



UNIVERSITI TUN HUSSEIN ONN MALAYSIA

**FINAL EXAMINATION
SEMESTER I
SESSION 2017/2018**

COURSE NAME : ECOLOGICAL DYNAMICS
COURSE CODE : BWJ 30603
PROGRAMME CODE : BWW
EXAMINATION DATE : DECEMBER 2017 / JANUARY 2018
DURATION : 3 HOURS
INSTRUCTION : ANSWER ALL QUESTIONS

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

- Q1** (a) Outline **TWO (2)** characteristics of useless data. (2 marks)
- (b) Illustrate the flow of five-stages ecological processes and give a suitable example. (10 marks)
- (c) Categorize **FOUR (4)** scales of measurement and distinguish them. (4 marks)
- (d) Define 'ecosystem' and list **TWO (2)** structures of ecosystem. (4 marks)
- Q2** (a) Rivers and streams are examples of freshwater biomes. Rivers are divided into 3 zones which are the headwater, transfer zone and depositional zone. In headwater zone, the current are the greatest. In your opinion, will animals able to survive in this situation? Justify your answer and name **TWO (2)** animals that can be found in headwater zone. **TERBUKA** (6 marks)
- (b) Based on Figure **Q2(b)**, explain **TWO (2)** laws that involve in energy flow. (4 marks)
- (c) Illustrate each mechanisms of succession and give examples that prove the mechanisms. (15 marks)
- Q3** (a) In order to survive in extreme cold temperature, animals evolved several mechanisms of adaptation. One of it is counter-current heat exchange mechanism. Define the 'counter-current heat exchange'. (1 mark)
- (b) Besides counter-current heat exchange, animals and plants also undergo 'supercooling' mechanisms to adapt to freeze environment. Demonstrate how the process of 'supercooling' occurs. (4 marks)
- (c) Photosynthesis is a crucial process in plants. By the end of photosynthesis, glucose and oxygen are produced. In order to get these end products, various processes are involve which include light reaction and carbon fixation processes. Carbon fixation involves three photosynthetic pathways which are C3, C4 and CAM pathways. Combine the whole processes of photosynthesis in C3 plants to produce glucose. (15 marks)

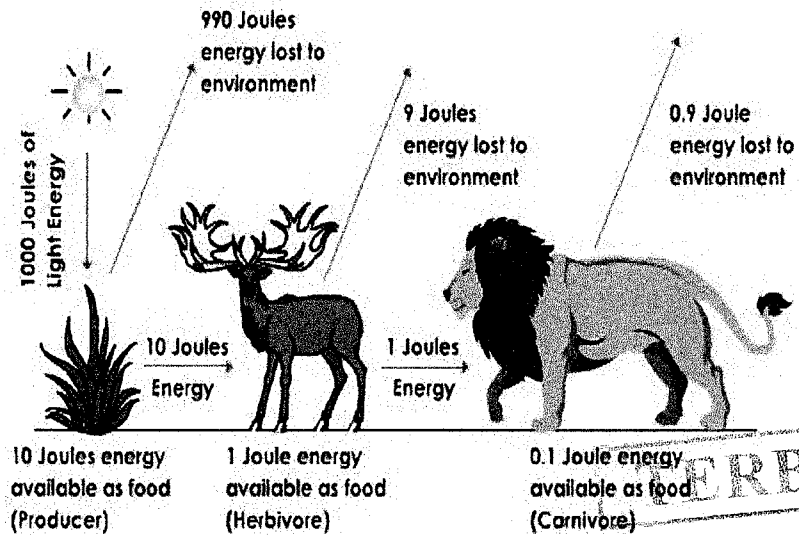
- Q4** (a) What is 'secondary production'? (1 marks)
- (b) Develop your understanding on decomposition process which consists of 3 processes: leaching, fragmentation and chemical alteration. (9 marks)
- Q5** (a) State the 'theory of natural selection'. (2 marks)
- (b) Examine the process of natural selection in Peppered moth, *Biston betularia*. (10 marks)
- (c) Define 'cohort' in population regulation. (1 mark)
- (d) Identify **TWO (2)** types of life table. (2 marks)
- TERBUKA**
- Q6** (a) Show **THREE (3)** predictions on the theory of Island Biogeography. (6 marks)
- (b) Define 'metapopulation' and briefly explain it. (4 marks)

- END OF QUESTIONS -

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Progressive Loss of Energy in Food Chain

Figure Q2(b)