

**NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY
FACULTY OF ARCHITECTURE AND QUANTITY SURVEYING**

**DEPARTMENT OF ARCHITECTURE
BACHELOR OF ARCHITECTURAL STUDIES (HONOURS) DEGREE**

**PART III – END OF FIRST SEMESTER EXAMINATIONS – DECEMBER 2006
AAR 3103 – BUILDING SERVICES I**

Instructions

Time : 3 Hours

Answer any FOUR questions.

Question 1

- (a) Classification of water from various water sources is based on degree of contamination. Briefly explain this classification paying attention to water quality properties. [8]
- (b) A boarding school is to be built in Filabusi Communal Lands. This area lies in Region IV hence a semi-dry area. There is however an unconfined aquifer and a dam near the school. Briefly discuss how you can come up with the best source of water supply for the school from these two. [10]
- (c) Because of low rainfall normally received in the area, there is need to improve water supply to the school by rainwater harvesting. Explain how best you can accomplish this. [7]

Question 2

- (a) Discuss the systems you can use to supply water and its drainage on a 62 storey commercial building. [15]
- (b) If the cold water that is supplied to the building is rich both in permanent and temporary hardness, how will you reduce this? [10]

Question 3

- (a) A cistern on a tall building, services to supply water using the indirect method. Part of the water is supplied to the geyser.
- (i) Briefly explain how you can come with the capacity of such a cistern. [8]

- (ii) Discuss factors that you should consider in locating the geyser as well as the cistern in this set up.
- (b) What are most likely problems to be encountered if the water is not soft. [10]

Question 4

- (a) Briefly discuss the drainage of waste water from a 25 storey building with 4 water closets, 4 sinks, 6 water hand wash basins and 1 urinal in each floor. [12]
- (b) If the discharge unit values for water closet, sink, water hand wash basin and urinals respectively are 18, 20, 3 and 5; determine the diameter of the vertical stack that should drain a combined soil/waste water from the building in question 4 (a) if on the market following stack exist. [5]

Internal Diameter	60	80	90	100	150	150
Discharge unit value	80	200	350	800	2500	6500

- (c) If the building in question 4 houses 50 people and that adjacent to it are four similar buildings, design a septic tank that should serve the 5 buildings. [10]
- (5) (a) Briefly write notes on drainage on roof tops and areas around the building. [12 ½]
- (b) Discuss garbage collection from building and disposal methods used on garbage. [12 ½]