Name _____ Date _____

Grade 12 Biology Worksheet
The Nephron and Urine Formation Video

Section A — Multiple Choice (15 marks)

Circle the letter of the best answer.

1. Which sequence correctly traces the movement of filtrate after it leaves Bowman's capsule?

A. PCT → DCT → loop of Henle → collecting duct

B. Loop of Henle → PCT → DCT → collecting duct

C. PCT → loop of Henle → DCT → collecting duct

D. DCT → loop of Henle → PCT → collecting duct

2. How does the narrower efferent arteriole help ultrafiltration?

A. It increases resistance to blood leaving the glomerulus, helping maintain high pressure there.

B. It allows blood to leave the glomerulus faster, increasing the pressure there.

C. It raises pressure in Bowman's capsule, forcing fluid into the glomerulus.

D. It carries filtrate out of Bowman's capsule, lowering pressure in the tubule.

3. Which pair of substances normally passes through the filtration barrier into Bowman's capsule?

A. Red blood cells and urea

B. Large plasma proteins and glucose

C. White blood cells and mineral ions

D. Amino acids and urea

4. About 65% of the filtered water is reabsorbed in the proximal convoluted tubule. If 100 mL of filtered water enters this tubule, about how much remains in the tubular fluid when it leaves?

A. 65 mL

B. 35 mL

C. 100 mL

D. 15 mL

5. Which change occurs in the ascending limb of the loop of Henle?

A. Glucose is filtered out of the blood.

B. Most filtered amino acids are reabsorbed.

C. Salts move out of the tubular fluid.

D. Water leaves the tubular fluid by osmosis.

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6. What is the direct effect of ADH on the collecting duct?

A. It increases the duct's permeability to water.

B. It decreases the duct's permeability to water.

C. It increases the pressure of blood entering the duct.

D. It prevents the duct from receiving fluid from the DCT.

7. Which sequence correctly traces the path of urine after it leaves the renal pelvis?

A. Urethra → bladder → ureter

B. Ureter → bladder → urethra

C. Bladder → ureter → urethra

D. Ureter → urethra → bladder

8. Glucose is present in the initial filtrate of a healthy person but is normally absent from final urine. Which statement explains this difference?

A. Glucose enters Bowman's capsule and is broken down in the loop of Henle.

B. Glucose enters Bowman's capsule and remains in the tubular fluid until urination.

C. Glucose stays in the blood because it is too large to cross the filtration barrier.

D. Glucose passes through the filtration barrier and is then reabsorbed into the blood.

9. Which change would most directly reduce the amount of filtrate entering Bowman's capsule?

A. An increase in water reabsorption from the collecting duct

B. A decrease in blood pressure inside the glomerulus

C. An increase in salt reabsorption from the ascending limb

D. A decrease in the amount of urine stored in the bladder

10. In which pair does the first structure carry blood and the second carry tubular fluid?

A. PCT and DCT

B. Afferent arteriole and efferent arteriole

C. Collecting duct and glomerulus

D. Efferent arteriole and loop of Henle

11. Which row correctly compares ultrafiltration and selective reabsorption?

Option	Ultrafiltration	Selective reabsorption
A	Blood → Bowman's capsule	Tubular fluid → blood
B	Bowman's capsule → blood	Blood → tubular fluid
C	Blood → collecting duct	Tubular fluid → Bowman's capsule
D	Tubular fluid → blood	Blood → Bowman's capsule

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12. Which set of substances is normally reabsorbed from the proximal convoluted tubule?

A. Water, glucose and red blood cells

B. Sodium ions, amino acids and large plasma proteins

C. Water, glucose and amino acids

D. Glucose, sodium ions and white blood cells

13. How does urine usually change when the body needs to conserve water?

A. Its volume increases and it becomes more dilute.

B. Its volume decreases and it becomes more dilute.

C. Its volume increases and it becomes more concentrated.

D. Its volume decreases and it becomes more concentrated.

14. A student labels a coiled tubule in the renal cortex just after the ascending limb. Which structure is it?

A. Proximal convoluted tubule

B. Distal convoluted tubule

C. Collecting duct

D. Bowman's capsule

15. What would normally happen to a red blood cell as it passes through the glomerulus?

A. It stays in the bloodstream and leaves through the efferent arteriole.

B. It enters Bowman's capsule and is reabsorbed in the PCT.

C. It enters the loop of Henle and moves into the renal medulla.

D. It crosses into the collecting duct when ADH levels rise.

Section B — Fill in the Blank (10 marks)

Write the correct term or number in each blank.

16. Each human kidney contains approximately _____ nephrons.

17. The cup-shaped structure that receives fluid filtered from the glomerular capillaries is

_____.

18. Blood enters the glomerulus through the _____ arteriole.

19. The outer region of the kidney is the renal _____.

20. The movement of useful substances from the tubular fluid back into the blood is called

_____.

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21. Water leaves the descending limb of the loop of Henle by _____.

22. The mineral ion named in the video as being reabsorbed in the distal convoluted tubule is _____.

23. After leaving a collecting duct, urine enters a renal _____ before reaching the renal pelvis.

24. The fluid that first collects in Bowman's capsule is called _____.

25. The _____ gland releases ADH when the body needs to conserve water.

Section C — True or False (10 marks)
Write **True** or **False** on each line.

26. _____ The glomerulus is a network of capillaries.

27. _____ Large plasma proteins normally pass through the filtration barrier into Bowman's capsule.

28. _____ A single collecting duct receives fluid from only one nephron.

29. _____ The loop of Henle extends into the renal medulla.

30. _____ Urea can enter the filtrate during ultrafiltration.

31. _____ The proximal convoluted tubule receives fluid directly from the distal convoluted tubule.

32. _____ Reabsorption can still occur after tubular fluid leaves the loop of Henle.

33. _____ The urethra carries urine from the kidneys to the bladder.

34. _____ When the body is short of water, ADH causes less water to be reabsorbed from the collecting duct.

35. _____ The urinary bladder stores urine before it is expelled from the body.

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