1. To monitor a patient with impaired function, the most useful serial serum determination would be:
   a. creatine
   b. creatinine
   c. BUN
   d. Uric acid
   e. Total nonprotein nitrogen
2. The end product of protein metabolism in man is:
   a. creatinine
   b. urea
   c. uric acid
   d. ammonia
   e. amino acids
3. Clearance tests for urea and creatinine measure:
   a. tubular excretion
   b. early loss of kidney function
   c. glomerular filtration rate
   d. concentrating ability
   e. blood flow and pressure
4. Determination of serum uric acid is useful in the diagnosis of:
   a. thyroid disease
   b. pancreatic disease
   c. viral hepatitis
   d. rheumatoid arthritis
   e. gout
5. The function unit of the kidney is the:
   a. cortex
   b. medulla
   c. nephron
   d. distal tubule
   e. collecting duct
6. Glomerular filtration describes:
   a. formation of a protein free plasma-like fluid from blood
   b. formation of urine
   c. formation of plasma-like fluid from blood
   d. formation of serum-like fluid from blood
   e. formation of electrolyte solution from plasma
7. The proximal tubule functions to:
a. reabsorb 80% of salt and water
b. concentrate salts
c. form the renal plasma threshold
d. reabsorb urea
e. reabsorb phosphate

8. The loop of Henle:
   a. responds to antidiuretic hormone
   b. has a high $T_m$ for glucose
   c. filters depending upon GFR
   d. has a counter current mechanism
   e. filters, depending upon glomerular pressure

9. The waste product of muscle metabolism which is excreted into the urine is:
   a. creatine
   b. creatinine
   c. pseudocreatinine
   d. creatine phosphate
   e. all of the above

10. Creatinine is a good substance to use for a clearance test because:
    a. it is exogenous
    b. it is reabsorbed
    c. its blood values are stable
    d. it is affected by fluid intake
    e. all of the above

11. A patient’s BUN value is 150 mg/L and his creatinine is 50 mg/L. What conclusion would you draw from these results?
    a. patient is normal
    b. patient is in early stage of renal failure
    c. patient protein intake is quite low
    d. patient has suffered muscle deterioration
    e. one of the values is in error

12. Uric acid:
    a. is a waste product of protein metabolism
    b. is further metabolized to allantoin in anthropoid apes and Dalmations
    c. is filtered by the glomerulus and subsequently excreted
    d. is often elevated in hemolytic anemia
    e. all of the above

13. Normal creatinine clearance is approximately (mL/min):
    a. 60-80 mL/min
14. Which of the following serum analytes is most affected by diet?:
   a. amonia
   b. creatine
   c. creatinine
   d. urea
   e. sodium

15. The final concentration step in urine formation occurs in the:
   a. proximal tubule
   b. loop of Henle
   c. distal tubule
   d. collecting tubules
   e. glomerulus

16. You measure electrolytes on a patient and get the following results (mmol/L):

   Na  140
   K  3.8
   Cl  106
   CO₂  11

   In addition, the BUN is 720 mg/L, and the creatinine is 99 mg/L. The glucose is 750 mg/L. You should:
   a. report the patient's results because the anion gap is normal
   b. repeat because the anion gap is too small
   c. repeat because the anion gap is too large
   d. report the patient's results. The anion gap is abnormal, but it is explained by evidence of renal failure.
   e. report the patient's results. Anion gap is abnormal, but is explained by evidence of diabetes

Use the following KEY to answer Questions 17—26:

   a. 1, 2, and 3 are correct
   b. 1 and 3 are correct
   c. 2 and 4 are correct
   d. only 4 is correct
   e. all are correct
17. Which of the following is a function of the proximal tubule?:
   1. reabsorption of amino acids and protein
   2. reabsorption of glucose
   3. reabsorption of uric acid and salts
   4. acidification of urine

18. The renal response to a decreased blood pH is to:
   1. decrease the secretion of H⁺
   2. increase the secretion of H⁺
   3. decrease the reabsorption of HCO₃⁻
   4. increase the reabsorption of HCO₃⁻

19. Which of the following describes one or more property of the hormone aldosterone?:
   1. acts on the distal tubule
   2. changes distal tubule water permeability
   3. acts on Na⁺/K⁺(H⁺) pump
   4. cannot be affected by certain diuretics

20. Which of the following is/are a function of the nephron complex?:
   1. control of body electrolytes
   2. control of body pH
   3. elimination of body wastes
   4. metabolism of drugs by microsomal oxidative system

21. A serum creatinine has been measured, and the result is 50 mg/L. Which of the following serum determinations would most likely correspond with this creatinine value?:
   1. uric acid = 40 mg/L
   2. uric acid = 15 mg/L
   3. BUN = 120 mg/L
   4. BUN = 520 mg/L

22. Which of the following would you expect to be elevated in renal failure?:
   1. BUN
   2. uric acid
   3. creatinine
   4. sodium

23. The presumptive urine fluid leaving the proximal tubule is:
   1. enriched in urea compared to plasma
   2. hyperosmolar compared to serum
   3. 80-90% reduced in volume from the original filtrate
   4. 20% reduced in volume from the original filtrate

24. Urinary ammonium ions are:
1. synthesized by the liver
2. synthesized by renal tubular cells
3. excreted to form an alkaline urine
4. excreted in response to an acidosis

25. Urinary phosphate is:
   1. excreted under the influence of parathyroid hormone
   2. the major buffer of urine
   3. increased in chronic renal failure
   4. excreted by the proximal tubule

26. Which of the following are physiological functions of the kidney?
   1. excretory
   2. electrolyte and water balance
   3. acid-base balance
   4. protein conservation

Answer:

1. b (p. 483,490)
2. b (p. 483)
3. c (p. 487)
4. e (p. 484,490)
5. c (p. 479)
6. a (p. 480)
7. a (p. 480, 481)
8. d (p. 481,482)
9. b (p. 483-484)
10. c (p. 484, 487)
11. e (p. 488, 490)
12. c (p. 484)
13. c (p. 487)
14. d (p. 483)
15. d (p. 482)
16. d (p. 489 - 490)
17. a (p. 480 - 481)
18. c (p. 483)
19. b (p. 482)
20. a (p. 479)
21. d (p. 488, 490)
22. a (p. 488-490)
23. b (p. 480)
24. c (p. 483)
25. a (p. 482 - 483)
26. e (p. 479)