
UNIVERSITI SAINS MALAYSIA

Final Examination
Academic Session 2007/2008

April 2008

JIB 214 – PLANT ANATOMY
[ANATOMI TUMBUHAN]

Duration : 2 hours
[Masa : 2 jam]

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

Answer **FOUR** questions. You may answer **either** in Bahasa Malaysia or in English.

All answers must be written in the answer booklet provided.

Each questions is worth 25 marks and the marks for each sub question is given at the end of that question.

Sila pastikan bahawa kertas peperiksaan ini mengandungi EMPAT muka surat yang bercetak sebelum anda memulakan peperiksaan ini.

*Jawab **EMPAT** soalan. Anda dibenarkan menjawab soalan **sama ada** dalam Bahasa Malaysia atau Bahasa Inggeris.*

Setiap jawapan mesti dijawab di dalam buku jawapan yang disediakan.

Setiap soalan bernilai 25 markah dan markah subsoalan diperlihatkan di penghujung subsoalan itu.

1. (a) Discuss the cell types found in axial and radial systems of
- (i) softwoods
 - (ii) hardwoods

Bincangkan jenis-jenis sel yang didapati pada sistem aksial dan jejari

- (i) *kayu lembut*
- (ii) *kayu keras*

(15 marks)

- (b) Discuss the characteristics of tracheids and vessel elements of xylem.

Bincangkan ciri-ciri trakeid dan unsur pembuluh xilem.

(10 marks)

2. (a) Discuss the principle functions of the cell types found in axial system of secondary phloem.

Bincangkan fungsi utama jenis-jenis sel yang didapati pada sistem aksial floem sekunder.

(15 marks)

- (b) Explain the structural differences between conducting and nonconducting phloem.

Jelaskan perbezaan struktur antara floem pengalir dan bukan pengalir.

(10 marks)

3. (a) Draw, describe the shape and state the location of the sclereids below :

- (i) macrosclereids
- (ii) trichosclereids
- (iii) brachysclereids
- (iv) astrosclereids
- (v) osteosclereids

Lukis, terangkan bentuk serta nyatakan lokasi sklerid di bawah :

- (i) *makrosklerid*
- (ii) *trikosklerid*
- (iii) *brakisklerid*
- (iv) *astrosklerid*
- (v) *osteosklerid*

(15 marks)

(b) Draw and describe the pattern of wall thickening in

- (i) lamellar collenchyma
- (ii) angular collenchyma
- (iii) lacunar collenchyma

Lukis dan terangkan corak penebalan dinding pada

- (i) *kolenkima berlamela*
- (ii) *kolenkima bersudut*
- (iii) *kolenkima berlakuna*

(10 marks)

4. (a) Explain the differences between the epidermis of a monocotyledon and dicotyledon leaf.

Jelaskan perbezaan antara epidermis daun monokotiledon dan dikotiledon.

(10 marks)

(b) Explain the meaning of the terms listed below

- (i) amphistomatic and epistomatic leaf
- (ii) anomocytic and anisocytic stomatal configuration
- (iii) epicuticular and intracuticular wax

Jelaskan maksud istilah berikut

- (i) *daun amfistomata dan epistomata*
- (ii) *konfigurasi stoma anomositik dan anisositik*
- (iii) *lilin epikutikel dan intrakutikel*

(15 marks)

5. (a) Draw and label the structure of the organelles listed below and state their respective functions.

- (i) chloroplast
- (ii) mitochondria
- (iii) nucleus
- (iv) Golgi body

Lukis dan label struktur organel berikut dan nyatakan fungsi setiap organel tersebut.

- (i) *kloroplas*
- (ii) *mitokondria*
- (iii) *nukleus*
- (iv) *jasad Golgi*

(20 marks)

- (b) Draw and label a longitudinal section of a plasmodesmata.

Lukis dan label keratan memanjang suatu plasmodesmata.

(5 marks)