Second Semester Examination
2023/2024 Academic Session

July/August 2024

# BMT222 – Bacteriology
## *(Bakteriologi)*

Duration : 2 hours
*(Masa : 2 jam)*

Please check that this examination paper consists of THREE (3) pages of printed material before you begin the examination.

*[Sila pastikan bahawa kertas peperiksaan ini mengandungi TIGA (3) muka surat yang bercetak sebelum anda memulakan peperiksaan ini.]*

**Instructions:** Answer **FOUR (4)** out of **FIVE (5)** questions, in English or Bahasa Malaysia. Each question carries 25 marks.

*[**Arahan:** Jawab **EMPAT (4)** daripada **LIMA (5)** soalan, menggunakan Bahasa Inggeris atau Bahasa Malaysia. Setiap soalan bernilai 25 markah .]*

In the event of any discrepancies, the English version shall be used.

*[Sekiranya terdapat sebarang percanggahan pada soalan peperiksaan, versi Bahasa Inggeris hendaklah digunapakai.]*

**...2/-**

1. [a] Explain bacterial flagella, their arrangement and functions.
*[Terangkan mengenai flagelum bakteria, susunan dan fungsinya.]*

(10 marks / 10 markah)

[b] Characterise the evolutionary adaptations and ecological niches of purple phototrophic bacteria, nitrifying bacteria, and acetic acid bacteria within the α-proteobacteria class. What is their importance to the daily lives of other organisms?
*[Cirikan penyesuaian evolusi dan lingkungan ekologi bakteria fototropik ungu, bakteria nitrifikasi, dan bakteria asid asetik dalam kelas α-proteobakteria. Apakah kepentingannya terhadap kehidupan harian organisma lain?]*

(15 marks / 15 markah)

2. [a] Explain bacterial taxonomy and why it is important.
*[Terangkan taksonomi bakteria dan kenapa taksonomi bakteria adalah penting?]*

(10 marks / 10 markah)

[b] There are two types of photosynthetic bacterial pigments: chlorophyll and bacteriochlorophyll. Identify the similarities and differences between the two pigments, and their significance to the environment.
*[Terdapat dua jenis pigmen bakteria fotosintetik: klorofil dan bakterioklorofil. Kenal pasti persamaan dan perbezaan antara dua pigmen, dan kepentingannya di dalam persekitaran.]*

(15 marks / 15 markah)

3. [a] Discuss the importance of bacterial surface appendages and capsules to bacteria.
*[Bincangkan kepentingan apendaj permukaan dan kapsul kepada bakteria.]*

(10 marks / 10 markah)

**...3/-**

[b] Determine the typical characteristics of the *Yersinia* species and identify its transmission routes to humans.
*[Tentukan ciri lazim spesis* Yersinia *dan kenal pasti laluan transmisinya kepada manusia.]*

(15 marks / 15 markah)

4. [a] Explain polyphasic taxonomy and how polyphasic approach can be used in classifying and identifying bacteria.
*[Terangkan taksonomi polifasik dan bagaimana pendekatan polifasik boleh digunakan dalam mengkelaskan dan mengenal pasti bakteria.]*

(10 marks / 10 markah)

[b] Outline the characteristics of *Campylobacter* species and identify the diseases the bacteria can cause in both humans and animals.
*[Rangkakan ciri spesis* Campylobacter *dan kenal pasti penyakit yang boleh berlaku pada manusia dan haiwan.]*

(15 marks / 15 markah)

5. [a] Summarise the morphology, physiology, and structural domains of Archaea.
*[Ringkaskan morfologi, fisiologi, dan struktur domain Archaea.]*

(10 marks / 10 markah)

[b] Identify the types of microbial growth media and analyse the function of each medium.
*[Kenal pasti jenis media pertumbuhan mikrob dan berikan analisis fungsi setiap medium.]*

(15 marks / 15 markah)

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