

1. Compare and contrast the action potentials of a nerve cell and a cardiac ventricular muscle. (16%)
2. Describe the pathways by which the changes in the peripheral and central chemoreceptors affect ventilation. What happens to the animal's ventilation after its peripheral chemoreceptors are denervated and is given a gas mixture containing 10% oxygen? (16%)
3. Mr. Wang is given intravenously a liter of isotonic solution. What happens to the osmolality and volume of his intracellular fluid and plasma, to urine volume, and ADH secretion? (18%)
4. A patient has a tumor in his adrenal cortex that causes the hypersecretion of adrenal steroids. List and explain the consequences of hypersecretion of these hormones. (18%)
5. What is "circulatory shock"? List one example and explain the cardiovascular compensatory mechanisms that occur under this condition. (16%)
6. Describe the pathways initiated by intracellular receptors and classify plasma-membrane receptors according to the signal pathways they initiate. (16%)