



"Investing in Africa's Future"

**COLLEGE OF SOCIAL SCIENCES, THEOLOGY,
HUMANITIES AND EDUCATION**

**HES322 ADVANCED STUDIES IN HYDROLOGY AND BIOGEOGRAPHY
END OF FIRST SEMESTER EXAMINATIONS**

NOVEMBER/DECEMBER 2018

LECTURER: Dr D. Mlambo

DURATION: 3HRS

GENERAL INSTRUCTIONS TO CANDIDATES

1. Do **NOT** write your name on the answer sheet
2. Answer **THREE** questions only
3. Question **1** in Section A is **Compulsory**
4. Answer any **TWO** questions from Section B
5. Begin your answer for each question on a new page
6. Each question is worth a total of **25 marks**
7. Credit will be given for neat, well-written and lucid work.

SECTION A

1. With the aid of a well-labelled diagram, explain the process of runoff leading to channel flow.

SECTION B

2. Discuss why the concepts of 'dispersal' and 'vicariance' are fundamental in the study of geographic distribution of organisms.
3. Citing specific examples, demonstrate how the following factors limit species distribution:
 - a) Physical environment [9 marks]
 - b) Disturbance [8 marks]
 - c) Biological interactions [8 marks]
4. a) Illustrate how the unit hydrograph can be used to predict storm events [22 marks]
b) State any three limitations of the unit hydrograph when used as a predictive tool [3 marks]
5. Analyse the usefulness of the theory of island biogeography in understanding species distribution in forest fragments.

End of Examination Paper