

國立中央大學九十學年度碩士班研究生入學試題卷

所別: 生命科學系 不分組 科目: 生理學 共 1 頁 第 1 頁

Animal Physiology

- (10%) 1. Draw and name the organ of the male and female human reproductive systems and describe the functions for each organ.
- (15%) 2. Define the terms 'hormone', 'prohormone', 'preprohormone', 'neurohormone' and 'growth factor' and describe the mechanisms of hormone action for epinephrine (decreased glycogen formation and increased glycogenolysis) and thyroid hormones (increased glucose utilization).
- (15%) 3. What is obesity? Summarize the specific effects of insulin, glucagon, growth hormone, glucocorticoids and epinephrine on lipid metabolism in terms of lipogenesis, lipolysis and/or ketogenesis.
- (10%) 4. Describe the cholesterol metabolism, including the absorption, transport, synthesis, degradation, and excretion. Consumption of green tea is associated with the lower risk of cardiovascular disease (i.e., atherosclerosis) since it reduces the blood cholesterol. Explain why the lower risk of cardiovascular disease is associated with the lower blood cholesterol. Based on the cholesterol metabolism that you have described, explain how green tea works on the reduction of blood cholesterol levels.

植物生理學

1. (10分) 以下那些色素是植物用於吸收光來從事各種生理作用的 photoreceptors? [Alkaloids, Anthocyanins, Ascorbate, Auxin, Betacyanins, Carotenoids, Chlorophyll, Cryptochrome, Cytokinins, Digitonin, Phytochrome, Tanins, Terpene, UV-B receptors]。那些是參與 photomorphogenesis 的色素? (請注意: 答對才給分; 寫錯一項, 扣一分)
2. (6分) 請您就 Low Fluence Responses (LFRs), Very Low Fluence Responses (VLFRs) 與 High Irradiance Reactions (HIRs) 作區分。
3. (8分) 以下那些元素對於植物是必要的微量養分(Essential Micronutrients)? [Boron, Cadmium, Calcium, Carbon, Chlorine, Cobalt, Copper, Hydrogen, Iron, Magnesium, Manganese, Molybdenum, Nickel, Nitrogen, Oxygen, Phosphorus, Potassium, Selenium, Silicon, Sodium, Sulfur, Zinc] (請注意: 答對才給分; 寫錯一項, 扣一分)。
4. (6分) 請闡述鈣離子在植物的向地性(Gravitropism)所擔任的角色。
5. (20分) 解釋名詞 (每題二分)
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|---------------------------------------|----------------------------|
| A. Plasmodesmata | F. Photophosphorylation |
| B. Tonoplast | G. Transmembrane Potential |
| C. Secondary Cell Wall | H. C4 Plants |
| D. Pathogenesis-Related (PR) Proteins | I. Thylakoid Membrane |
| E. Phytochelatin | J. Nodulins |

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