Chapter Six: Human Physiology: Excretory Products and Excretion

Creative Essay Type

1. ▶Kidney is an important organ of man. It helps to eliminate the nitrogenous wastes when the organ suddenly become unable to remove waste product, is called chronic kidney failure. *[Viqarunnisa Noon School & College, Dhaka]*

a. What is Symmetry? 1
b. Mention the organic components of wine. 2
c. Describe structure and function of the basic unit of stem organ. 3
d. In case of chronic stem organ failure, what measures you will be taken— Explain it logically. 4

Ans: See HSC EV Biology 2nd Paper 6th Chapter Note Ques. No. 11 of Answer Paper.

2. ▶

[Mymensingh Girls' Cadet College, Mymensing]

a. What is dialysis? 1
b. What are the components of urine? 2
c. Describe the causes of above organs failure. 3
d. How the urea formate through above organ? 4

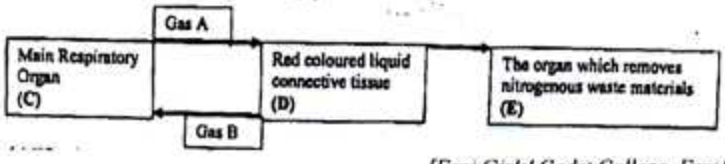
Ans: See HSC EV Biology 2nd Paper 6th Chapter Note Ques. No. 14 of Answer Paper.

3. ▶ [A] Ultrafiltration → [B] Selective Reabsorption → [C] Tubular Secretion *[Joypurhat Girls' Cadet College, Joypurhat]*

a. What is Opsonin? 1
b. Differentiate innate and learning behavior. 2
c. Describe the structure of the place where step [A] of the stem take place. 3
d. Illustrate the whole process of the stem briefly. 4

Ans: See HSC EV Biology 2nd Paper 6th Chapter Note Ques. No. 15 of Answer Paper.

4. ▶ Observe the stem and answer the following questions.



[Feni Girls' Cadet College, Feni]

a. What is Coronary Artery? 1
b. What do you mean by Gluconeogenesis? 2
c. Write down the role of E in Osmoregulation. 3
d. How A and B are transported in the body? Discuss briefly. 4

Ans: See HSC EV Biology 2nd Paper 6th Chapter Note Ques. No. 16 of Answer Paper.

▸ Question No. a (Knowledge based)

Ques-1. What is epiglottis? *[All board 18]*

Ans: The opening of the Larynx that is located in the oral cavity or the lid of the glottis is called the epiglottis.

Ques-2. What is an adaptation? *[C. B. 17]*

Ans: The mechanism of formation of images of objects situated at various distances by changing the convexity of the lens keeping the distance between the object and the eye fixed, is called accommodation.

Ques-3. What is ADH? *[J.B. 17]*

Ans: ADH is a kind of secreted hormone from posterior part of the pituitary gland.

Ques-4. What is barorecptor? *[D.B. 16]*

Ans: Baroreceptor is the existing special sensitive edge of nerve in the wall of blood vessel that regulates the blood pressure of our body.

Ques-5. What is immunity? *[Dj. B. 16]*

Ans: Immunity is the defensive system of protect own self from harmful microscopic pathogenic organisms and damage from the toxic chemical substances by our body.

▸ Question No. b (Comprehension based)

Ques-1. What is meant by ultra filtration? *[All board 18]*

Ans: The filtration that occurs at the first step of urine formation in the renal corpuscle of nephron that is the structural and functional unit of kidney, is known as ultra-filtration. In this process of filtration, blood from the heart enters into the glomerulus at high pressure through the dorsal aorta, renal artery and afferent arterioles. As the diameter of efferent arteriole is narrower than afferent arteriole which causes high pressure that filters the blood as water, salt, carbohydrate, urea, uric acid and deposits as urine in glomerulus.

Ques-2. Why the pituitary gland is called the master gland? *[C. B. 17]*

Ans: The pituitary gland is an orbicular gland connected to the brain's hypothalamus. Most of the hormones are secreted from this gland and these hormones almost influences all other glands or coordinate their functions. For that this gland is called the master gland.

Ques-3. What do you mean by osmoregulation? *[J.B. 17]*

Ans: Osmoregulation is the maintenance of constant osmotic condition inside and outside environment of the body. Osmoregulation process regulates the balance of water and ion. The death of cell, acidosis and overflow of nitrogen in the blood are the results of inadequate osmoregulation process.

Ques-4. Write the names of the main components of urine. *[R.B. 16]*

Ans: The main components of urine are- water, urea, uric acid, creatinine, sodium, potassium, ammonium, magnesium, chloride, phosphate, sulphate etc.

