
UNIVERSITI SAINS MALAYSIA

First Semester Examination
2013/2014 Academic Session

December 2013 / January 2014

BAT 201/3 – Limnology
[Limnologi]

Duration: 3 hours
[Masa : 3 jam]

Please ensure that this examination paper contains THREE printed pages before you begin the examination.

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

Instructions: Answer **FIVE** (5) out of **SIX** (6) questions, in English or Bahasa Malaysia. Each question carries 20 marks.

Arahan: Jawab **LIMA** (5) daripada **ENAM** (6) soalan yang diberikan dalam Bahasa Inggeris atau Bahasa Malaysia. Tiap-tiap soalan bernilai 20 markah.]

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

[Sekiranya terdapat sebarang percanggahan pada soalan peperiksaan, versi Bahasa Inggeris hendaklah diguna pakai].

1. [a] What is the function of a Secchi disc ? Discuss factors affecting the Secchi disc depth.
[Apakah fungsi cakera Secchi ? Bincangkan faktor yang mempengaruhi kedalaman cakera Secchi.]
- (10 marks / 10 markah)
- [b] Explain three factors that affect the solubility of oxygen in water.
[Terangkan tiga faktor yang mempengaruhi keterlarutan oksigen dalam air.]
- (10 marks / 10 markah)
2. [a] Discuss the ecological importance of phytoplankton in lentic ecosystems.
[Bincangkan kepentingan ekologi fitoplankton dalam ekosistem lentik.]
- (10 marks / 10 markah)
- [b] Using a diagram, describe the seasonal cycle of phytoplankton biomass in a temperate lake.
[Dengan menggunakan gambarajah, huraikan kitaran bermusim biojisim fitoplankton di tasik temperat.]
- (10 marks / 10 markah)
3. Describe factors affecting the eutrophication level in freshwater lakes.
[Huraikan faktor yang mempengaruhi tahap eutrofikasi dalam tasik air tawar.]
- (20 marks / 20 markah)

4. Discuss the transformation of nitrogen in the nitrogen cycle of freshwater ecosystems.

[Bincangkan transformasi nitrogen dalam kitar nitrogen di ekosistem airtawar.]

(20 marks / 20 markah)

5. [i] Describe the longitudinal zonation of a river, and explain how physical changes from headwaters to river mouth which affect the distribution of phytoplankton and benthic invertebrates.

[Huraikan zon memanjang suatu sungai, dan jelaskan bagaimana perubahan fizikal dari hulu sehingga hilir sungai mempengaruhi taburan fitoplankton dan invertebrate benthik.]

(20 marks / 20 markah)

6. [a] Describe the following lake zonations :

[Huraikan zonasi tasik yang berikut :]

[i] Littoral zone

[Zon litoral]

[ii] Pelagic zone

[Zon pelagik]

[iii] Profundal zone

[Zon profundal]

[iv] Photic zone

[Zon fotik]

[v] Aphotic zone

[Zon afotik]

(20 marks / 20 markah)