1. Which of the following is not a function of the kidneys?
   (a) excretion of metabolic wastes.
   (b) maintaining proper plasma volume.
   (c) secreting aldosterone to regulate sodium.
   (d) maintains proper osmolarity of body fluids.
   (e) assisting in maintaining the proper acid-base balance of the body.

ANSWER: c (it's secreted from the adrenal gland)

2. The specialized nephron capillary bed where filtration occurs is the
   (a) afferent arteriole.
   (b) efferent arteriole.
   (c) glomerulus.
   (d) peritubular bed.
   (e) none of these answers.

ANSWER: c

3. Which of the following statements about juxtamedullary nephrons is incorrect?
   (a) their glomeruli lie in the renal medulla.
   (b) they are important in the ability of the kidneys to concentrate urine.
   (c) their loops of Henle dip deep into the medulla.
   (d) their peritubular capillaries form vasa recta.
   (e) they are not the predominant type of nephron found in human kidneys.

ANSWER: a

4. Below is a listing of nephron components and associated structures:
   1. descending limb of loop of Henle
   2. Bowman's capsule
   3. collecting tubule
   4. ascending limb of loop of Henle
   5. distal tubule
   6. proximal tubule

Indicate the correct flow of filtrate through these structures:
   (a) 4, 6, 5, 3, 2, 1
   (b) 2, 6, 1, 4, 5, 3
   (c) 2, 5, 6, 3, 1, 4
   (d) 3, 2, 6, 1, 4, 5
   (e) 2, 1, 4, 3, 5, 6

ANSWER: b

5. Which nephron structure is especially important in the kidney's ability to produce urine of varying concentration?
   (a) Bowman' capsule.
   (b) proximal tubule.
   (c) distal tubule.
   (d) loop of Henle.
   (e) glomerulus.

ANSWER: d

6. The renal process whereby substances are selectively transferred from the peritubular blood into the renal tubule is
   (a) filtration.
   (b) secretion.
   (c) reabsorption.
   (d) excretion.
   (e) none of these answers.

ANSWER: b

7. The blood that flows through the kidneys is
   (a) normally about 20 to 25% of the total cardiac output.
   (b) all filtered through the glomeruli.
   (c) all used to supply the renal tissue with O_2 and nutrients.
   (d) both (a) and (b) above.
   (e) all of these answers.

ANSWER: a

8. The glomerular filtration rate
   (a) averages 125 ml/min.
   (b) averages 75 liters/day.
   (c) represents 60 to 65% of the cardiac output.
   (d) both (a) and (b) above.
   (e) all of these answers.

ANSWER: a

9. Filtrate passes through all of these except
   (a) glomerular capillary pores.
   (b) basement membrane.
   (c) podocytes.
   (d) filtration slits.
   (e) none of these answers.

ANSWER: c

10. The glomerular capillary blood pressure in the nephron is 78 mm Hg. The Bowman's capsular hydrostatic pressure is 24 mm Hg. The colloidal osmotic pressure is 18 mm Hg. The net filtration pressure is ___ mm Hg.
   (a) 18
   (b) 26
   (c) 36
   (d) 42
   (e) 78

ANSWER: c
net = glomerular capillary blood pressure – Bowman's capsular hydrostatic pressure + colloidal osmotic pressure
= 78 – (18 + 24) = 36 ☺

11. Changes in the glomerular filtration rates are accomplished through
   (a) autoregulation.
   (b) myogenic activity.
   (c) vasoactive responses in the afferent arteriole.
   (d) both (a) and (b) above.
   (e) all of these answers.

ANSWER: e

12. Which factor would reduce the net filtration pressure the most?
   (a) vasodilation of the afferent arteriole.
   (b) vasocontraction of the efferent arteriole.
   (c) a large increase in blood colloid osmotic pressure.
   (d) a low capsular hydrostatic pressure.
   (e) a high glomerular hydrostatic pressure.

ANSWER: c

13. Which of the following factors would decrease the GFR?
   (a) a fall in plasma protein concentration.
   (b) an obstruction such as a kidney stone in the tubular system, which increases Bowman's capsule hydrostatic pressure.
   (c) vasodilation of the afferent arterioles.

(d) two of these answers.
(e) all of these answers.

ANSWER: b (a : the colloid osmotic will decrease so the GFR will increase / C : vasodilatation means more blood will reach the glomeruls which means more filtration , more GFR)

14. Afferent arteriolar vasoconstriction _____ blood flow into the glomerulus, which causes the glomerular-capillary blood pressure to _____, leading to a(n) _____ in the net filtration pressure and a resultant _____ in the GFR.
(a) increases, increase, increase, increase
(b) decreases, decrease, decrease, decrease
(c) increases, increase, decrease, decrease
(d) decreases, decrease, increase, increase
(e) none of these answers.

ANSWER: b

15. The myogenic mechanism
(a) causes the afferent arteriole to constrict when blood pressure is too high.
(b) may result from stretching of vascular smooth muscle.
(c) is an autoregulatory mechanism.
(d) both (a) and (b) above.
(e) all of these answers.

ANSWER: e

16. Tubular reabsorption
(a) refers to the movement of a substance from the peritubular capillary blood into the tubular fluid.
(b) occurs by either active or passive transport.
(c) involves the process of transepithelial transport.
(d) both (b) and (c) above.
(e) all of these answers.

ANSWER: d

17. Tubular reabsorption
(a) involves the movement of substances from the peritubular capillaries into the tubular fluid.
(b) involves the movement of substances from the tubular fluid into the peritubular capillaries.
(c) is considered to be active if any one of the five steps of transepithelial transport is active.
(d) both (a) and (c) above.
(e) both (b) and (c) above.

ANSWER: e

18. The Na^+-K^+ ATPase transport system that plays a pivotal role in much of tubular reabsorption is located in the
(a) luminal membrane of tubular cells.
(b) basolateral membrane of tubular cells.
(c) podocytes.
(d) glomerular capillary membrane.
(e) basement membrane.

ANSWER: b

19. Into which structure does most reabsorption occur?
(a) proximal convoluted tubule.
(b) glomerulus.
(c) distal convoluted tubule.
(d) loop of Henle.
(e) none of these answers.

ANSWER: a

40. The proximal tubule
    (a) reabsorbs about 65% of the filtered water.
    (b) is not the site of action of renin.
    (c) is the location where glucose is reabsorbed.
    (d) reabsorbs about 65% of the filtered water and is the location where glucose is reabsorbed.
    (e) all of these answers.

ANSWER: e