



MAASAI MARA UNIVERSITY

**REGULAR UNIVERSITY EXAMINATIONS
2017/ 2018 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 WATER
RESOURCES**

DATE: 25TH APRIL, 2018

TIME: 1100 - 1300 HRS

INSTRUCTIONS TO CANDIDATES

Answer **ALL** questions in Section A, and any **THREE** questions in Section B
Use illustrations where appropriate. A simple calculator would be required
during this examination. Borrowing of any materials from other candidates
is strictly not allowed.

This paper consists of 3 printed pages. Please turn over

SECTION A (COMPULSORY)

Question One

- (a) Outline typical roles of a hydrologist in a community. **(3 marks)**
- (b) Explain how the following could impact on the health of any catchment
- i. Algal blooms **(2 marks)**
 - ii. Loss of aquatic habitat **(2 marks)**
 - iii. Water hyacinth growth **(2 marks)**
- (c) Explain how any two catchment characteristics influence streamflow hydrograph in the area. **(4 marks)**
- (d) Read the newspaper article given below by Eric Wainaina (*30th January 2018*). Give six strong arguments that support the view that the idea of the County governor would improve service delivery. **[12 marks]**

WAITITU'S PLAN TO DISSOLVE WATER COMPANIES IN COUNTY SPARKS DISPUTE.

Controversy is brewing over Kiambu Governor Ferdinand Waititu's plan to dissolve water and sewerage companies to form one giant firm. Mr Waititu has said the plan to merge the regional water firms are at in top gear. According to the governor, the move is aimed at improving service delivery. However, a section of residents have opposed the plan, saying it is ill-informed. Thika residents have threatened to move to court to challenge the plan, which Mr Waititu claims has the full backing of President Uhuru Kenyatta. They warned that the merger will compromise service delivery.

UNSTOPPABLE

But Mr Waititu has said his determination to dissolve the firms is unstoppable. He has branded those opposing the plan. The governor wants Thika, Gatundu, Githunguri, Kiambu, Karuri, Kikuyu, Ruiru-Juja, Limuru Water and Karimenu merged to form Kiambu Water and Sewerage Company. According to the governor, the individual companies have been operating as cartels by selling water to residents at exorbitant prices. "Key stakeholders were consulted (on the merger), including residents, who have raised key issues like cartels that have been selling water to them at exorbitant prices, while individual companies have failed to ensure every resident has access to clean water and reliable supply," he said. He added that managing directors of the firms agreed to effect the merger on January 19.

COERCION

But Thika manufacturers, traders and residents accused the governor of coercing the firms to agree to his plans, and failing to involve the public in the plans. Thika District Business Association chairman Alfred Wanyoike said the county should instead expand the capacity of the existing firms by putting up dams to increase water supply. "Instead of planning how to centralise the water companies, the county should think of putting up dams to increase water supply and supplement the current services," Mr Wanyoike said.

Opposing voices have also come from a section stakeholders from other regions in the county who want the county to retract on the move and come up with alternative remedy to water issues. They claim Mr Waititu's move is against the spirit of devolution of "bringing resources and services closer to the people". [Source: Eric Wainaina, Daily Nation, 30 January 2018]

[Total 25 marks]

SECTION B (ANSWER ONLY THREE QUESTIONS)

Q2

(a) With the aid of a hydrological cycle diagram, identify seven main water-related processes that usually take place in the environment. **(7 marks)**

(b) Explain the importance of any four of the processes in (2a) in Integrated Water Resources Management of a catchment. **(8 marks)**

Q3

Using a sketch and hypothetical data explain how one could estimate the average speed of water in a stream channel. **[15 marks]**

Q4

Discuss six environmental factors that lead to a reduction in the quality of ground water resources. **[15 marks]**

Q5

Explain some seven strategies that an Environmentalist could use to encourage locals people to improve soil conservation measures in catchment. **[15 marks]**

Q6

(a)What is an evaporation pan? **(3 marks)**

(b)Describe six major problems that are usually encountered while collecting rainfall data from a national rainguage network. **(12 marks)**

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