



Final Examination  
2017/2018 Academic Session

May/June 2018

**JIB324 – Plant Developmental Biology**  
***[Biologi Perkembangan Tumbuhan]***

Duration : 3 hours  
*[Masa : 3 jam]*

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

Answer **FIVE (5)** questions. You may answer **either** in Bahasa Malaysia or English.

All answers must be written in the **answer booklet** provided.

Each question is worth **20 marks** and the mark for each sub question is given at the end of that question.

In the event of any discrepancies in the exam questions, the **English** version shall be used.

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

*Jawab **LIMA (5)** soalan. Anda dibenarkan menjawab soalan **sama ada** dalam Bahasa Malaysia atau Bahasa Inggeris.*

*Setiap jawapan mesti dijawab dalam **buku jawapan** yang disediakan.*

*Setiap soalan bernilai **20 markah** dan markah subsoalan diperlihatkan di penghujung subsoalan itu.*

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

Answer **FIVE (5)** questions.  
*Jawab **LIMA (5)** soalan.*

1. Draw a nitrogen cycle, and explain the **FIVE (5)** major processes taking place.

*Lakarkan kitar nitrogen, dan jelaskan **LIMA (5)** proses utama yang berlaku.*

(20 marks/markah)

2. Explain:

- (a). The water stress effects on plants.  
(b). The mechanism of salt tolerance in plants.

*Terangkan:*

- (a). *Kesan ketegasan air atas tumbuhan.*  
(b). *Mekanisme ketoleranan masin dalam tumbuhan.*

(20 marks/markah)

3. With a diagram, describe the stages of:

- (a). Microsporangium development. (7 marks)  
(b). Embryo differentiation. (6 marks)  
(c). Fruit ripening. (7 marks)

*Berserta gambar rajah, terangkan peringkat:*

- (a). *Perkembangan mikrosporangia.* (7 markah)  
(b). *Pembezaan embrio.* (6 markah)  
(c). *Kemasakan buah.* (7 markah)

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4. Discuss :

- (a). The induction of flowering by florigen.
- (b). The stages of fruit ripening.

*Bincang :*

- (a). *Aruhan pembungaan oleh florigen.*
- (b). *Peringkat kemasakan buah.*

(20 marks/markah)

5. Give **FOUR (4)** roles of each of the following hormones in influencing plant growth and development.

- (a). Abscisic acid.
- (b). Auxin.
- (c). Gibberellic acid.
- (d). Cytokinin.
- (e). Ethylene.

*Berikan **EMPAT (4)** peranan setiap hormon berikut dalam mempengaruhi pertumbuhan dan perkembangan tumbuhan.*

- (a). *Asid absisik.*
- (b). *Auksin.*
- (c). *Asid giberelik.*
- (d). *Sitokinin.*
- (e). *Etilena.*

(20 marks/markah)

6. Differentiate between:

- (a). Photoperiodism and vernalisation.
- (b). Endogenous and exogenous dormancy.

*Bezakan antara:*

- (a). *Fotoperiodisme dan vernalisasi.*
- (b). *Kedormanan endogen dan eksogen.*

(20 marks/markah)