



**UNIVERSITI TUN HUSSEIN ONN MALAYSIA**

**FINAL EXAMINATION  
SEMESTER II  
SESSION 2016/2017**

COURSE NAME : INSECT TAXONOMY AND DIVERSITY  
COURSE CODE : BWJ 10603  
PROGRAMME CODE : BWW  
EXAMINATION DATE : JUNE 2017  
DURATION : 3 HOURS  
INSTRUCTION : ANSWERS ALL QUESTIONS

**TERBUKA**

THIS QUESTION PAPER CONSISTS OF **FOUR (4)** PAGES

- Q1** (a) Explain why are insects considered the most advanced Arthropoda by discussing **FOUR (4)** of their characteristics.

(4 marks)

*Terangkan mengapa serangga dianggap sebagai Arthropoda termaju dengan membincangkan **EMPAT (4)** ciri-ciri mereka.*

(4 markah)

- (b) Compare hind leg of a grasshopper and the forelegs of a praying mantis and explain what are the adaptations that have occurred and why are those adaptations necessary. You may sketch legs of these insects if it helps to make your answer better.

(6 marks)

*Bandingkan kaki belakang seekor belalang dan kaki depan seekor mentadak dan terangkan apakah adaptasi yang telah berlaku dan kenapa adaptasi tersebut penting. Anda boleh melakarkan gambar kaki-kaki serangga ini jika membantu untuk menerangkan jawapan anda.*

(6 markah)

- (c) Explain each of the terms below and give **ONE (1)** example of an insect most related to each of the term.

(i) Entomophagus

(ii) Mutualism

(6 marks)

*Terangkan maksud setiap satu istilah di bawah dan berikan **SATU (1)** contoh serangga yang terdekat dengan setiap satu istilah itu.*

(i) Entomofagus

(ii) Kesalingan

(6 markah)

- (d) Explain differences between morphology and biology of insects. Illustrate your answer elaborating **THREE (3)** examples for each aspect.

(10 marks)

*Terangkan perbezaan antara morfologi dan biologi serangga. Perjelaskan jawapan anda dengan menggunakan **TIGA (3)** contoh bagi setiap aspek.*

(10 markah)

- Q2** (a) (i) Explain what are Ectognatha.

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(2 marks)

*Terangkan apakah Ectognatha.*

(2 markah)

- (ii) What are differences between Brachycera and Nematocera?

(2 marks)

*Apakah perbezaan antara Brachycera dan Nematocera?*

(2 markah)

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- (b) Analyse **THREE (3)** differences between Orthoptera and Hymenoptera. Give examples for these two orders.

(8 marks)

*Analisis TIGA (3) perbezaan antara Orthoptera dan Hymenoptera. Berikan contoh-contoh bagi dua order ini.*

(8 markah)

- (c) Describe **TWO (2)** families in Hymenoptera and give your opinion why these two families are important in human life. Give **ONE (1)** example of hymenopteran for each family.

(10 marks)

*Perihalkan DUA (2) famili dalam order Hymenoptera dan berikan pendapat anda mengapa setiap satu daripada dua famili ini penting dalam kehidupan manusia. Berikan SATU (1) contoh serangga Hymenoptera bagi setiap famili.*

(10 markah)

- Q3** (a) There are several purposes why we collect insects. Discuss **THREE (3)** purposes and suggest which methods are suitable for each purpose.

(6 marks)

*Bincangkan TIGA (3) tujuan kita mengumpul serangga. Bincangkan tujuan - tujuan itu dan cadangkan kaedah-kaedah yang sesuai bagi setiap tujuan.*

(6 markah)

- (b) Suggest types of equipment suitable for catching/trapping (i) fast flying insects and (ii) aquatic insects, explaining the principles for the equipment used.

(8 marks)

*Cadangkan jenis-jenis peralatan yang sesuai untuk menangkap/memerangkap (i) serangga kuat terbang dan (ii) serangga air, dengan menjelaskan prinsip-prinsip bagi peralatan yang digunakan.*

(8 markah)

- (c) A student using aerial net tries to collect insects living among bushes. He has problems. Can you explain what kinds of problems he would face and why. Suggest other equipment suitable for the target insects.

(8 marks)

*Seorang pelajar menggunakan jaring sauk untuk menangkap serangga yang hidup pada semak-semak. Dia menghadapi masalah. Terangkan apakah masalah yang bakal dia hadapi dan kenapa. Cadangkan peralatan lain yang sesuai untuk mengumpul serangga sasaran.*

(8 markah)

**TERBUKA**

- Q4** (a) Explain why a natural history museum is important to Malaysia. Justify why insect should be in the display in the museum.

(6 marks)

*Terangkan kenapa sebuah muzium alam semulajadi penting bagi Malaysia. Pertahankan kenapa serangga perlu ada dalam pameran muzium itu.*

(6 markah)

- (b) You collected two insects (i) cicadas (Homoptera) and mayflies (Ephemeroptera). Explain the method of curation that you would apply to each of these insects and give your opinion why you chose the method.

(8 marks)

*Anda telah membuat koleksi dua jenis serangga (i) riang-riang (Homoptera) dan (ii) lalat mei (Ephemeroptera). Terangkan kaedah kurasi bagi setiap satu jenis serangga ini dan berikan pendapat anda kenapa anda memilih kaedah tersebut.*

(8 markah)

- Q5** (a) **Figure Q5 (a)** shows a hypothetical keys for two insect families. Please suggest what is family X and Y and explain why you choose the two families.

(6 marks)

Hypothetical taxonomic keys for two suborder of an insect order

1. mouth mandibulate, antenna has many segments usually more than 30 and longer than body length.....X  
 mouth mandibulate, antenna relatively shorter with less than 30 segments and shorter than body length.....Y

**Figure Q5 (a)**

*Rajah Q5 (a) menunjukkan satu kunci berhipotesis bagi dua famili serangga. Cadangkan apakah famili X dan Y serta terangkan kenapa anda memilih dua famili ini.*  
 (6 markah)

*Kekunci berhipotesis bagi dua suborder dalam suatu order serangga*

*1. mulut mandibulat, antena terdiri daripada banyak segment biasanya lebih dari 30 dan melebihi panjang tubuh.....X  
 mulut mandibulat, antena relatif lebih pendek, kurang dari 30 segmen dan lebih pendek dari tubuh.....Y*

**Rajah Q5 (a)**

- (b) You are given a dragonfly, a damselfly and an ant. Construct a key to differentiate between these insects and give your opinion on the taxonomic characters that you used.

(10 marks)

*Anda diberikan seekor papatung, papatung jarum dan semut. Sila buat satu kekunci untuk membezakan serangga-serangga ini dan berikan pendapat anda tentang ciri-ciri taksonomik yang anda pilih.*

(10 markah)

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- END OF QUESTIONS -

- TAMAT -