

※ 考生請注意：本試題不可使用計算機。請於答案卷(卡)作答，於本試題紙上作答者，不予計分。

一、問答題（100 分，每題 10 分）

1. Tuberculosis, also known as TB, is a serious disease. TB is caused by bacteria that spread through the air when a person with contagious TB coughs, sneezes, sings, or talks. Testing mucus from the sputum culture is the best way to diagnose active TB. But a sputum culture can take 1 to 8 weeks to provide results. Is there any rapid sputum test available? Please describe it in detail. When the test should be done and how does it work.
2. Please describe important epigenetic markers and their effects on transcription in eukaryotic cells.
3. Please describe how transcriptomes are studied and discuss the applications of this type of research.
4. Antibody drugs have been widely used to treat various diseases. Please describe the steps to develop and manufacture antibody drugs.
5. What does the term “microbiome” mean and how to do microbiome research?
6. Describe the replication in procaryotes, including origin, initiation, leading strand, lagging strand.
7. Describe function and structure of telomere in eucaryotic cells.
8. Describe transcription of mRNA in eucaryotes including promoter, enhancer, polymerases, transcription factor, histone code.
9. Describe protein translation initiation in procaryotes.
10. Describe DNA repair system in eucaryotes.