MAASAI MARA UNVERSITY

REGULAR UNIVERSITY EXAMINATIONS
2018/2019 ACADEMIC YEAR
SECOND YEAR SECOND SEMESTER

SCHOOL OF TOURISM & NATURAL RESOURCES MANAGEMENT
BACHEOR OF ARTS IN GEOGRAPHY

COURSE CODE: GEO 2218
COURSE TITLE: HYDROLOGY AND WATERSHED RESOURCES

DATE: 15TH APRIL 2019 **TIME: 8.30AM -10.30AM**

INSTRUCTIONS TO CANDIDATES

Answer question **ONE** and any other **TWO** questions. Two graph papers have been provided. Simple calculators are allowed in this examination.

Use illustrations where appropriate

This paper consists of 2 printed pages. Please turn over

SECTION A (ANSWER ALL QUESTIONS)

Q1

a) Explain how estimates of the following processes of hydrological cycle are obtained in the field.

i. Soil moisture **(2 marks)**

ii. Evapotranspiration **(2 marks)**

iii. Precipitation **(2 marks)**

b) Describe the main role of the Water Resources Authority in Kenya **(2 marks)**

c) Using a sketch of a hypothetical watershed, demonstrate how stream orders are allocated and how a river basin could have a stream order of 5. **(4 marks)**

d) Explain the usefulness of obtaining the following basin characteristics;

i. Concentration time **(2 marks)**

ii. Size of basin **(2 marks)**

iii. Average stream slope **(2 marks)**

iv. Areal precipitation **(2 marks)**

e) The table below gives a summary of data obtained under a bridge in a river basin of Area 950 sq. km. Study the data and answer the questions that follow;

Time (Hrs)	0, 2, 3, 4, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 26, 27
Runoff (Cumecs)	50, 50, 50, 50, 200, 1600, 3700, 2600, 1400, 900, 500, 200, 150, 75, 50, 50, 50

i. Using the graph paper provided plot the Total Runoff Hydrograph **(4 marks)**

ii. Explain the significance of ONE special characteristic of this graph **(2 marks)**

iii. Estimate the effective rainfall amount **(4 marks)**

[Total 30 marks]

SECTION B (ANSWER ONLY TWO QUESTIONS)

Q2 Discuss human impacts on the hydrological cycle. **[20 marks]**

Q3 (a)Describe what happens at a gauging station. **(4 marks)**

(b)Explain how a geography student could obtain the average annual volume of streamflow at one point along the channel of a small stream.
(16 marks)

Q4 Describe ten suitable measures that you would recommend for the control of soil erosion in farming areas that have steep slopes.
[20 marks]

Q5 A group of students wishes to study the water quality at the intake point of a water treatment plant in a catchment. This treatment plant supplied water to a nearby urban centre. Describe five water quality variables that they should consider and give a justification for each.
[20 marks]

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