



First Semester Examination  
2021/2022 Academic Session

February/March 2022

**BAT308 – Limnology**  
***[Limnologi]***

Duration: 2 hours  
*[Masa: 2 jam]*

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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 yang diberikan dalam Bahasa Inggeris atau Bahasa Malaysia. Tiap-tiap 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. Describe the horizontal and vertical zonation of a typical man-made lake.

*[Terangkan pengezonan horizontal dan vertikal tasik tipikal buatan manusia.]*

(25 marks / 25 markah)

2. Analyse seasonal stratification and circulation in temperate lakes.

*[Lakukan analisis stratifikasi dan edaran bermusim dalam tasik temperat.]*

(25 marks / 25 markah)

3. [a] Define internal loading of phosphorus. Explain the processes by which soluble phosphate moves from the anoxic sediments to the water column in a eutrophic lake.

*[Takrifkan pemuatan dalaman fosforus. Jelaskan proses di mana fosforus terlarut bergerak dari sedimen anoksik ke ruang air dalam suatu tasik eutrofik.]*

(15 marks / 15 markah)

- [b] Analyse why large and deep lakes are less productive compared to small and shallow lakes.

*[Lakukan analisis kenapa tasik besar dan dalam kurang produktif berbanding tasik kecil dan cetek.]*

(10 marks / 10 markah)

4. [a] Elaborate the seasonal cycle of phytoplankton biomass in a temperate lake.

*[Huraikan kitaran bermusim biomas fitoplankton dalam tasik temperat.]*

(15 marks / 15 markah)

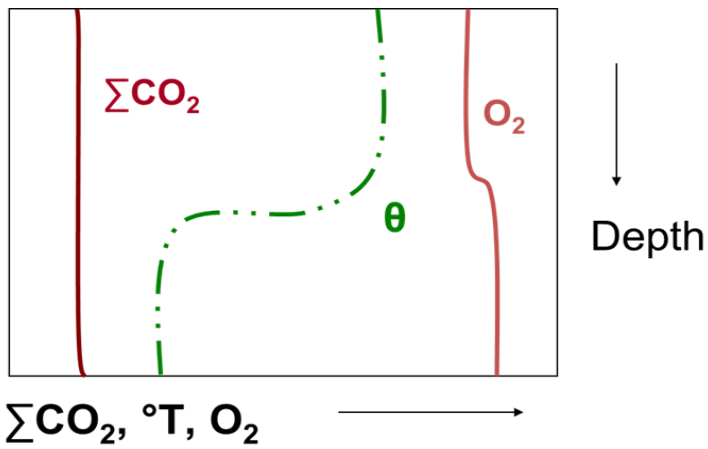
- [b] The following diagrams show the oxygen and carbon dioxide profiles during thermal stratification in oligotrophic and eutrophic lakes. Analyse the vertical distribution of these two gasses.

*[Gambarajah berikut menunjukkan profil oksigen dan karbon dioksida semasa stratifikasi terma dalam tasik oligotrofik dan eutrofik. Lakukan analisis taburan menegak kedua-dua gas tersebut.]*

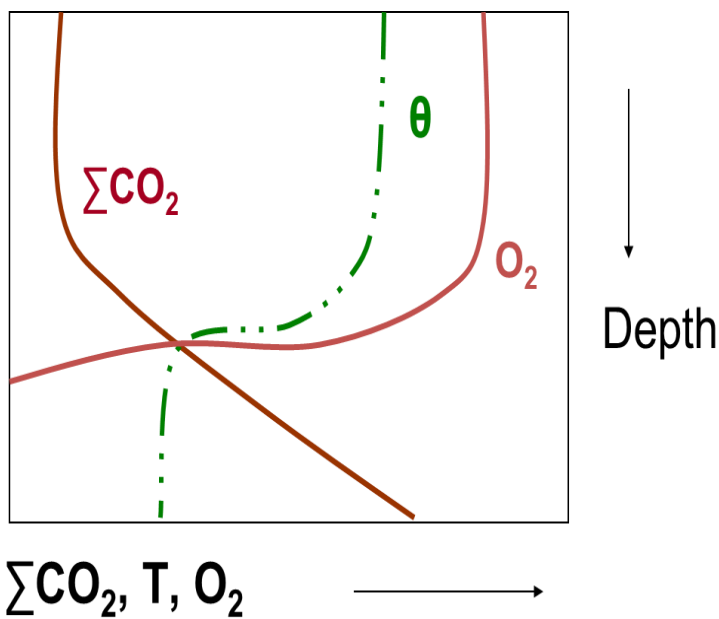
(10 marks / 10 markah)

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Oligotrophic lake:



Eutrophic lake:



5. Analyse the roles of riparian vegetation in controlling the health and functioning of stream ecosystems.

*[Lakukan analisis peranan tumbuh-tumbuhan riparian dalam mengawal kesihatan dan fungsi ekosistem sungai.]*

(25 marks / 25 markah)