

國立臺灣大學九十四學年度轉學生入學考試試題

科目：普通動物學

題號：44

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※ 注意：請於試卷上「非選擇題作答區」依序作答，並應註明作答之題號。

A. 填充題(20%):

1. 珊瑚產卵在台灣是在\_\_\_\_\_月。
2. 解釋印痕(imprinting)的定義  
\_\_\_\_\_。
3. 人類的生殖最好的年齡是男性\_\_\_\_\_,女性是\_\_\_\_\_,為要給下一代成長及教育的時間,以及自己的工作年限及退休時間應該不要太遲結婚。
4. 始祖鳥(*Archaeopteryx*)生存時代 距今有\_\_\_\_\_百萬年前。
5. 龜的脊椎骨骼長在\_\_\_\_\_內
6. Epiglottis 長在\_\_\_\_\_,功用是\_\_\_\_\_。
7. 哺乳類牙齒分為那四種\_\_\_\_\_,人類的齒式是\_\_\_\_\_。
8. 艾氏樹蛙的生活中, 選取竹筒做巢的蛙是雄蛙,母蛙以\_\_\_\_\_來餵她的小蝌蚪。
9. 鳥類會飛因為他的構造方面有 1.\_\_\_\_\_, 2.\_\_\_\_\_。
10. 無脊椎動物種類最多的是\_\_\_\_\_門。

B. 選擇題(8%)可多選.

1. ( ) 鳥類眼的 Pecten 功用是 1).nutrients 2). focus .3). color vision.
2. ( ) Altricial hatchlings 是指剛生下的小鳥 1).不能 2).能 站立起來.
3. ( ) Heterodont 是專指 1).哺乳類的牙齒 2) 哺乳類肉食性的牙齒.
4. ( ) 消化管較長的是 1) 草食性動物 2)肉食性動物 3).兩者皆是.
5. ( ) Zygomatic bone 長在 1) 頭上, 2). 脊椎骨上, 3) 附肢骨上.
6. ( ) 海魚的 Glomerulus 比淡水魚較 1) 大, 2)小 .
7. ( ) 渦虫以 1)Flame cell , 2) pronephros, 3) mesonephros 排泄.
8. ( ) 砂囊(Gizzard)位於 1) earthworm, 2) chicken, 3) mammals 消化管上.

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C. 配合題：(8%) 甲、乙、丙、丁、戊各項內容與後面 1、2、3、4、5 各項特徵何者相對應？請註明其代號，例如：甲-1。

甲、Teeth	1. canine(犬齒)
乙、neuromast	2. vision
丙、occipital lobe of cerebrum	3. Thalamus
丁、Prosencephalon	4. ear
戊、oval window and round window	5. lateral line

D. 配合題：(14%) a-j 各項內容與後面 1~10 各項特徵何者相對應？請註明其代號，例如：a-9。

a. Phylum Echinodermata	1. sponge
b. Phylum Porifera	2. hydra
c. Phylum Arthropoda	3. Beef Tapeworm
d. Order Caudate	4. radula
e. Phylum Platyhelminthes	5. <i>Latimeria</i>
f. Lobe-finned fish	6. Malpighian tubules
g. Class Aves	7. <i>Archaeopteryx</i> sp.
h. Phylum Cnidaria	8. salamander
i. Phylum Annelida	9. tube feet
j. Phylum Mollusca	10. earthworms

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E. 單選題 (每題 2 分) ※ 注意：請於試卷上「選擇題作答區」依序作答。

1. Which of the following statement regarding human reproduction function is correct?
  - (A) Fertilization occurs in uterine duct
  - (B) Oxytocin is the major hormone associated with maintaining a pregnancy, and acts upon uterine smooth muscle to inhibit contraction.
  - (C) Oxytocin stimulate uterine contractions during labor and cause milk letdown.
  - (D) A surge in Estrogen signals ovulation
  - (E) All of the above are correct
2. The appearance of which of the following hormone in the blood and urine of the mother could be the first chemical indicator that pregnancy has begun?
  - (A) Progesterone
  - (B) Human chorionic hormone
  - (C) Estrogen
  - (D) None of the above
3. The blue whales are
  - (A) suspension feeders
  - (B) fluid feeders
  - (C) deposit feeders
  - (D) herbivory.
4. The following hormones play important roles in homeostasis of blood level of glucose, except
  - (A) cortisol
  - (B) insulin
  - (C) glucagons
  - (D) ADH (antidiuretic hormone)
5. The following hormones are secreted by anterior lobe of pituitary gland except
  - (A) growth hormone
  - (B) prolactin
  - (C) follicle-stimulating hormone
  - (D) vasopressin
6. Bursa of Fabricius
  - (A) is an endocrine gland in birds
  - (B) begins to shrink soon after hatching
  - (C) produces secretion that are responsible for the maturation of white blood cells
  - (D) all of the above
7. In lizards and snakes, vomeronasal organ is a well development sensory organ that can detect
  - (A) air flow on skin
  - (B) light
  - (C) sound wave
  - (D) chemical odors in air
8. Which part of neuron (nerve cell) functions as signal receiver?
  - (A) Axon
  - (B) Dendrites
  - (C) Nerve terminal
  - (D) None of the above.
9. Of factors described below, which can speed up the propagation of action potential on a nerve fiber?
  - (A) Reducing diameter of the nerve fiber
  - (B) Formation of myelin sheath along the nerve fiber
  - (C) Increasing the number of nodes Ranvier along the nerve fiber
  - (D) All of the above
10. In crustaceans, what sensory receptor cans response to the force of gravity, and gives an animal information about its orientation relative to "up" or "down"
  - (A) Gepreceptors (statocysts)
  - (B) hydroceptors
  - (C) baroreceptors
  - (D) phonoceptors (tympanal organ)

