

※注意：請於試卷內之「非選擇題作答區」標明題號依序作答。

一、填充題 (每題2分，共50分)

1. The useful magnification of a light microscope is limited by the _____ of the light source being utilized.
2. _____ microscopes can be used to create high-resolution three-dimensional images of cells.
3. Proteins that are loosely associated with the cytoplasmic membrane are called _____ proteins.
4. Proteins that are embedded within the cytoplasmic membrane and not easily extracted are called _____ proteins.
5. Small circular DNA molecules capable of replicating and containing genes that are useful but not necessary to the bacterium are called _____.
6. _____ is the process through which endospores are formed within a vegetative cell.
7. _____ is involved in the modification, packaging, and secretion of materials in eukaryotic cells.
8. The enzymes and electron carriers involved in electron transport and oxidative phosphorylation in eukaryotes are located in the inner membrane of the _____.
9. The protein coat surrounding the viral genome is called the _____.
10. _____ can be used to bring nutrients into a cell against a concentration gradient.
11. A growth medium that distinguishes among different groups of bacteria on the basis of their biological characteristics is called a _____ medium.
12. A culture in a closed vessel to which no additional medium is added and from which no waste products are removed is called a _____ culture.
13. Complex microbial communities that grow tightly adhered to surfaces are called _____.
14. The time required to kill 90% of the microorganisms or spores in a sample at a specified temperature is called the _____ value.
15. _____ mutations affect only a single base pair in a gene.
16. _____ pathway can provide 4-carbon sugar for aromatic amino acid synthesis.
17. _____ cycle is used by eukaryotic microorganisms to fix carbon dioxide.
18. When the end product of a pathway inhibits catalysis of the first step of that pathway, this phenomenon is called _____.
19. The combination of all the genes present in the human genome and those present in the trillions of microbes living in and on adults is known as the human _____.
20. The concept that human and animal diseases are caused by microorganisms is called the _____ theory.
21. The disinfectant screening method that is known as the _____ coefficient test, which is used to measure the potency of a disinfectant.

見背面

22. Fatty acids are metabolized by the _____ pathway.
23. Organisms that can use carbon dioxide as their sole or principal source of carbon are called _____.
24. The procedure in which a single stain is used to visualize microorganisms is called _____ staining.
25. _____ are the site of protein synthesis in the cell.

二、何謂 species？試述真菌和細菌在“species”的定義有何差異？常用於 species 分類鑑定的指標為何？(10 分)

三、何謂 Gram staining？試述其步驟？試各舉一物種學名為例，說明 Gram positive, Gram negative 細菌間之異同。(10 分)

四、請舉例說明微生物在綠色基因科技(green gene technology)如生質能源、分子農場或生物復育等所扮演的角色，並說明其願景及待克服的困難。(10 分)

五、何謂 antibiotics？試各舉一種為例，說明其主要的的作用機制。(10 分)

六、解釋下列名詞

1. Archaea (4 分)
2. Coliforms (3 分)
3. Actinomycetes (3 分)

試題隨卷繳回