Ques-5. Why lymphocyte is called the memory cell? *[C.B.16]*

Ans: Lymphocyte is a special kind of cell of human defense system that plays important role in defense. If any germ attacks our body for the first time, the lymphocyte preserves the process of detecting germ's antigen as memory. Later on entering a germ, the antigen of germs first identify and spread the message. As a result, the defense mechanism of body activates against the germ.

Creative Multiple Choice

1. **In which part of the kidney most of the filtrate from the glomerulus is reabsorbed?** *[Dj.B.-17]*
   ⓐ Proximal convoluted tubule
   ⓑ Loop of Henle
   ⓒ Distal convoluted tubule
   ⓓ Collecting tubule — **a**

2. **Which one carries urine from the urinary bladder?** *[Ctg.B.-17]*
   ⓐ Oviduct
   ⓑ Urethra
   ⓒ Ureter
   ⓓ Vas deferens — **b**

3. **Which one is absent in glomerular filtrate?** *[Ctg.B.-17]*
   ⓐ Protein ⓑ Glucose
   ⓒ Ion ⓓ Urea — **a**

4. **Which of following organ is connected with adrenalin gland?** *[Dj.B.-15]*
   ⓐ Brain ⓑ Trachea
   ⓒ Liver ⓓ Kidney — **d**

5. **In kidney, glomerulus is found at —** *[Ctg.B.-15]*
   ⓐ Pelvis
   ⓑ Hilum
   ⓒ Bowman's capsule
   ⓓ Loop of Henle — **c**

6. **Which of the following is responsible for the hay like colour of urine?** *[C.B.-15]*
   ⓐ Ammonia
   ⓑ Bilirubin
   ⓒ Urochrome
   ⓓ Ketone bodies — **c**

7. **How many types of dialysis are available?** *[B.B.-15]*
   ⓐ 2 ⓑ 3
   ⓒ 4 ⓓ 5 — **a**

8. **In which part of a nephron, most re-absorption is occurred?** *[B.B.-15]*
   ⓐ Proximal convoluted tubule
   ⓑ Loop of Henle
   ⓒ Distal convoluted tubule
   ⓓ Collecting tubule — **a**

9. **Which component makes urine straw coloured?** *[R.B., Dj.B., C.B., Ctg.B., S.B., J.B., B.B.-18]*
   ⓐ Urea
   ⓑ Creatinine
   ⓒ Ammonia
   ⓓ Urochrome — **d**

10. **Which portion of a nephron can conduct ultrafiltration?**
    ⓐ Glomerulus
    ⓑ Loop of Henle
    ⓒ Distal convoluted tubule
    ⓓ Urinary bladder — **a**

11. **Podocytes are found in —**
    ⓐ Proximal convoluted tubule
    ⓑ Loop of Henle
    ⓒ Distal convoluted tubule
    ⓓ Collecting tubule — **d**

12. **The concave shaped folding of a kidney is known as —**
    ⓐ Cortex ⓑ Hilus
    ⓒ Medulla ⓓ Calyx — **b**

13. **What is the necessary amount of urine deposition in bladder to create an urge for urination?**
    ⓐ 15-170 ml
    ⓑ 280-320 ml
    ⓒ 530-630 ml
    ⓓ 700-750 ml — **b**

14. What is the total length of all nephrons together?

ⓐ 3-4 cm ⓑ 3-4 m
ⓒ 72-80 m ⓓ 73-80 km **d**

15. A balance between the intracellular and extracellular osmotic pressure is called —

ⓐ Excretion
ⓑ Osmosis
ⓒ Osmoregulation
ⓓ Filtration **c**

16. Which portion of a nephron can conduct ultrafiltration?

ⓐ Glomerulus
ⓑ Loop of Henle
ⓒ Distal convoluted tubule
ⓓ Urinary bladder **a**

17. What is the amount of urine production in cm^3 per minute?

ⓐ 1 ⓑ 2
ⓒ 3 ⓓ 4 **a**

18. Which hormone can maintain water balance in our body?

ⓐ ADH ⓑ FSH
ⓒ TDH ⓓ LH **a**

19. Functions of kidney are— *[B.B.- 17]*

i. Removal of nitrogenous wastes
ii. Maintaining body water level
iii. Maintaining the hemoglobin concentration of blood

Which one is correct?

ⓐ i & ii ⓑ i & iii
ⓒ ii & iii ⓓ i, ii & iii **d**

20. Which are true for nephron?

i. Visceral layer is made up with podocytes
ii. Parietal layer is made up with squamous epithelial cell
iii. The cup like portion is Bowman's capsule

Which one is correct?

ⓐ i & ii ⓑ i & iii
ⓒ ii & iii ⓓ i, ii & iii **d**

21. Kidney—

i. Maintain blood pressure
ii. Deposits excessive hormones
iii. Excrete metabolic wastes

Which one is correct?

