

※ 考生請注意：本試題 可 不可 使用計算機

Each question below contains 4 suggested answers. Select the **one best** response to each question (2.5 points for each)

1. The endocrine hypothalamus controls the secretion of all the following EXCEPT  
a. thyrotropin                      b. somatomedin                      c. corticotropin                      d. luteinizing hormone
2. Hyperglycemia is induced by all the following hormones EXCEPT  
a. epinephrine                      b. glucagons                      c. aldosterone                      d. thyroxine
3. Goiter, a general term used to describe thyroid enlargement, can occur as a consequence of all the following EXCEPT  
a. iodine deficiency                      b. pituitary adenoma  
c. Graves' disease                      d. excessive intake of exogenous thyroxine
4. Plasma levels of calcium are controlled by the action of parathyroid hormone upon all the following tissues EXCEPT  
a. the kidney                      b. the small intestine                      c. bone                      d. the thyroid gland
5. Hyperpigmentation of the skin is associated with all the following conditions EXCEPT  
a. adrenal insufficiency                      b. ectopic production of corticotropin  
c. hypothyroidism                      d. pituitary tumor
6. The supraoptic nucleus of the hypothalamus is believed to control secretion of which of the following hormones?  
a. antidiuretic hormone                      b. growth hormone  
c. prolactin                      d. thyroid-stimulating hormone
7. Gallbladder contraction is controlled primarily by the hormone  
a. insulin                      b. secretin                      c. glucagon                      d. cholecystokinin
8. Dietary fat, after being processed, is extruded from the mucosal cells of the gastrointestinal tract into the lymphatic ducts in the form of  
a. monoglycerides                      b. diglycerides                      c. triglycerides                      d. chylomicrons
9. In a normal individual, all the following circumstances will elicit the enterogastric reflex EXCEPT  
a. increased duodenal pressure                      b. small bowel irritation  
c. Basic chyme in the duodenum                      d. excessive protein catabolites in the duodenum
10. In women, estrogens have all the following effects EXCEPT  
a. They facilitate the growth of ovarian follicles  
b. They cause cyclic changes in the cervix, vagina, and endometrium  
c. They produce ductal proliferation in the breast  
d. They produce glandular proliferation in the breast

(背面仍有題目,請繼續作答)

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11. All the statements about implantation of the zygote in the uterus are true EXCEPT that it
- occurs 6 to 7 days after fertilization
  - involves infiltration of the endometrium by syncytiotrophoblast
  - requires secretion of human chorionic gonadotropin by the corpus luteum
  - follows dissolution of the zona pellucida
12. The statements about the development of the Wolffian duct system include which of the following?
- It is accompanied by regression of the Mullerian duct system
  - It is completed during the fifth month of fetal life
  - It occurs normally in patients with testicular feminization
  - It requires the presence of estrogen
13. All the following statements about testosterone are true EXCEPT that it
- is synthesized in Leydig cells from cholesterol
  - becomes less active following reduction to dihydrotestosterone
  - inhibits luteinizing hormone release at the level of the hypothalamus
  - is an intermediate in estrogen synthesis
14. All the following compounds have been shown to be neurotransmitters EXCEPT
- serotonin
  - $\beta$ -endorphin
  - somatomedin
  - glycine
15. Excitation-contraction coupling involves all the following events EXCEPT
- generation of end-plate potential
  - release of calcium from troponin
  - formation of cross linkages between actin and myosin
  - depolarization along transverse tubules
16. The blood-brain barrier is correctly described in the following statements EXCEPT
- It is formed by specialized endothelial cells of brain capillaries
  - It maintains a low potassium concentration in the cerebrospinal fluid
  - It is freely permeable to most antibiotics
  - It is present in all areas of the brain except the hypothalamus
17. Visual accommodation involves all the following mechanisms EXCEPT
- Release of acetylcholine by parasympathetic nerves
  - contraction of lens ligaments
  - change of lens shape to a more biconvex form
  - contraction of the ciliary muscle
18. The primary cause(s) of heat stroke is(are)
- excessive heat production
  - conductive heat gain
  - inability to lose heat by radiation
  - inability to sweat
19. A pure tone can be characterized by
- frequency and amplitude only
  - amplitude and phase only
  - phase only
  - frequency, amplitude, and phase

