

一、是非題(每小題 2 分，共 40 分)

※注意：請於答案卷之「選擇題作答區」作答，答案均寫於(A)欄內。

1. Endotherms can use metabolic heat to regulate their body temperature, in contrast, ectotherms gain most of their heat from the environment.
2. Pancreatic enzymes are secreted into the duodenum in inactive form and will be activated in a chain reaction until they are safely located in the extracellular space within it.
3. The body plan of animal results from a pattern of development programmed by the genome, and the possibilities are infinite.
4. The sinoatrial (SA) node is a pacemaker which located in the wall of the left atrium could coordinate the contraction of the intact heart.
5. The diet from which a ruminant actually absorbs its nutrients is much richer than the grass the animal originally ate.
6. Hemoglobin consisting of four subunits has iron as its oxygen-binding component.
7. Chitin is a polysaccharide polymerized from the glucose monomers and used by arthropods to build their exoskeleton.
8. The cerebellum of human brain controls voluntary movement and cognitive functions.
9. Excesses of water-soluble vitamins are excreted in urine; on the contrary, fat-soluble vitamins are not excreted but are deposited in body fat.
10. In mammals, the insulating material is associated with the integumentary system and relying mainly on adipose tissue inside.
11. The proposed ancestors of mitochondria in eukaryotic cell were aerobic autotrophic prokaryotes.
12. An osmoregulator animal can control its internal osmolarity dependent of that of its environment.
13. Parthenogenesis is a form of sexual reproduction in which an egg develops without being fertilized.
14. The deuterostomes include the echinoderms and the chordates.
15. Darwin called the evolutionary history of species "descent with modification" that also captured the duality of life's unity and diversity.
16. Humoral immunity defends against pathogens and toxins in extracellular fluid, and cell-mediated immunity defends against infected cells, cancer cells and transplanted tissues.
17. In indeterminate development, any cell from the first few cell divisions of the zygote can develop into a complete organism if separated from the others.
18. Myelin sheaths are produced by two types of glia - oligodendrocytes in the PNA and Schwann cells in the CNS.
19. Blood is a connective tissue with cells suspended in serum.
20. The way we classify animal is being reevaluated and most taxonomists agree that the animal kingdom is polyphyletic.

二、問答題(每題 15 分，共 60 分)※ 注意：請於答案卷內之「非選擇題作答區」作答，並應註明作答之題號。

1. Please explain how an animal's nitrogenous wastes can reflect its phylogeny and habitat?
2. Please discusses the cellular response pathways for both water- and lipid-soluble hormones.
3. What is the Cambrian explosion?
4. What is the respiratory surface? Please discusses its diversity in insect, fish and human.