1. Which of the following statements concerning free water clearance is correct?
   
   A) A sustained decrease in the GFR and/or a sustained increase in proximal tubular Na reabsorption is associated with a decrease in the ability to form positive free water.
   
   B) An elevated plasma concentration of antidiuretic hormone is required for the formation of a positive free water clearance.
   
   C) When the urine to plasma osmolar concentration ratio is greater than one, free water clearance must be positive.
   
   D) Positive free water is formed mainly in the medullary collecting duct.
   
   E) The ability to form negative free water is greater than our ability to form positive free water.

2. The NaCl co-transporter in the distal convoluted tubule:
   
   A) is inhibited by aldosterone.
   
   B) is stimulated by the thiazide diuretic agents.
   
   C) contributes to the generation of positive but not negative free water.
   
   D) is expressed in the basolateral membrane.

3. A patient constitutively (un-regulated) over-expresses the epithelial sodium channel (ENaC) in his principal cells (he has Little’s syndrome). You expect that this patient will have which of the following series of events?
   
   A) Salt and water retention, hypertension, hypokalemia, metabolic alkalosis with high plasma renin and aldosterone.
   
   B) Salt and water retention, hypertension, hyperkalemia, metabolic alkalosis with high plasma renin and aldosterone.
   
   C) Salt and water loss, hypotension, hyperkalemia, metabolic acidosis with low plasma renin and aldosterone.
   
   D) Salt and water retention, hypertension, hypokalemia, metabolic alkalosis with low plasma renin and aldosterone.
   
   E) Salt and water retention, hypertension, hyperkalemia, metabolic acidosis with low plasma renin and aldosterone.

4. Use the following data to answer this question:
   
   Urine osmolar concentration = 100 mOs/L
   Plasma osmolar concentration = 270 mOs/L
   Urine osmolar excretion rate = 540 micro osmoles/min

   A) The individual’s urine flow rate is 5.4 ml/min.
   
   B) The individual’s free water clearance is negative.
   
   C) The individual is attempting to decrease the extracellular fluid osmolar concentration.
   
   D) The urine to plasma osmolar concentration ratio is 5.4/1.
   
   E) There is a high level of v1 receptor activity in the collecting duct.

5. Bicarbonate reabsorption:
   
   A) in the proximal tubule is increased during treatment with an inhibitor of carbonic anhydrase.
   
   B) is increased when extracellular fluid volume is decreased.
   
   C) is enhanced when tubular cells have an elevated intracellular K concentration.
   
   D) is increased on a vegetarian diet.
   
   E) is accomplished by an anion exchanger and a sodium bicarbonate transporter on the apical membrane.