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20. To minimize sweating during exposure to the sun in a hot desert, one should
- wear as much black clothing as possible to reflect the rays
  - removing clothing and walk slowly to increase convection
  - walk clothed
  - sit quietly and clothed (in white color and of texture that permits air flow)
21. Sweat glands are innervated by
- cholinergic parasympathetic postganglionic fibers
  - cholinergic sympathetic postganglionic fibers
  - cholinergic parasympathetic preganglionic fibers
  - adrenergic sympathetic postganglionic fibers
22. The "all-or-none" law applies to which of the following events?
- excitatory postsynaptic potential
  - inhibitory postsynaptic potential
  - presynaptic inhibition
  - nerve action potential
23. Gamma-aminobutyric acid (GABA)
- is blocked by glycine
  - is excitatory in nature
  - hyperpolarizes motoneurons and is inhibitory in nature
  - probably is responsible for the inhibitory postsynaptic potential (IPSP) in alpha motoneurons
24. Under normal external temperature conditions, the most important system controlling water excretion or loss is
- skin
  - lungs
  - kidneys
  - body hair
25. Total renal blood flow of both human kidneys is what fraction of the resting cardiac output?
- 5%
  - 10%
  - 25%
  - 50%
26. The normal human glomerular filtration rate (GFR) is approximately (in mL/min)
- 25
  - 50
  - 125
  - 300
27. Major determinants of plasma osmolarity include all the following EXCEPT
- sodium
  - hemoglobin
  - chloride
  - glucose
28. In metabolic acidosis, the primary abnormality is
- CO<sub>2</sub> excess
  - CO<sub>2</sub> deficiency
  - bicarbonate excess
  - bicarbonate deficiency
29. Prolonged hyperventilation may lead to respiratory alkalosis. This condition may be associated with
- increased renal reabsorption of bicarbonate
  - decreased renal excretion of ammonium
  - dissociation of acid buffers
  - rising of plasma bicarbonate concentration
30. Which of the following statements about pulmonary blood flow during exercise is true?
- It increases more than systemic blood flow
  - It increases by the same amount as systemic blood flow
  - It increases less than systemic blood flow
  - It decreases

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31. In the airway of a normal adult, the dead space is approximately what percent of the tidal volume?  
a. 1%                      b. 10%                      c. 30%                      d. 50%
32. In a normal respiratory cycle, the volume of inspired air does **not** equal  
a. vital capacity                      b. the tidal volume  
c. approximately 500 ml                      d. the inspiratory capacity minus the inspiratory reserve volume
33. A spirometer can be used to measure  
a. tidal volume                      b. residual volume  
c. functional residual capacity                      d. pulmonary artery pressure
34. The total quantity of air that can be expelled from the lungs following a maximal inspiration is known as the  
a. tidal volume    b. vital capacity                      c. total capacity                      d. functional residual capacity
35. Citrate is a useful anticoagulant because of its ability to  
a. bind factor XII                      b. bind vitamin K  
c. chelate calcium                      d. be slowly metabolized
36. Blood pressure increases and heart rate decreases in response to  
a. exercise                      b. increased body temperature  
c. exposure to high altitude                      d. increased intracranial pressure
37. An average man at rest has a stroke volume that is  
a. greater from the left ventricle than from the right ventricle  
b. equal to the cardiac output divided by the heart rate  
c. independent of body surface area  
d. 100 to 120 mL
38. In heart failure that is  
a. inadequate cardiac output                      b. increased tissue blood flow  
c. lowered venous pressure                      d. adequate fluid tissue exchange
39. Under resting conditions, the cardiac output of humans would be closest to  
a. 1.0 L/min    b. 5.0 L/min                      c. 10.0 L/min                      d. 15.0 L/min
40. The pulse pressure is lowest in the  
a. aorta                      b. arterioles                      c. capillaries                      d. femoral artery