ⓐ i & ii ⓑ i & iii
ⓒ ii & iii ⓓ i, ii & iii **c**

22. The steps of human urine formation are — *[R.B., Dj.B., C.B., Ctg.B., S.B., J.B., B.B.-18]*

i. Ultra filtration
ii. Reabsorption
iii. Tubular secretion

Which one of the following is correct?

ⓐ i and ii ⓑ i and iii
ⓒ ii and iii ⓓ i, ii and iii **d**

23. Each kidney is —

i. 12 cm long
ii. 6 cm wide
iii. 3 cm thick

Which one is correct?

ⓐ i & ii ⓑ i & iii
ⓒ ii & iii ⓓ i, ii & iii **d**

24. Hormone responsible for urine density —

i. Is found in brain
ii. Also goes under the name vasopressin
iii. Is secreted in a reduced amount when water deficiency occurs

Which one is correct?

ⓐ i & ii ⓑ i & iii
ⓒ ii & iii ⓓ i, ii & iii **a**

Read the following paragraph and provide answer of question number 25 and 26:

In a zoology classwhile explaining the structure of an organ a teacher said, 'This is a reddish coloured bean shaped organ.' *[R.B.-17]*

25. Organ explained in the passage is—

ⓐ Liver ⓑ Stomach
ⓒ Pancreas ⓓ Kidney **d**

26. Ultrastructure of this organ contains —

i. Alveolus
ii. Renal pyramid
iii. Pelvis

Which one is correct?

ⓐ i & ii ⓑ i & iii
ⓒ ii & iii ⓓ i, ii & iii **c**

Read the following stem and answer questions 27 and 28-

Selina's body has become bloated. Her urination has decreased at an alarming amount as well. *[D.B.-18]*

27. Besides the symptom mentioned in the stem, what other symptoms Selina could have?

i. Loss of appetite,
ii. Vomiting,
iii. Pain in the waist

Which one is correct?

ⓐ i and ii ⓑ i and iii
ⓒ ii and iii ⓓ i, ii, and iii **d**

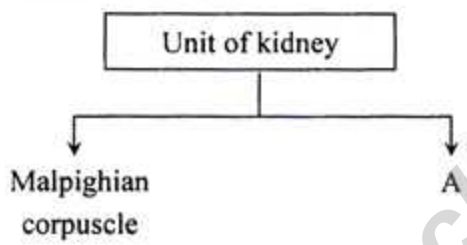
28. The steps needed to solve Selina's problems-

i. Take advice from a doctor
ii. Controlled food intake
iii. Dialysis

Which one is correct?

ⓐ i and ii ⓑ i and iii
ⓒ ii and iii ⓓ i, ii, and iii **d**

Read the following flowchart and provide answer of question number 29 and 30:



29. Length of A is —

ⓐ 5 cm ⓑ 14 cm
ⓒ 3 cm ⓓ 11 cm **c**

30. Passive re-absorption of which component is occurred in A?

i. Water
ii. Glucose
iii. Urea

Which one is correct?

ⓐ i & ii ⓑ i & iii
ⓒ ii & iii ⓓ i, ii & iii **a**

Read the following reaction and provide answer of question number 31 and 32:

Amino acid $\xrightarrow[\text{Deaminase}]{\text{Deamination}}$ [x] + (– NH_2)

31. Biochemical reaction explained above is found at—

ⓐ Liver
ⓑ Glomerulus
ⓒ Loop of Henle
ⓓ Convoluted tubule **a**

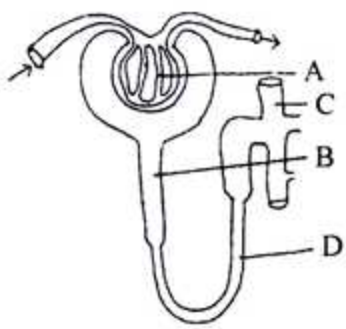
32. The component labelled with X is —

i. Acid
ii. Converted into fat
iii. Responsible for urine production

Which one is correct?

ⓐ i & ii ⓑ i & iii
ⓒ ii & iii ⓓ i, ii & iii **a**

Provide answers of question 33 and 34 from the image provided below.



33. Which of the following event occurs in portion A?

ⓐ Re-absorption ⓑ Urea production
ⓒ Ultrafiltration ⓓ Urine production **c**

34. In case of selective re-absorption—

i. Glucose is re-absorbed in portion B.
ii. Water is re-absorbed in portion D.
iii. Na^+, K^+, Cl^-, are re-absorbed in portion C.

Which one is correct?

ⓐ i & ii ⓑ i & iii
ⓒ ii & iii ⓓ i, ii & iii **a**