

本科目不得使用計算機

本科目試題共 1 頁

1. Please describe the biological characteristics of the following microorganisms, and use **one example** to describe their contribution to human life (each question is 4%, total 20%)
 - (1) Bacteria
 - (2) Nematodes
 - (3) Viruses
 - (4) Fungi
 - (5) *Mycobacterium tuberculosis*
2. If all of the microorganisms were extinct due to non-controllable disasters, what will happen to the other living creatures on Earth? (10%) (請論述若地球上所有的微生物受到不可抗拒的因素而突然滅絕時，對地球上其他生物可能造成的影響。)
3. Please describe the function(s) of the following chemicals in selective or differential media and name **one medium** that contains the chemical (15%).
 - (1) Neutral red
 - (2) X-gal
 - (3) Ampicillin
 - (4) Bromothymol blue (BTB)
 - (5) Starch
4. Please describe how microorganisms take up **iron** from the environments and how important the iron is for **microbial growth**. (5%)
5. **Design experiments** to differentiate these two bacteria *Bacillus subtilis* and *Xanthomonas campestris* and describe the **basic concepts** as to why you choose these methods and **the expected results**. (20%)
6. Define the two terms “**Multipartite Genomes**” and “**Multiparticulate Viruses**” and give a **representative virus** for each of them. (10%)
7. Describe and contrast the **basidiomycetes**, **ascomycetes**, **zygomycetes**, **oomycetes**, and **deuteromycetes** based on their characteristics of hyphae, reproductive structures, and cell wall compositions. In addition, **list a genus name** as an example in each of the above classification. (20%)