



**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
SEMESTER 2016/2017 ACADEMIC YEAR**

CENTRE: MAIN CAMPUS

COURSE CODE: PWE 3321

COURSE TITLE: SOIL AND WATER CONSERVATION MANAGEMENT

EXAM VENUE:

STREAM: SPATIAL PLANNING

DATE:

EXAM SESSION:

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

- (a) Discuss the following types of soils in Kenya and state where they occur
 - i. Nitisols. (5 marks)
 - ii. Vertisols. (5 marks)
- (b) Discuss the predominant types of soils in semi-arid regions (Northern and North-Eastern Kenya). (5 marks)
- (c) Discuss the overview of Kenya precipitation patterns. (5 marks)
- (d) Discuss the overview of Kenya landscapes. (10 marks)

QUESTION TWO

- (a) Discuss the following factors affecting erosion by water:
 - i. Climatic factors. (5 marks)
 - ii. Soil properties. (5 marks)
- (b) Explain the mechanics of raindrop erosion. (4 marks)
- (c) Explain the following forms of water erosion:
 - i. Sheet erosion including an equation for determining energy of sheet erosion. (3 marks)
 - ii. Rill erosion. (3 marks)

QUESTION THREE

- (a) Discuss factors affecting wind erosion. (10 marks)
- (b) Discuss the control of wind erosion on grazing lands. (5 marks)
- (c) Discuss the development processes of gully erosion. (5 marks)

QUESTION FOUR

- (a) Discuss control of deep and narrow gullies. (5 marks)
- (b) Discuss agronomic soil conservation measures. (5 marks)
- (c) Discuss soil conservation strategies for ecosystem approach. (5 marks)

QUESTION FIVE

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