TECHNICAL UNIVERSITY OF MOMBASA

Faculty of Applied & Health Sciences

Department of Environment & Health Sciences

University Examination for the Degree of Bachelor of Science in Marine Resource Management

BSMR 13S/YEAR 3/SEMESTER 2

Code: AES 4311: ECOLOGICAL AND EVOLUTIONARY PHYSIOLOGY PAPER 1

SEMESTER EXAMINATION

SERIES: MAY/2016

TIME: 2HRS

Instructions to Candidates

This paper consists of FIVE questions

Answer question ONE (COMPULSORY) and any other TWO questions

This paper consists of one printed pages

QUESTION ONE (30 MARKS)

a) (i) Define evolution (1 mark)

(ii) Differentiate between small-scale and large-scale evolutions (4 marks)

b) (i) State the main causes of evolution (2 marks)

(ii) What are the major impacts of random genetic drift on the evolution of small populations (3 marks)

c) (i) Define physiology (1 mark)
(ii) List the processes that bring genetic characteristics in populations, and also over geological time may account for the formation of new species (4 marks)

d) (i) Define the term evolutionary physiology (1 mark)
(ii) Briefly explain the causes of mutations in populations (4 marks)

e) (i) What is photosynthesis? (1 mark)
(ii)Briefly explain how the products of photosynthesis are formed (4 marks)

f) (i) Name the 4 divisions of the Plant Kingdom that are characterized by naked seeds (4 marks)
(ii) Which group represents the Angiosperms or flowering plants in the marine environment (1 mark)

QUESTION TWO (20 MARKS)

Fish species make up almost half of the present number of vertebrates on earth. Discuss this evolutionary success over other vertebrates (20 marks)

QUESTION THREE (20 MARKS)

In fish feeding and nutrition, the next fundamental stage after prey capture is food processing in the alimentary tract.

i. Briefly discuss the ultrastructure of the alimentary tract (15 marks)
ii. Briefly discuss the characteristics and function of the esophagus (5 marks)

QUESTION FOUR (20 MARKS)

Describe the processes of food detection and prey capture stages of nutrient acquisition in fishes (20 marks)

QUESTION FIVE (20 MARKS)

Discuss the composition and characteristics of food components in fish feeding and nutrients (20 marks)