

BIOLOGY Part I

I. Answer the following questions: 50%

1. Name five feeding mechanisms of animals and describe each of them. 10%
2. Compare the differences of circulatory systems among fish, amphibians, reptiles, birds and mammals? 6%
3. What is sliding-filament model of skeletal muscle contraction? 2%
Describe the role of calcium in that model. 4%
4. Name one breakdown product of carbohydrate, protein and fat that are actually small enough to be absorbed across the intestinal lining and into the internal environment of human. Also, indicate their absorptive mechanisms and routes. 6%
5. Summarize the key differences between mitosis and meiosis. 6%
6. Indicate the timing of meiosis and fertilization of animals, fungi and plants. 6%
7. Describe the following terms in biology: 10%
 1. Organ of Corti
 2. Glycocalyx
 3. Parthenogenesis
 4. Kinetochore
 5. Biological species

BIOLOGY PART II [50%]

注意：所有答案均需另外寫於答案紙上；不可直接寫於試題紙上，否則不計分。

甲大題：每小題中有五個答案 (a-e)，其中有一個為不合適者；請將不合適者之代號選出。另請就你的研判將每小題作一綜合性的解釋。每小題各四分。(40%)

- Four of the five answers listed below are related by common chemical similarity and important to life.
 - cellulose
 - hydrochloric acid
 - amino acid
 - protein
 - nucleic acid
- Four of the five answers listed below are relationships in which at least one of the interactants benefits.
 - competition
 - parasitism
 - mutualism
 - commensalism
 - predation
- Four of the five answers listed below are the results of fertilization.
 - fruit
 - seed
 - embryo
 - pollen
 - endosperm
- Four of the five answers listed below are related by their participation in water movement through plants.
 - hydrogen bonds
 - transpiration
 - cohesion
 - tension in xylem
 - photosynthesis
- Four of the five answers listed below are tissues capable of cell division.
 - cork cambium
 - apical meristem
 - procambium
 - periderm
 - vascular cambium
- Four of the five answers listed below are related by the quantity (set) of chromosomes present.
 - spore
 - sporophyte
 - egg
 - sperm
 - gametophyte

7. Four of the five answers listed below are taxonomic categories.
- species
 - taxon
 - genus
 - family
 - order
8. Four of the five answers listed below support the concept of evolution.
- biogeography
 - fossils
 - comparative anatomy
 - natural selection
 - catastrophism
9. Four of the five answers listed below are related pairings.
- double-stranded DNA-messenger RNA
 - purine-pyrimidine
 - codon-anticodon
 - small subunit-large subunit
 - promoter-terminator
10. Four of the five answers listed below are composed of membranes.
- endoplasmic reticulum
 - granum
 - dictyosome
 - chromosome
 - nuclear envelope

乙大題：每小題中有五個答案 (a-e)，其中有一個為合適者；請將合適者之代號選出。另請就你的研判將每小題作一綜合性的解釋。每小題各五分。(10%)

1. During metabolism, ATP (adenosine triphosphate) is an energy source for which of the following processes?
- I. reproduction II. growth III. development
- I and II
 - I and III
 - II only
 - II and III
 - I, II and III
2. If short hair (L) is dominant to long hair (l), animals LL and Ll have the same
- parents
 - genotypes
 - phenotypes
 - alleles
 - genes