JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE & TECHNOLOGY

SCHOOL OF BIOLOGICAL AND PHYSICAL SCIENCES

UNIVERSITY EXAMINATION FOR THE DEGREE OF BACHELOR OF EDUCATION SCIENCE WITH IT

3RD YEAR 2nd SEMESTER 2018/2019 ACADEMIC YEAR

MAIN CAMPUS - REGULAR

COURSE CODE: **SBT 308**

COURSE TITLE: **ECOPHYSIOLOGY**

EXAM VENUE: **LAB 12** **STREAM: (BED)**

DATE: 30/04/2019 **EXAM SESSION: 12.00-2.00PM**

TIME: 2 HOURS

Instructions:

1. **Answer ALL questions in Section A and Any two questions in Section B**
2. **Candidates are advised not to write on question paper**
3. **Candidates must hand in their answer booklets to the invigilator while in the examination room**

SECTION A: SHORT ANSWER QUESTIONS (30 MARKS)

1. Illustrate the behavior of cell ψ, π and p when water diffuses across the membrane into a cell. (3marks)
2. Using the Tissue-Volume method, describe how you can determine the water potential of a plant leaf. (3marks)
3. Describe how you can use a pressure chamber to determine the osmotic potential of a plant tissue. (3marks)
4. Distinguish between desiccation avoidance and desiccation tolerance in plants, giving examples in each case. (3marks)
5. Describe what "Halophytes" are and explain how they are adapted to their extreme environments. (3marks)
6. i) Distinguish between tracheids and vessel elements. ii) Explain how their structures enable them perform their functions. (3marks)
7. With an illustration, explain why increasing environmental pollution is bringing much more attention to the toxic effects of booth essential and non-essential elements. (3marks)
8. State the function of the following minerals in plants and their deficiency symptoms
   (a) P (b) Mg (c) Mo (3marks)
9. Explain what "Xerophytes" are and list four key adaptations to their environment. (3marks)
10. Distinguish between ecto- and endo-mycorrhizal hyphae. (3marks)

SECTION B: ESSAY QUESTIONS (40 MARKS)

11. Discuss the properties of water and their relevance to life conditions. (20 marks)
12. Discuss Nodulation of roots and the process of nitrogen fixation in plant roots. (20 marks)
13. Discuss the ascent of sap in plants. (20 marks)
14. Discuss the mechanisms of ion uptake into the plant cell. (20 marks)