Universiti Tun Hussein Onn Malaysia

UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION
SEMESTER II
SESSION 2022/2023

COURSE NAME	:	INSECT DIVERSITY
COURSE CODE	:	BWJ 11503
PROGRAMME CODE	:	BWW
EXAMINATION DATE	:	JULY / AUGUST 2023
DURATION	:	3 HOURS
INSTRUCTION	:	1. ANSWER ALL QUESTIONS 2. THIS FINAL EXAMINATION IS CONDUCTED VIA ☐ Open book ☒ Closed book 3. STUDENTS ARE **PROHIBITED** TO CONSULT THEIR OWN MATERIAL OR ANY EXTERNAL RESOURCES DURING THE EXAMINATION CONDUCTED VIA CLOSED BOOK.

THIS QUESTION PAPER CONSISTS OF **THREE (3)** PAGES

Q1 (a) Insects are from the phylum Arthropoda. Explain **THREE (3)** general characteristics of insects.

(6 marks)

(b) Explain **TWO (2)** differences between subclass Paleoptera and Neoptera. Give **ONE (1)** example of organism for each subclass.

(6 marks)

(c) Explain the relationship between the variation of different insect mouthparts with its diet. Provide examples of insects to support your answer.

(8 marks)

Q2 (a) Analyze **FOUR (4)** differences between a moth (suborder: Heterocera) and a butterfly (suborder: Rhopalocera) and create a simple key to elaborate your answer.

(8 marks)

(b) Name **ONE (1)** species of butterfly and **ONE (1)** species of moth that you know.

(2 marks)

(c) Explain your understanding on the concept of mutualism by using the relationship between ants. aphids and ladybugs.

(4 marks)

(d) Both parasitic wasps and blowfly maggots are considered as parasites. However, there are differences in the way they interact with their prey. Explain **THREE (3)** of these differences in detail.

(6 marks)

Q3 (a) Ecologically, Blattodea are both good and bad for people. Explain what is meant by the statement and give **TWO (2)** examples of the insect when you are quoting the good and bad sides of Blattodea.

(5 marks)

(b) Order Coleoptera performs many ecological functions. To elaborate on this, explain **FOUR (4)** ecological functions performed by Coleoptera. Name the insects involved in each of the functions.

(5 marks)

(c) State the definition behind the study of insect ecology.

(5 marks)

Q4 (a) State **FIVE (5)** methods of insect collection that you know.

(5 marks)

(b) Imagine you are tasked to plan a sampling regime for a butterfly study in Taman Negara Johor Endau Rompin. Outline your sampling plan for before sampling, during sampling and after sampling.

(15 marks)

Q5 (a) Define diversity index.

(3 marks)

(b) Calculate the Shannon diversity index (H') and Shannon Equitability Index (E_H) for the sample given in **Table Q5.1.** Show your calculation in detail.

Table Q5.1

Common name	Species name	No. of individuals
Scarlet Basker	*Urothemis signata*	10
Russet Percher	*Neurothemis fulvia*	60
Ditch Jewel	*Brachythemis contaminata*	1
Orange Skimmer	*Orthetrum testaceum*	25
Common Parasol	*Neurothemis fluctuans*	4

(8 marks)

(c) Explain **THREE (3)** differences between active and passive insect sampling. Then, give **THREE (3)** examples for **EACH** type of collecting method.

(9 marks)

– END OF QUESTIONS –