JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY

SCHOOL OF AGRICULTURAL AND FOOD SCIENCES

THIRD YEAR SECOND SEMESTER UNIVERSITY EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN SOIL SCIENCE 2019/2020 ACADEMIC YEAR

REGULAR

COURSE CODE: ALS 3325

COURSE TITLE: Soil Contamination and Remediation

EXAM VENUE: **STREAM: BSc. (Soil Science)**

DATE: **EXAM SESSION:**

TIME: 2 HOURS

Instructions:

1. **Answer ALL questions in section A and ANY other 2 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 [30 MARKS]

Answer ALL questions from this Section.

1. Define the following terms with examples:
   a. Environment **(2 Marks)**
   b. Contaminant **(2 Marks)**
   c. Biosorption **(2 Marks)**
   d. Bioleaching **(2 Marks)**

e. Detoxification **(2 Marks)**

2. List at least 5 classifications of potential soil contaminants **(5 Marks)**
3.
   a) Define the term bioremediation **(2 Marks)**
   b) Discuss FOUR advantages of bioremediation techniques **(4 Marks)**
   c) Outline the soil conditions that favor the biodegradation of soil contaminants by soil microorganisms **(5 Marks)**
4. Discuss the fate of contaminants in the soil **(4 Marks)**

SECTION B [40 MARKS]

Answer ANY TWO questions from this Section.

5. a). Define the term phytoremediation **(3 Marks)**
   b). Discuss the different types of phytoremediation mechanisms **(12 Marks)**
   c). Discuss the five types of physical remediation **(5 Marks)**

6. Discuss the detrimental effects of agrochemicals to the environment **(20 Marks)**
7. Discuss the transport mechanisms and loss pathways of contaminants in the soil **(20 Marks)**