

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

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

**PART III – SUPPLEMENTARY EXAMINATIONS – JULY 2007
AAR 3103 – BUILDING SERVICES I**

Instructions

Time : 3 Hours

Answer any FOUR questions.

Question 1

- (a) Briefly discuss either the quality of water you can assess before selecting a service of water supply. [10]
- (b) Discuss the problems associated with hard water. [7]
- (c) (i) The process in which water is purified is through the following stages; removal of large particles by use of grid, settlement and sedimentation of fairly small particles and finally chlorination. Explain briefly how small particles (colloids) are removed during this process and why it is necessary to chlorinate. [8]

Question 2

- (a) Briefly explain how both direct and indirect cold water can be used to supply cold water in the building. [12]
- (b) With 80mm; 100mm; and 200mm size pipes available on the market, calculate the diameter of the water main to supply twenty five 21mm diameter short branch pipes. [5]
- (c) Discuss how you can select size of a cistern for a 30 storey building. How will you locate such a cistern on the building. [8]

Question 3

- (a) (i) Briefly discuss the methods that are used to drain soil/waste water from the building. [7]
- (b) (ii) Discuss the indirect hot water supply system. How is this system better

than the direct approach. [5]

- (c) Four draw coop points which are more that 8 metres away from the hot water supply boiler, what unit be the best method of delivering waste to these points. How does the system maintain the water fairly hot throughout? [5]

Question 4

- (a) write brief notes or garbage removal methods in buildings. [12 ½]
- (b) Explain refuse disposal methods that are in use and give an account of how some of the methods can be helpful to the society. [12 ½]

Question 5

- (a) Estimate the hot water storage for a clinic having the following Appliances; 40 showers 20 wash basins 40 sinks, 4 urinals. Use table I below:

Table 1

Appliance	Capacity (litres)
Basin	1,5
Shower	15
Sinks	5
Washing Machine	70

During peak hours basins are be used 5 times, showers 6 times and sinks 3 times. [10]

- (b) Discuss drainage of rain water on roof tops and around the buildings. [15]