

※ 考生請注意：本試題不可使用計算機。請於答案卷(卡)作答，於本試題紙上作答者，不予計分。

1. The sense of hearing,
 - (a). Describe the structure of organ of Corti. (10%)
 - (b). How are the hair cells activated by a sound wave to generate the firing of action potentials in the cochlear nerve? (10%)
 - (c). Describe the neural pathways in hearing (from the cochlear nerve to the auditory cortex). (10%)
2. In the bone formation,
 - (a). Describe the cell composition of bone. (10%)
 - (b). Compare the difference of rickets, osteoporosis, and osteomalacia. (10%)
 - (c). Describe the hormonal controls on bone mass. (10%)
3. In the control of ventilation,
 - (a). Describe the area of the brain in which automatic control of rhythmic respiration. (10%)
 - (b). Explain the changes in arterial P_{O_2} , P_{CO_2} , and H^+ concentration that stimulate ventilation, please include the receptors, afferent pathways, integrating centers, efferent pathways, and effectors. (10%)
4. Describe the cardiovascular response to
 - (a). a head injury that causes cerebral edema. (10%)
 - (b). exercise that increases blood flow to skeletal muscle. (10%)