Chapter 18 Questions:

1. Trace the path of an erythrocyte as it moves from the renal artery of the kidney to the renal vein.

2. Describe the process of glomerular filtration. Identify the filterable and non-filterable components of the blood. Define GFR. (See IP CD for animations)

3. Describe the process of tubular reabsorption. Specifically describe how sodium ions, chloride ions, water, and glucose are reabsorbed from the proximal convoluted tubule.

4. Describe the process of tubular secretion. Name three substances normally secreted into the renal tubule, and the significance of each substance named.

5. Trace the path of a molecule of water as it moves from the glomerulus of a nephron to the urethra and exits the body in the urine.

6. Describe the importance of ADH, aldosterone, and atrial natriuretic peptide in the process of urine formation. How do these hormones affect urine output?

7. Define: glucosuria (glycosuria); UTI; incontinence; dialysis (or hemodialysis); micturition; cystitis, diuretics, and dysuria.

8. Describe the role of the renin-angiotensin mechanism in the homeostatic control of kidney function and blood pressure. Specifically, what effect does angiotensin II have on the efferent arteriole? (See IP CD: Cardiovascular and Urinary Systems for animations)

9. Define and describe general differences between the two types of fluid compartments: ECF and ICF. Explain how fluid shifts result from changes in the osmotic concentration or osmolarity of the ECF.

10. Explain the importance of sodium and potassium ion balance. Which of these ions is more commonly the cause of electrolyte imbalances, sodium or potassium?

11. Describe respiratory acidosis and respiratory alkalosis in terms of pH and carbon dioxide changes in the blood, and give one example of how each of these conditions might occur.

12. Describe metabolic acidosis and metabolic alkalosis in terms of pH and bicarbonate ion changes in the blood, and give one example of how each of these conditions might occur.
Chapter 19 (and 20) Questions:

13. Using a simple diagram, describe the meiotic division of a cell with a diploid (2n) number of four. Explain the phases of meiosis I and II. What is the end result of meiosis I? What is the end result of meiosis II?

14. Describe the stages and specific cells formed during the process of spermatogenesis. How is the structure of a sperm cell adapted to its function?

15. Describe the stages and specific cells involved in the process of oogenesis.

16. Describe the functions of the following reproductive hormones: **human chorionic gonadotropin** (hCG), estrogen, progesterone, and testosterone. Describe the origin, target and function of oxytocin as related to lactation (Hint, see chapter 20).

17. Trace the pathway of spermatozoa through the male and female reproductive systems from their origin to the site of fertilization.

18. Define: ectopic pregnancy; cryptorchidism, inguinal hernia; menopause; amenorrhea, and dysmenorrhea.

19. How many spermatozoa fertilize an egg (secondary oocyte)? What sex chromosome combination is characteristic of a MALE baby? A FEMALE? What is considered a "normal" sperm count in the adult male (number of sperm per ml)? Give reasons that help explain the large number of sperm that are required to cause fertilization under ordinary circumstances.

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