EMBU UNIVERSITY COLLEGE

(A CONSTITUENT COLLEGE OF THE UNIVERSITY OF NAIROBI)

TRIMESTER EXAMINATION 2013/2014

SECOND YEAR EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN WATER RESOURCES MANAGEMENT

AWM 206: SOIL EROSION AND SEDIMENTATION

DATE: AUGUST 7, 2014   TIME: 11.00AM – 1.00PM

INSTRUCTIONS:

Answer Question ONE and ANY Other TWO Questions.

QUESTION ONE

a) State FIVE important uses of Digital Elevation Models (DEMs) in soil erosion and sedimentation studies.   (6 marks)

b) Explain why gullies develop?   (2 marks)

c) Identify FOUR visual indicators of soil erosion by wind.   (4 marks)

d) State the FOUR socio-economic factors to be considered in soil and water conservation.

(6 marks)

e) Explain the meaning of the following terms <u>Soil erodibility</u>, <u>Tolerable soil loss</u> and <u>Sediment Delivery Ration</u> as used in soil erosion and sedimentation.   (6 marks)

f) Describe three types of sampling procedures used in measurement of sedimentation.

(6 marks)

QUESTION TWO

a) Describe FIVE ways that can lead to failure of gully control. (10 marks)

b) Explain how a soil and water conservationist can achieve riverbank protection in Embu County. (10 marks)

QUESTION THREE

(a) Describe the methods used to measure soil loss. (12 marks)

(b) A soil of bulk density 1.2 g/cm3 is eroded at a rate of 0.5 cm per year. How much soil will be lost from a hectare of land in 10 years? (8 marks)

QUESTION FOUR

(a) Describe the factors that affect soil loss from a given catchment area. (10 marks)

(b) Explain the measures that can be used to reduce/eliminate the risk of landslides in Murang'a County. (10 marks)

QUESTION FIVE

a) Supposing a maximum allowed soil loss from a tillage field is 10 t/ha-yr. The present soil loss estimated = 25.6 t/ha-y; l = 60m; s = 8%. How far should the terrace be reduced to for the soil loss required maximum of 10t/ha-y? (8 marks)

b) What are the limitations of using the USLE Model in estimating and managing soil loss from a catchment? (12 marks)

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