Universiti Tun Hussein Onn Malaysia

UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION
SEMESTER I
SESSION 2021/2022

COURSE NAME	:	BIODIVERSITY CONSERVATION TECHNOLOGY
COURSE CODE	:	CWJ 10203
PROGRAMME CODE	:	CWJ
EXAMINATION DATE	:	JANUARY / FEBRUARY 2022
DURATION	:	3 HOURS 30 MINUTES
INSTRUCTION	:	1) ANSWER **ALL** QUESTIONS 2) THIS FINAL EXAM IS AN **ONLINE** ASSESSMENT AND CONDUCTED VIA **CLOSED BOOK**

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

Q1 Malaysia is considered to be among the megadiverse countries in the world.

(a) List out all the different levels of biodiversity.

(2 marks)

(b) Compare the mountains of Peninsular Malaysia and Borneo and outline **THREE (3)** differences between them.

(12 marks)

(c) Global temperatures are expected to rise over the next few decades. Discuss which Malaysian ecoregions will be most affected by global warming.

(4 marks)

(d) Explain why Sabah has the highest diversity of hard coral in Malaysia.

(2 marks)

Q2 In recent years, conservation efforts have implemented technologies such as Unmanned Aerial Vehicle (UAV), Internet of Things (IoT) sensors, crowdsourcing, and machine learning.

(a) Justify **FIVE (5)** advantages that UAV has over satellite-borne cameras for biodiversity and conservation.

(10 marks)

(b) Give **TWO (2)** examples of online databases and explain, in detail, how each database can be used for biodiversity conservation.

(10 marks)

Q3 **(a)** The Agriculture Department has confiscated a shipment of orchids that they suspect to be a protected species. However, the orchids cannot be identified to the species level as they are not in flower. Suggest a method that can be used to help identify the orchid species in this situation and outline the steps involved in using this technology on the orchids.

(10 marks)

(b) There is concern that exotic fish species (tilapia) may have been accidentally introduced into the peat swamp in Ayer Hitam Utara Forest Reserve. However, it is not possible to search the entire swamp using conventional means due to the size of the area and the challenging terrain. Propose a technology that can be used in this situation and outline the steps involved.

(10 marks)

Q4 **(a)** (i) Explain, in detail, why seed banks are not suitable for the *ex-situ* conservation of Malaysian forest tree species.

(4 marks)

(ii) Discuss **ONE (1)** alternative method to seed banks for the *ex-situ* conservation of forest tree species. (4 marks)

(b) Plant tissue culture is now routinely used for the commercial production of oil palm clones. Discuss **ONE (1)** advantage and **ONE (1)** disadvantage of using oil palm clones for plantations.

(8 marks)

(c) One of the main challenges of chicken farming is the high cost of commercial chicken feed. Evaluate a technology that is appropriate for this situation and explain, in detail, how we can use it to reduce the chicken farm's dependence on commercial chicken feed.

(4 marks)

Q5 The Johor State Government would like to start an elephant captive breeding program at the Johor Elephant Sanctuary in Kota Tinggi. As the purpose of program is to reintroduce elephants into Johor forests, it has been proposed that the founder population for this program should consist entirely of elephants that have been rescued from Johor only.

(a) In terms of genetics, evaluate **ONE (1)** potential long-term advantage and **ONE (1)** disadvantage of using a founder population that is derived exclusively of elephants from Johor.

(8 marks)

(b) Aside from genetics, evaluate **THREE (3)** potential challenges of reintroducing captive-bred elephants into the wild.

(12 marks)

- END OF QUESTIONS -