【所有答案請寫在答案卷上，並依序作答】

I. Explain and distinguish the following terms: (每題 3 分，共 30 分)

1. monobiontic and diplobiontic life cycle
2. homothallic and heterothallic
3. *monoecious plant and dioecious plant*
4. plasmogamy and karyogamy
5. zooidogamy and siphonogamy
6. protostele, siphonostele, and eustele
7. microphyll and megaphyll
8. microsporophyll and megasporophyll
9. simple strobilus and compound strobilus
10. crozier and clamp conncetion

II. Answer the following questions: (共 70 分)

1. Describe the life cycle of following algae: (1) *Chlamydomonas*; (2) Diatom; (3) *Ulva*; (4) *Laminaria*. Please indicate the meiosis stage and the dominant generation. (10%)
2. Express and draw a possible evolution pathway of all algae based on the pigmentation, cytological information (including nuclei and chloroplast ER) and endosymbiosis. (10%)
3. What is the possible evolutionary trend among *Riccia*, *Marchantia*, *Anthoceros*, and *Polytrichum* when you focus on the structures of sporophytes of those bryophytes? Please draw and label these sporophytes and explain their evolutionary trend. (10%)
4. Describe and draw the processes of evolution of a seed. Give five phyla name of all extant seed plants (in Latin) (10%).
5. What are the 2-celled pollen and 3-celled pollen in angiosperms? .Describe and draw the microsporogenesis and male gametogenesis of two types of pollen grains. (10%)
6. Describe and draw the development of monosporic, bisporic and tetrasporic embryo sacs. What are the final results after double fertilization? (10%)
7. Choose the correct answer: (5%)

_____ (1) *Allomyces*	A. basidiomycetes
_____ (2) *Saprolegnia*	B. zygomycetes
_____ (3) *Rhizopus*	C. oomycetes
_____ (4) *Saccharomyces*	D. chytrids
_____ (5) *Peziza*	E. ascomycetes

8. Describe the life cycle of *Puccinic graminis* (wheat rust). Give the number of chromosome set for each stage. (5%)

試題隨卷繳回