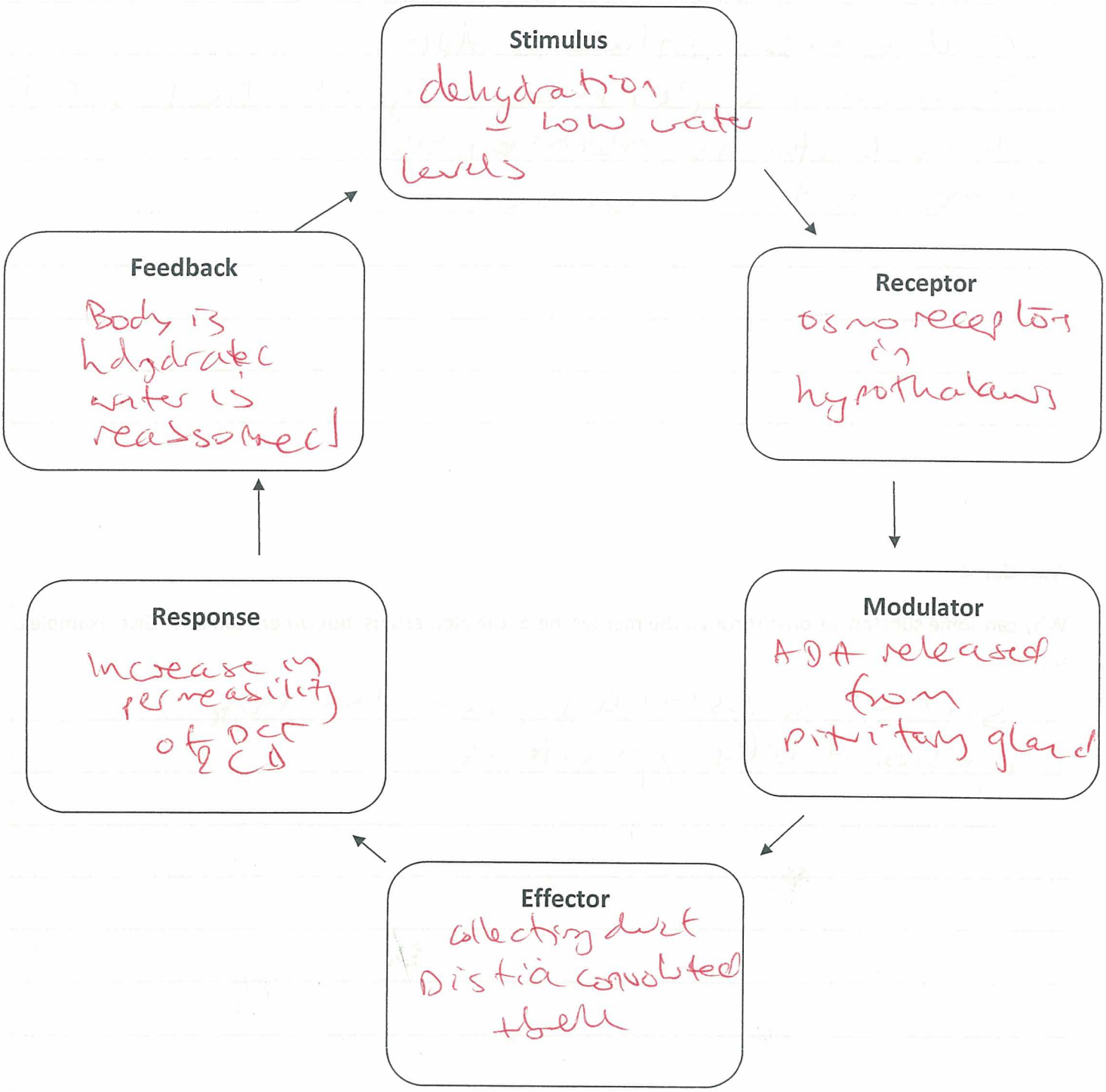
d. Which structure/structures does ADH affect the permeability of? (2)

distal convoluted tubule & collecting duct

Question 2.

Alex decided to go for a run around Lake Monger. She forgot to take her water bottle with her and began feeling a bit light headed and had a bit of a headache.

Complete the feedback loop to explain how Alex's body is dealing with dehydration. (6)



Question 3.

Explain why the consumption of alcohol and caffeine increases the amount of urine that is produced. (2)

- alcohol & caffeine are diuretics
- diuretics inhibit ADH
- Decrease in permeability of DCT & CT
- less water is reabsorbed.
- more water in urine

Question 4.

Why can some substances pass through the membrane of the glomerulus, but others can not? Give examples. (2)

some substances are too large
eg blood cells / proteins

Question 5.

Explain the difference between filtration, selective reabsorption and tubular secretion. You can use specific details and diagrams to help explain. (6)

- Filtration - glomerulus
Increase pressure - forces molecules across the membrane / becomes filtrate

- selective reabsorption in PCT & DCT & loop of Henle.
useful substances reabsorbed active transport / osmosis

- tubular secretion - DCT
unwanted substances (H^+, NH_3, drugs) added to filtrate