Universiti Tun Hussein Onn Malaysia

UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION
SEMESTER II
SESSION 2017/2018

COURSE NAME	:	MARINE ECOSYSTEM MANAGEMENT
COURSE CODE	:	BWJ 31203
PROGRAMME CODE	:	BWW
EXAMINATION DATE	:	JUNE/JULY 2018
DURATION	:	3 HOURS
INSTRUCTION	:	ANSWER **ALL** QUESTIONS

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

Q1 (a) Name the force responsible for creating the waves and define it.

(4 marks)

(b) Distinguish between waves, tides and currents.

(3 marks)

(c) By using illustrations, relate how wind currents influence the ocean currents.

(18 marks)

Q2 (a) State **THREE (3)** methods of reproduction of marine animals and give **ONE (1)** example of marine animal for each methods.

(6 marks)

(b) Explain how tidal energy is constructed.

(6 marks)

(c) Compare **THREE (3)** benefits of area inside and outside of Marine Reserves.

(6 marks)

(d) Given you are a Marine Manager and the shoreline under your area is degrading. By using your knowledge of Shoreline Management Plans (SMPs), list **THREE (3)** possible actions you should take to protect the shore and explain how the actions can help protect the shore.

(6 marks)

(e) Name **ONE (1)** International Marine Policy to control water pollution.

(1 mark)

Q3 (a) Von-Bertalanffy Growth model is one of the popular tools to measure fish growth based on length. Write the formula of Von-Bertalanffy Growth model.

(2 marks)

(b) Describe L(t), $L\infty$, K and t_o in the equation.

(4 marks)

(c) A group of scientists conducted a study on the Pacific Ocean between 1993 and 1998 and determined the values of K, L_∞ and t_o for economically important fish species in the region. The values are listed in **Table Q3(c).**

(i) According to the model, calculate the length of the 2-year old female fish.

(3 marks)

(ii) Calculate the length of the 2-year old male fish.

(2 marks)

(iii) Given the formula in **Figure Q3(c)**, determine which one is grow faster, male or female fish?

(5 marks)

(d) Differentiate **TWO (2)** characteristics among commensalism, parasitism and mutualism.

(6 marks)

(e) Discuss the origin of the association of pilot fishes and remoras.

(3 marks)

Q4 (a) Replanting mangroves through rehabilitation program is one of the good efforts to conserve the mangrove ecosystem. However, it posed several threats from predators such as crabs or toppling of the seedlings caused by other organisms. Propose **THREE (3)** ways to enhance the replanting efforts of the mangroves.

(6 marks)

(b) The Convention for International Trade in Endangered Species (CITES), indicates the degree of protection needed by grouping species into several Appendices. Briefly distinguished **TWO (2)** aspects of Appendix I, Appendix II and Appendix III of CITES.

(9 marks)

(c) Explain the function of 'ecological indicator'.

(4 marks)

(d) Examine how Exclusive Economic Zone (EEZ) of The Coral Triangle improved socio-economic and ecological sustainability.

(6 marks)

– **END OF QUESTIONS** –

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Table Q3(c)

Fish	K	L_∞	t_0
Female	0.11	43.3 cm	-1.91 years
Male	0.136	34.2 cm	2.02 years

$$\frac{dL}{dt} = K\,(L_\infty - L)$$

Figure Q3(c)