



Final Examination
2017/2018 Academic Session

May/June 2018

JIB321 – Biochemistry
[Biokimia]

Duration : 3 hours
[Masa : 3 jam]

Please ensure that this examination paper contains **FIVE** 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 **LIMA** 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 di 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. (a). Define.
Takrifkan.
- (i). Enantiomers.
Enantiomer. [2 marks/markah]
- (ii). Diastereomers.
Diastereomer. [2 marks/markah]
- (b). What is Fischer Projections and Haworth Projections? With the aid of a diagram, compare the Fischer and Haworth representations.
Apakah Unjuran Fisher dan Unjuran Haworth? Dengan bantuan gambar rajah, bandingkan gambaran Fischer dengan Haworth. [8 marks/markah]
- (c). What is glycosidic bond? With the aid of a diagram, show the unique numbering schemes of glycosidic bond.
Apakah ikatan glikosida? Dengan bantuan gambar rajah, tunjukkan skim penomboran unik ikatan glikosida. [8 marks/markah]
2. (a). State the different levels of a protein structure.
Nyatakan tahap berbeza pada suatu struktur protein. [4 marks/markah]
- (b). Draw the α -helix and β -sheet forms in the secondary structure of protein and list the differences between both forms.
Lukis bentuk α -heliks dan β -kepingan di dalam struktur sekunder protein dan senaraikan perbezaan antara kedua-dua bentuk. [8 marks/markah]
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- (c). What is a quaternary structure? Draw an example of quaternary protein and list its properties.

Apakah struktur kuartener? Lukis satu contoh protein kuartener dan senaraikan cirinya.

[8 marks/markah]

3. (a). Define.

Takrifkan.

- (i). Triacylglycerols.

Triasilgliserol.

[2 marks/markah]

- (ii). Phosphoacylglycerols.

Fosfoasilgliserol.

[2 marks/markah]

- (iii). Waxes and sphingolipids.

Lilin dan sfingolipid.

[2 marks/markah]

- (iv). Glycolipids.

Glikolipid.

[2 marks/markah]

- (v). Steroids.

Steroid.

[2 marks/markah]

- (b). Illustrate the formation of triacylglycerol in structure.

Tunjukkan pembentukan triasilgliserol dalam struktur.

[10 marks/markah]

4. (a). What are the **THREE (3)** main purposes of metabolism?
*Apakah **TIGA (3)** tujuan metabolisme?*
(6 marks/markah)
- (b). What are the two categories of metabolism? Give an example for each.
Apakah dua kategori metabolisme? Berikan satu contoh untuk setiap satu.
(4 marks/markah)
- (c). Give the differences in the characteristics of these two categories of metabolism.
Berikan perbezaan ciri dalam kedua-dua kategori metabolisme ini.
(10 marks/markah)

5. Give the overall reaction of :

- (a). glycolysis (5 marks)
- (b). glyconeogenesis (3 marks)
- (c). glycogenolysis (3 marks)
- (d). Krebs Cycle (5 marks)
- (e). the anaerobic conversion of pyruvate with the names of the enzyme and the cofactor. (4 marks)

Berikan tindak balas keseluruhan bagi :

- (a). *glikolisis* (5 markah)
- (b). *glikoneogenesis* (3 markah)
- (c). *glikogenolisis* (3 markah)
- (d). *Kitar Krebs* (5 markah)
- (e). *penukaran anaerobik piruvat dengan nama enzim dan kofaktor.* (4 markah)

6. Show all the steps involved in the breakdown of palmitic acid beginning from the activation in the cytosol, and include all the enzymes, the cofactors and the intermediates.

Tunjukkan kesemua langkah dalam pencernaan asid palmitik bermula daripada pengaktifan di dalam sitosol dan masukkan kesemua enzim, kofaktor dan perantara.

(20 marks/markah)