國立臺灣大學 114 學年度碩士班招生考試試題

請於試卷內之「非選擇題作答區」標明題號依序作答。

1. Please describe the structure and function of the nuclear pore complex in protein transport into the nucleus. (10%)
2. Please explain how clathrin-mediated endocytosis works and its role in regulating hormone signaling. (10%)
3. Please describe the different types of cytoskeleton, their compositions, and their functions. (10%)
4. Please explain the composition of the nucleosome and its role in regulating gene expression. (10%)
5. Explain the following terms: (10%)
   (1) Fluorescence Recovery After Photobleaching (FRAP)
   (2) Autophagy
6. Describe the formation, signal transduction, and functions of inositol triphosphate and diacylglycerol. (8 %)
7. Compare the differences of light microscope, scanning electron microscope, transmission electron microscope, and confocal microscope in terms of resolution of microscopes, sample preparation for observation by microscopes, and imaging principles of microscopes? (12 %)
8. Describe the structures and functions of the plant cell surface? (6 points)
9. Match the following organelles or cellular structures to their functions, one answer for each organelle or cellular structure. (24 %, 2 %/each)

9-1 ( ) nucleus
9-2 ( ) mitochindrion
9-3 ( ) chloroplast
9-4 ( ) nucleolus
9-5 ( ) rough endoplasmic reticulum
9-6 ( ) smooth endoplasmic reticulum
9-7 ( ) Golgi apparatus
9-8 ( ) lysosome
9-9 ( ) peroxisome
9-10 ( ) central vacuole
9-11 ( ) plasmodesma
9-12 ( ) cilium

A) protein sorting, B) oxidation of glucose, C) information center, D) detoxification of hydrogen peroxide, E) ribosome production, F) photosynthesis, G) turgor pressure, H) channel between plant cells, I) secretary proteins, J) locomotor appendage, K) storage of hydrolase, L) lipid synthesis

試題隨卷繳回