

若無特別標示或要求，中英文作答皆可

一、詳細說明下列名詞間的異同點 (21 分)：

1. seta vs. spine
2. juvenile hormone vs. ecdysone
3. corpus cardiacum vs. corpus allatum
4. hemolymph vs. hemocytes
5. pericardial sinus vs. perineural sinus
6. pharate adult vs. subimago
7. kairomone vs. allomone

二、問答題 (29 分)：

1. 畫出並標明昆蟲典型的消化系統中的所有構造，並畫出且標明一種特化的消化系統。(7%)
2. 昆蟲具有那些特點，使得昆蟲成為地球上最強勢的生物？詳細說明你的理由。(5%)
3. 昆蟲不具有瞳孔，如何調節進入眼內的光量？以畫圖說明。(4%)
4. 為什麼昆蟲的感官非常靈敏？可是也非常受到限制？詳細說明這種互相矛盾的現象。(4%)
5. halter (halter) 是什麼？它是如何調節運作？(4%)
6. 昆蟲翅膀的演化假說有哪些？哪一個最有可能？詳細說明你的理由。(5%)

三、說明生物多樣性 (Biodiversity) 的定義、價值以及研究內容。(10 分)

四、試以媒介重要人畜傳染病的昆蟲種類 5 目為例，列舉 5 種媒介昆蟲的中名、學名以及傳染的疾病。(15 分)

五、試述昆蟲標本保存的價值。(5 分)

六、有關昆蟲發育和生殖的基本觀念：(12 分)

- (1) Please explain the relationship between "ovarioles" and "ovaries"? (2%)
- (2) What is the morphological difference between a panoistic ovariole and a telotrophic ovariole? (2%)
- (3) Please define "germ cells". (2%)
- (4) Please define "germ plasm" and explain its relationship to a "germ cell". (2%)
- (5) When dissecting an adult cockroach, at the dorsal or ventral region of the abdomen can you identify the gonads? (2%)
- (6) Please explain the relationship between "testicular follicles" and "gonads" in a male cockroach? (2%)

七、有關 *Drosophila melanogaster* 的卵發育和早期發育：(8 分)

- (1) During oogenesis, what kind of cells can provide nutrients to the developing oocytes? Please answer in English. (2%)
- (2) Axis determination is known to occur during mid oogenesis. Briefly describe how the anteroposterior (anterior-posterior) axis is determined. (4%)
- (3) After cellularization of the blastoderm, will the embryo enter into which developmental stage? Please answer in English. (2%)

試題隨卷繳回