

1. Pain relief is an important issue for the clinician and pharmacologists.
 - 1-1. Which receptors and endogenous chemicals may initiate and mediate pain? (10%)
 - 1-2. Compare the differences between fast and slow pain, muscle pain and visceral pain. (10%)
 - 1-3. Explain hyperalgesia and allodynia. (5%)
2. Glomerular filtration rate (GFR) is a sensitive index of renal function.
 - 2-1. List the major factors affecting GFR. (8%)
 - 2-2. Explain why polyurea occurs in patients with diabetes mellitus but not in those with hypertension. (10%)
 - 2-3. Why is acidosis a common complication of chronic renal disease? (7%)
3. Cardiovascular diseases, such as hypertension and stroke, are on the list of top ten high-mortality rate diseases.
 - 3-1. Please explain the compensatory responses of the cardiovascular system to gravity (rising from the supine to the upright position) and hemorrhagic shock. (12%)
 - 3-2. List the factors that affect the cerebral blood flow. (7%)
 - 3-3. Discuss the effect of intracranial pressure changes on systemic blood pressure. (6%)
4. We all know that long-term stress may cause diseases.
 - 4-1. List the hormones which are increased by stress. (6%)
 - 4-2. What are the major symptoms induced by stress hormones? (7%)
 - 4-3. Discuss the relationships among hypothalamus, pituitary, and adrenal glands in response to stress. (12%)