接 背 面

11. Which of the following cell types may share common cellular mechanisms for releasing chemical substance into extracellular space?
- beta cell, in pancreatic islets, secretes insulin
  - nerve cell, in central nervous system, secretes neurotransmitter
  - follicle cell, in ovary, secretes estrogen
- (A) beta cell & nerve cell      (B) beta cell and follicle cell  
(C) nerve cell & follicle cell      (D) beta cell, nerve cell, and follicle cell
12. Refer to question 11, which of the following organell(s) is (are) involved in the synthesis, storage, and release of insulin in beta cell in pancreatic islets
- Smooth endoplasmic reticulum
  - Rough endoplasmic reticulum
  - Golgi apparatus
  - Centrioles
- (A) i, ii, & iii      (B) ii & iii      (C) ii, iii, & iv      (D) i & iii
13. Which of the following does not belong to connective tissue
- (A) blood      (B) bone      (C) cartilage      (D) nerve tissue
14. Which part of the central nervous system is the body temperature set point in mammals?
- (A) hypophysis      (B) hypothalamus      (C) pineal gland      (D) thalamus
15. In Hydra, the digestion of food takes place in
- (A) gastrovascular cavity      (B) mouth      (C) Inside cells lining gastrovascular cavity  
(D) midgut

**Read the following paragraph, and answer questions 16-19**

“The nervous system contains a toolbox of motor programs in the brainstem and spinal cord – that is, neuronal networks designed to handle the basic motor repertoire required for survival, including locomotion, posture, eye movements, breathing, chewing, swallowing and expression of emotions. .... Motor programs are kept under tonic inhibition by GABAergic pallidal neurons (the output nuclei of the basal ganglia). The motor programs can be relieved from pallidal inhibition through activation of striatal neurons at the input stage of the basal ganglia. It is argued that the striatum has a prominent role in selecting which motor program should be called into action.”

16. Locomotion is handled by
- (A) specific gene expressed in neurons of spinal cord and brainstem  
(B) specific gene expressed in neurons of striatum  
(C) activity of interconnected neuronal circuit in spinal cord and brainstem  
(D) activity of interconnected neuronal circuit in striatum

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17. Regarding to the hierarchy of motor command, which of the following is correct
- activation of striatal neurons
  - execution of selected motor program in spinal cord for locomotion
  - motor program relieved from tonic inhibition by pallidal neurons
- (A) a → b → c    (B) a → c → b    (C) c → a → b    (D) b → a → c
18. Which of the following structure is responsible for choosing right motor program for right movement?
- (A) Pallidus    (B) Striatum    (C) Spinal cord and brain stem    (D) None of the above
19. GABAergic neurons are neurons in nervous system that release GABA. Regarding GABA, which of following statement is correct after it is released?
- (A) It acts to reduce excitability of other neurons.    (B) It acts to increase excitability of other neurons  
(C) It acts either to reduce or increase the excitability of other neurons, depending on properties of neurons that release it.    (D) It only functions in pallidal neurons
20. Do you think what effect of striatal neurons on pallidal neurons is?
- (A) They reduce the excitability of pallidal neurons  
(B) They increase the excitability of pallidal neurons  
(C) They have no direct effect on pallidal neurons  
(D) No sufficient information is given for the judgment

**Read the following paragraphs, and answer questions 21-25**

Doping in sport has a long history, going as far back as the original Greek Olympic games, and is mainly driven by the desire to win at all costs. Among the potent performance-enhancing drugs that have so copiously proliferated in the past 50 years, anabolic-androgen steroid hormones were initially the most prominent, based on their alleged capacity to increase muscle size and strength. However, although these hormones are still abused by athletes and bodybuilders, they have lost in part their primacy in favour of other potent, endogenous, anabolic compounds. Among these pituitary-derived growth hormone (GH) and, during the past two decades, the hormone obtained by recombinant DNA technology (rhGH) has acquired popularity among sport adepts, so that it is now included as a listed compound in the doping class of peptide hormones and analogues.

Many reasons, besides its unequivocal anabolic activity, account for the inappropriate use of GH in sport, including the present availability of unlimited amounts of rhGH and the lack of an International Olympic Committee-accredited method for its detection in body fluids. In addition, some elite athletes and bodybuilders believe that GH is more potent than anabolic steroids, or that it can be used in combination with them to increase muscular size and strength.

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In adipose tissue, GH leads to decreased glucose utilization and stimulation of lipolysis; in the heart, skeletal muscle and kidney, GH provokes glucose and amino acid uptake, and in general stimulates protein synthesis, possibly using the energy derived from its lipolytic activity.

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21. Regarding "performance-enhancing drugs, which of following statement is correct?
- (A) They enhance catabolic activity of muscle tissue
  - (B) In past 50-years, GH is the most popular performance-enhancing drug, abused by athletes and bodybuilder
  - (C) Currently, GH has become favoured performance-enhancing drug partially because that there is not yet an approved method for detecting its abuse.
  - (D) All of the above statements are correct.
22. What are reasons that account for the inappropriate use of GH in sport?
- (A) its unequivocal anabolic activity
  - (B) it is more potent than anabolic steroid
  - (C) it is more easily to obtain rhGH
  - (D) All the above statements are correct
23. GH is secreted from
- (A) Liver
  - (B) pituitary gland
  - (C) heart
  - (D) kidney
24. GH increases up take of glucose and amino acid in
- (A) adipose tissue
  - (B) skeletal muscle
  - (C) all tissue except muscle
  - (D) none of the above
25. What is the effect of GH on fat cells?
- (A) increase protein synthesis
  - (B) increase glucose utilization
  - (C) stimulation of lipolysis
  - (D) All of the above