

1. Describe the structures and functions of smooth and rough endoplasmic reticulum and peroxisome. (15%)
2. By separating transcription from translation, the nuclear envelope allows eukaryotes to regulate gene expression by processes that are not found in prokaryotes. What are these regulatory mechanisms that are unique to eukaryotes? (10%)
3. Draw and name the structures of mitochondria and chloroplast. Also, point out where are the following complexes or reactions located within these organelles: Tom complexes, Tic complexes, electron transport chain, ATP synthase, citric acid cycle, photosystem I and II, and Calvin cycle. (15%)
4. Describe the structures and functions of confocal and fluorescence microscopes. (10%)
5. Some proteins are found associated with membrane via the glycosylphosphatidylinositol (GPI) linkage. Please explain the structure and formation process of the GPI linkage. (10%) Also, please describe the properties of these types of membrane proteins, such as their localization and relation to membrane. (5%)
6. One of the major intracellular degradation processes is mediated by the ubiquitin-proteasome system. Please explain how this system functions in terms of its cargo selection, degradation processes, and properties of its cargo and end products. (10%)
7. Please explain three ways in which activation of a proto-oncogene into an oncogene can occur. (15%)
8. Explain the following terms (10%)
 - (1) aquaporin
 - (2) fluorescence recovery after photobleaching (FRAP)

試題隨卷繳回