

※ 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。

Part I : 50%

I. Each question below contains five suggested answers. Choose the one best response to each question. (20%)

1. Which of the following is an inhibitory neurotransmitter in the central nervous systems (CNS)?
 - (A) Serotonin
 - (B) Glutamate
 - (C) γ -Aminobutyric acid (GABA)
 - (D) Norepinephrine
2. Which type of cell in the visual cortex responds best to a moving bar of light?
 - (A) Simple
 - (B) Complex
 - (C) Bipolar
 - (D) Ganglion
3. Which receptor mediates constriction of arteriolar smooth muscle?
 - (A) Muscarinic receptors
 - (B) α_1 receptors
 - (C) β_1 receptors
 - (D) β_2 receptors
4. In which vascular bed does hypoxia cause vasoconstriction?
 - (A) Skin
 - (B) Muscle
 - (C) Coronary
 - (D) Pulmonary
5. Which of the following substances or combination of substances could be used to measure interstitial fluid volume?
 - (A) Insulin and radioactive albumin
 - (B) Mannitol
 - (C) Insulin and D_2O
 - (D) Insulin alone
6. Which of the following is the site of Na^+ -bile acid cotransport?
 - (A) Gastric antrum

(B) Gastric fundus

(C) Ileum

(D) Duodenum

7. Which of the following pancreatic secretions has a receptor with four subunits, two of which have tyrosine kinase activity?

(A) Insulin

(B) Somatostatin

(C) Pancreatic lipase

(D) Glucagon

8. The action of which of the following hormones is prevented by inhibitors of microtubules?

(A) Estradiol

(B) Prolactin

(C) Oxytocin

(D) Insulin

9. Free water clearance by the kidney is increased by which of the following?

(A) Heart failure

(B) Renal failure

(C) Diabetes mellitus

(D) Diabetes insipidus

10. Metabolic acidosis is caused by which of the following?

(A) Hypovolemia

(B) Hypoaldosteronism

(C) Hypokalemia

(D) Hypocalcemia

II. Explain following terms. (20%)

1. Insulin resistance

2. Diuretics

3. Systolic pressure

4. Acinar cells

5. Gluconeogenesis

III. Please describe adenylate cyclase mechanism. (10%)

Part II : 50%

1. Briefly compare among endocrine, paracrine, autocrine and nervous system. (16%)
Give examples to each system. (4%)
2. What are the mechanism involved in maintaining plasma pH within the range 7.38-7.42 ? (10%)
3. Compare between respiratory alkalosis and metabolic alkalosis. (10%)
4. How can altered automaticity and conduction cause cardiac arrhythmias? (10%)