****

**JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY SCHOOL OF SPATIAL PLANNING**

**UNIVERSITY EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN WATER RESOURCE AND ENVIRONMENTAL MANAGEMENT**

**SEMESTER2 2016/2017 ACADEMIC YEAR**

**CENTRE: MAIN CAMPUS**

**COURSE CODE: PWE 3321**

**COURSE TITLE: SOIL AND WATER CONSERVATION MANAGEMENT**

**EXAM VENUE: LAB 5 STREAM: SPATIAL PLANNING**

**DATE: 2/05/17 EXAM SESSION: 9.00 – 11.00 AM**

**TIME: 2 HOURS**

**Instructions:**

1. **Answer question 1 ( compulsory ) and ANY other 2 questions.**
2. **Candidates are advised not to write on the question paper.**
3. **Candidates must hand in their answer booklets to the invigilator while in the examination room.**

**QUESTION ONE**

1. Discuss the following types of soils in Kenya and state where they occur
2. Nitisols. (5 marks)
3. Vertisols. (5 marks)
4. Discuss the predominant types of soils in semi-arid regions (Northern and North-Eastern Kenya). (5 marks)
5. Discuss the overview of Kenya precipitation patterns. (5 marks)
6. Discuss the overview of Kenya landscapes. (10 marks)

**QUESTION TWO**

1. Discuss the following factors affecting erosion by water:
2. Climatic factors. (5 marks)
3. Soil properties. (5 marks)
4. Explain the mechanics of raindrop erosion. (4 marks)
5. Explain the following forms of water erosion:
6. Sheet erosion including an equation for determining energy of sheet erosion.

(3 marks)

1. Rill erosion. (3 marks)

**QUESTION THREE**

1. Discuss factors affecting wind erosion. (10 marks)
2. Discuss the control of wind erosion on grazing lands. (5 marks)
3. Discuss the development processes of gully erosion. (5 marks)

**QUESTION FOUR**

1. Discuss control of deep and narrow gullies. (5 marks)
2. Discuss agronomic soil conservation measures. (5 marks)
3. Discuss soil conservation strategies for ecosystem approach. (5 marks)

**QUESTION FIVE**

1. Discuss the objectives of watershed management. (5 marks)
2. Discuss various types of drainage systems. (5 marks)
3. Discuss design considerations of siltation ponds. (6 marks)
4. Describe a method for measuring soil erosion in a small size runoff plot test.(3 marks)