國立嘉義大學 99 學年度

動物科學系碩士班招生考試試題

科目：專業英文

一、單一選擇題（每小題 2 分，共 30 分）

1.Which one of the following is extremely important for water conservation in mammals?
(A) juxtamedullary nephrons (B) Bowman's capsule (C) urethra
(D) podocytes (E) ureter

2. Prolactin stimulates mammary gland growth and development in mammals and regulates salt and water balance in freshwater fish. Many scientists think that this wide range of functions indicates which of the following?
(A) Prolactin is a nonspecific hormone.
(B) Prolactin has a unique mechanism for eliciting its effects.
(C) Prolactin is an evolutionary conserved hormone.
(D) Prolactin is derived from two separate sources.
(E) Prolactin interacts with many different receptor molecules.

3.When an organism dies, its muscles remain in a contracted state termed "rigor mortis" for a brief period of time. Which of the following most directly contributes to this phenomenon? There is no
(A) ATP to move cross-bridges.
(B) ATP to break bonds between the thick and thin filaments.
(C) calcium to bind to troponin.
(D) oxygen supplied to muscle.
(E) glycogen remaining in the muscles.

4.Which of the following receptors is incorrectly paired with the type of energy it transduces?
(A) mechanoreceptors -- sound
(B) electromagnetic receptors -- magnetism
(C) chemoreceptors -- solute concentrations
(D) thermoreceptors – heat
(E) pain receptors -- electricity

5.Which of the following could you find in the lumen of a transverse tubule in muscle tissue?
(A) extracellular fluid (B) cytoplasm (C) actin (D) myosin (E) sarcomeres

6.Which of the following statements about hormones is incorrect?
(A) They are produced by endocrine glands.
(B) They are modified amino acids, peptides, or steroid molecules.
(C) They are carried by the circulatory system.
(D) They are used to communicate between different organisms.
(E) They elicit specific biological responses from target cells.

7.What is the role of calcium in muscle contractions?
(A) break the cross-bridges as a cofactor in the hydrolysis of ATP
(B) bind to the troponin complex, which leads to the exposure of the myosin-binding sites
(C) transmit the action potential across the neuromuscular junction
(D) spread the action potential through the T tubules
(E) reestablish the polarization of the plasma membrane following an action potential

8.Which of the following statements about hormones is correct?
(A) Steroid and peptide hormones produce different effects but use the same biochemical mechanisms.
(B) Steroid and peptide hormones produce the same effects but differ in the mechanisms that produce the effects.
(C) Steroid hormones affect the synthesis of proteins, whereas peptide hormones affect the activity of proteins already present in the cell.
(D) Steroid hormones affect the activity of certain proteins within the cell, whereas peptide hormones directly affect the processing of mRNA.
(E) Steroid hormones affect the synthesis of proteins to be exported from the cell, whereas peptide hormones affect the synthesis of proteins that remain in the cell.

9.Which part of the vertebrate nervous system is most involved in preparation for the fight-or-flight response?
(A) sympathetic (B) somatic (C) central (D) visceral (E) parasympathetic

10.Which of the following does not form part of the thin filaments of a muscle cell?
(A) actin (B) troponin (C) tropomyosin (D) myosin (E) calcium-binding site

11. A person exposed to a new cold virus would not feel better for one to two weeks because
(A) specific B cells and T cells must be selected prior to a protective response.
(B) it takes up to two weeks to stimulate immunologic memory cells.
(C) no memory cells can be called upon, so adequate response is slow.
(D) antigen receptors are not the same as for a flu virus to which she has previously been exposed.
(E)V-J gene rearrangement must occur prior to a response.

12.Most of the neurons in the human brain are
(A) sensory neurons. (B) motor neurons. (C) interneurons.
(D) auditory neurons. (E) olfactory neurons.

背面尚有試題

13. In the communication link between a motor neuron and a skeletal muscle,

(A) the motor neuron is considered the presynaptic cell and the skeletal muscle is the postsynaptic cell.

(B) the motor neuron is considered the postsynaptic cell and the skeletal muscle is the presynaptic cell.

(C) action potentials are possible on the motor neuron but not the skeletal muscle.

(D) action potentials are possible on the skeletal muscle but not the motor neuron.

(E) the motor neuron fires action potentials but the skeletal muscle is not electrochemically excitable.

14. For a neuron with an initial membrane potential at -70 mV, an increase in the movement of potassium ions out of that neuron's cytoplasm would result in

(A) depolarization of the neuron.

(B) hyperpolarization of the neuron.

(C) the replacement of potassium ions with sodium ions.

(D) the replacement of potassium ions with calcium ions.

(E) the neuron switching on its sodium-potassium pump to restore the initial conditions.

15.Which of the following is the correct sequence that occurs during the excitation and contraction of a muscle cell?

1. Tropomyosin shifts and unblocks the cross-bridge binding sites.
2. Calcium is released and binds to the troponin complex.
3. Transverse tubules depolarize the sarcoplasmic reticulum.
4. The thin filaments are ratcheted across the thick filaments by the heads of the myosin molecules using energy from ATP.
5. An action potential in a motor neuron causes the axon to release acetylcholine, which depolarizes the muscle cell membrane.

(A) 1, 2, 3, 4, 5

(B) 2, 1, 3, 5, 4

(C) 2, 3, 4, 1, 5

(D) 5, 3, 1, 2, 4

(E) 5, 3, 2, 1, 4

二、請將下列英文句子翻譯成中文（20 分）

In the case of postmortem skeletal muscle, the lower level of desmin protein connections between the sarcolemma and the myofibrils can help to decrease the drip or purge loss. Recent studies report that the extent and rate of desmin degradation may affect the water holding capacity and the meat tenderness in postmortem porcine muscle. A greater desmin degradation rate is associated with a higher water holding capacity and improves meat tenderness in porcine muscle. Likewise, the loss of protein connections between the membrane and the cytoskeleton as the result of desmin degradation and α-actinin release, and the degradation of cytoskeleton itself in postmortem gizzard smooth muscles may increase meat tenderness.

三、Please translate the following paragraph into Chinese（20分）

Long-term inbreeding in a closed herd may increase genetic uniformity, but inbreeding usually reduces performance, especially in fertility and survival. This is called inbreeding depression. One type of inbreeding is linebreeding, which is used to concentrate the genetic influence of some line or individual while minimizing increases in inbreeding. Mating animals less related than average is called outbreeding. Outbreeding of lines within a breed can restore performance lost to inbreeding depression. Mating of individuals of different breeds is called crossbreeding. It often increases performance above what might be expected from the parent breeds. This effect is called heterosis. It is commonly thought that outbreeding increases variability, but well-planned outbreeding or crossbreeding produces uniform progeny.

四、Please translate the following terms into English（30分）

(1) 大豆粕	(2) 飼料消耗量	(3) 鈣磷比
(4) 隻日蛋生產	(5) 乳頭式飲水器	(6) 疫苗
(7) 性聯遺傳	(8) 腦垂腺	(9) 發情同期化
(10) 常態分布	(11) 最小顯著差異	(12) 基因轉殖動物
(13) DNA指紋	(14) 單胃動物	(15) 瘤胃