

國立臺灣海洋大學 103 學年度研究所碩士班招生考試試題

考試科目：普通生物學(一)

系所名稱：海洋生物研究所碩士班不分組

1. 答案以橫式由左至右書寫。2. 請依題號順序作答。

一、Multiple-Choice Questions (單選題, 2% for each) :

1. Tissues are composed of cells, and tissues functioning together make up
(A) organs.
(B) membranes.
(C) organ systems.
(D) organelles.
(E) organisms.
2. Hormones that are secreted by the posterior pituitary gland are made in the
(A) cerebrum.
(B) cerebellum.
(C) thalamus.
(D) hypothalamus.
(E) medulla oblongata.
3. Many marine and freshwater bony fish achieve osmoregulation via
(A) loss of water through the gills.
(B) gain of salt through the gills.
(C) loss of water in the urine.
(D) no drinking of water.
(E) gain of water through food.

4. The thin horizontal arrows in the **Figure 1** show that

- (A) the warmer arterial blood can bypass the flippers as needed, when the flippers are too cold to function well.
- (B) the warmer venous blood transfers heat to the cooler arterial blood.
- (C) the warmer arterial blood transfers heat to the cooler venous blood.
- (D) the arterial blood is always cooler in the abdomen, compared to the temperature of the venous blood in the flipper of the dolphin.
- (E) the dolphin's flippers get progressively warmer as the blood moves away from the abdomen to the feet.

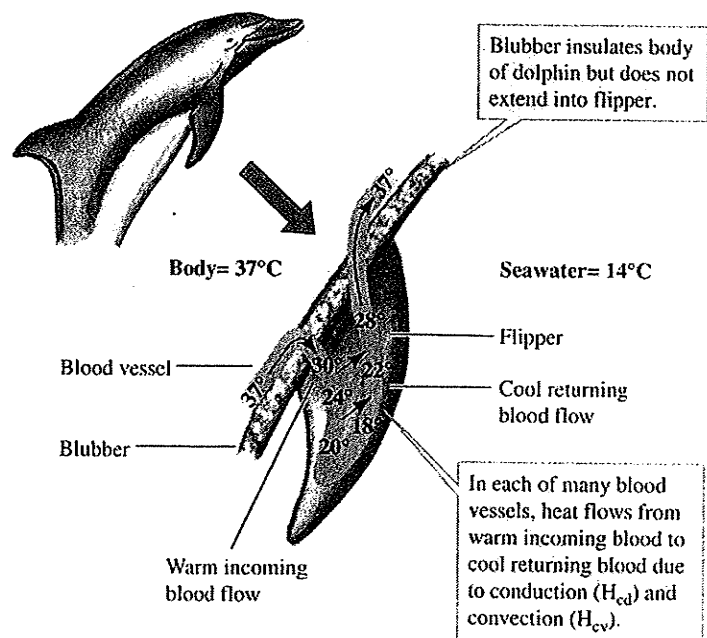


Figure 1

5. The effect shows in **Figure 1** is _____ . (填充題，中英文皆可)

6. Innate immunity

(A) is activated immediately upon infection.

(B) depends on a newly infected animal's previous exposure to the same pathogen.

(C) is based on recognition of antigens that are specific to different pathogens.

(D) is found only in vertebrate animals.

(E) utilizes highly specific antigen receptors on B cells.

7. The steroid hormone that coordinates molting in arthropods (節肢動物) is

(A) ecdysone.

(B) glucagon.

(C) thyroxine.

(D) oxytocin.

(E) growth hormone.

8. Sexual reproduction patterns include the example of

(A) fragmentation.

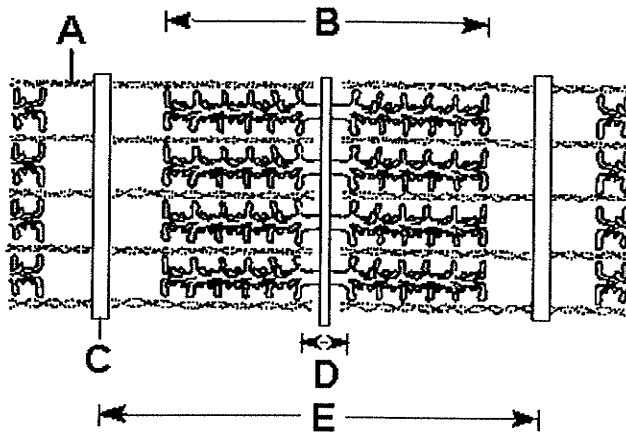
(B) budding.

(C) hermaphroditism.

(D) parthenogenesis.

(E) fission.

For the following 2 questions, refer to the graph of a muscle.



9. The structure pictured in the figure is found in

(A) skeletal muscles and smooth muscles.

(B) cardiac muscles and skeletal muscles.

(C) smooth muscles and cardiac muscles.

(D) smooth muscles, skeletal muscles, and cardiac muscles.

(E) smooth muscles.

10. Overlapping actin and myosin filaments are found in which section of the figure?

- (A) A.
- (B) B.
- (C) C.
- (D) D.
- (E) E.

二、解釋名詞

1. Buffer (4%)
2. Enantiomers (4%)
3. Chaperonins (4%)
4. Lysosome (4%)
5. The endosymbiont theory of the origin of mitochondria and chloroplast in eukaryotic cells (4%)

三、請以圖文簡述植物的光合作用。(6分)

四、請比較苔蘚類、蕨類和種子植物生活史的孢子體和配子體差異。(9分)

五、請以光合作用胞器(如葉綠體)的演化角度來闡明藻類多樣性如何演化出來。(5分)

六、Compare the following pairs of terms:

- a. Virus and viroid (4%)
- b. Northern and Southern blotting (4%)
- c. Exotoxin and endotoxin (4%)
- d. Flagellum and cilium (4%)
- e. A yeast cell and a mycelium of fungi (4%)

七、問答題，每題10分。

1. Please compare the prokaryotic cell and eukaryotic cell.
2. Please describe how, in multicellular organisms, cells communicate with each other.