

本試題是否可以使用計算機：可使用，不可使用（請命題老師勾選）

考試日期：0302，節次：2

**※ 請勿在本試題紙上作答，否則不予計分。****I. Please select one best answer for each question. (3 points for each)**

1. Which of the following organelle contains enzymes for fatty acid and steroid synthesis?  
(a) lysosome (b) granular endoplasmic reticulum (c) Golgi apparatus (d) agranular endoplasmic reticulum
2. Which of the following receptors is also an ion channel?  
(a) interleukin receptor (b) insulin receptor (c) glycine receptor (d) GABA<sub>B</sub> receptor
3. Which of the following statements about "refractory period" of action potential is incorrect?  
(a) The major cause of absolute refractory period is inactivation of voltage-gated Na<sup>+</sup> channel.  
(b) K<sup>+</sup> influx occurs in the relative refractory period.  
(c) The refractory period limits the number of action potentials an excitable membrane can produce in a given period of time.  
(d) Refractory periods contribute to the separation of action potentials so that individual electrical signals pass down the axon.
4. Which of the following acts as a synaptic relay station for sensory pathways on their way to the cerebral cortex?  
(a) basal ganglia (b) thalamus (c) hypothalamus (d) brain stem
5. Which of the following neurotransmitters will induce "excitatory postsynaptic potential (EPSP)"?  
(a) glutamate (b) GABA (c) glycine (d) neuropeptide Y
6. Which of the following tastes will be preferentially affected by cutting glossopharyngeal nerve?  
(a) bitter (b) sour (c) sweet (d) salty
7. Contraction of antigravity muscles can be inhibited by stimulating  
(a) pontine reticular nucleus (b) medial vestibular nucleus  
(c) medullary reticular nucleus (d) lateral vestibular nucleus.
8. What component of skeletal muscle fibers accounts for the differences in the fibers' maximal shortening velocities?  
(a) myosin-ATPase (b) mitochondria (c) glycolytic enzyme (d) myoglobin
9. Which of the following will evoke behavior of anger?  
(a) destruction of hippocampus (b) stimulation of lateral hypothalamus  
(c) destruction of amygdala (d) stimulation of basal ganglia
10. Learning and memory capabilities are affected mostly by destroying  
(a) medulla (b) basal ganglia (c) midbrain (d) limbic system.
11. Which of the following is true regarding the sexual determination and development?  
(a) SRY gene determines the development of the ovary.  
(b) Müllerian inhibiting substance (MIS) determines the development of Wolffian duct.  
(c) Estrogen determines whether the uterus develops.  
(d) Dihydrotestosterone determines the development of penis.
12. In a 30-year-old women with a menstrual cycle of 28 days,  
(a) an increase in FSH stimulates antral follicles to secrete estrogen at Day 13.  
(b) estrogen positive feedback is peaking at Day 13.  
(c) progesterone from the corpus luteum peaks at Day 13.  
(d) estrogen and progesterone are both decreasing at Day 23.

**(背面仍有題目,請繼續作答)**

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13. A patient has low serum levels of  $T_4$  and TSH. These hormone levels do not increase after receiving the injection of TRH. What is the possible site of the defect leading to the situation?  
(a) hypothalamus (b) pituitary (c) thyroid (d) parathyroid
14. Which of the following is not the characteristic of hyperthyroidism?  
(a) increased heart rate (b) increased food intake (c) increased weight gain (d) increased basal metabolic rate
15. Which of the following statements concerning the response during stress is correct?  
(a) CRH stimulates adrenal medulla to secrete cortisol (b) ACTH stimulates adrenal cortex to secrete aldosterone  
(c) CRH is secreted from the hypothalamus (d) ACTH stimulates adrenal cortex to secrete epinephrine.
16. Following a moderate hemorrhage, there is baroreceptor-mediated increase in the following, except  
(a) heart rate (b) venous pressure (c) arteriolar resistance (d) parasympathetic activity.
17. A patient ran on a treadmill to a steady state. The results showed a modest rise (25%) in the mean arterial blood pressure, and an increase of cardiac output to 400% of resting value. These results indicate that during the exercise, systemic vascular resistance  
(a) was constant (b) fell slightly  
(c) fell drastically to less than one-third of the resting value (d) rose slightly.
18. Atrial repolarization normally occurs during the  
(a) P wave (b) QRS complex (c) T wave (d) ST segment.
19. In which stage of cardiac cycle, the decrease of ventricular pressure is the most?  
(a) ventricular ejection (b) isovolumetric relaxation  
(c) ventricular filling (d) isovolumetric contraction
20. Which of the following would cause a decreased stroke volume, compared to the normal value?  
(a) reduction in afterload (b) an increased end-diastolic volume  
(c) injection of an adrenergic  $\beta$ -agonist (d) electrical pacing to exceed 200 beats/min in humans
21. Which of following would be expected to raise the blood pressure?  
(a) nitric oxide synthase inhibitors (b) angiotensin-converting enzyme inhibitors  
(c) endothelin-converting enzyme inhibitors (d) a drug that inhibits vasopressin release
22. The possible cause of cardiac murmur in diastole is  
(a) stenosis of aortic valve (b) stenosis of pulmonary valve  
(c) insufficiency of AV valves (d) stenosis of AV valves.
23. When Mr. Chen gets excited, his blood pressure goes up. If his systolic pressure is 150 mmHg and diastolic pressure is 90 mmHg, what will be his mean arterial blood pressure?  
(a) 130 mmHg (b) 120 mmHg (c) 110 mmHg (d) 100 mmHg
24. Which of the following has the lowest blood flow velocity?  
(a) vein (b) capillary (c) arteriole (d) artery
25. Which of the following statements is correct?  
(a) Tissue factor is needed in the extrinsic clotting pathway.  
(b) Several clotting factors are synthesized in the kidney.  
(c) Thrombin only has procoagulant effect.  
(d) Ferritin is an iron-transport protein.

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26. Which of the following situations will decrease alveolar gas  $PO_2$  (ie,  $P_{AO_2}$ )?

- (a) decreased alveolar ventilation with unchanged metabolism
- (b) increased alveolar ventilation with unchanged metabolism
- (c) decreased metabolism with unchanged alveolar ventilation
- (d) breathing air with high  $PO_2$

27. Which of the following statements is incorrect?

- (a) Hypercapnia (ie, high  $PCO_2$ ) increases airway resistance.
- (b) Ventilation-perfusion mismatching would cause hypoxemia.
- (c) An elevated shunt would cause ventilation-perfusion inequality.
- (d) Hypoventilation would cause hypercapnia.

28. Which of the following structures is involved in tubuloglomerular feedback?

- (a) proximal tubule
- (b) collecting tubule
- (c) Bowman's capsule
- (d) juxtaglomerular apparatus

29. Which of the following conditions is life threatening?

- (a) hypernatremia
- (b) hyperglycemia
- (c) hyperkalemia
- (d) hypokalemia

30. Which of the following statements is incorrect?

- (a) Bile salts are secreted by hepatocytes.
- (b) Bile contains cholesterol.
- (c) Bile salts are reabsorbed from the intestinal lumen into liver via hepatic artery.
- (d) Bile salt secretion is controlled by the concentration of bile salts in the blood.

II. Please describe the differences between patients with emphysema and those with lung fibrosis in their lung mechanics (including lung compliance and airway resistance), breathing patterns, lung volumes and capacities, and the performance in forced expiration maneuver. (10 points)

<請在答案卷上作答。>