NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY
FACULTY OF THE BUILT ENVIRONMENT

DEPARTMENT OF ARCHITECTURE
AAR 3203 BUILDING SERVICES II
BACHELOR OF ARCHITECTURAL STUDIES (HONOURS) DEGREE
BACHELOR OF QUANTITY SURVEYING (HONOURS) DEGREE
2010-2011 ACADEMIC YEAR
PART III SECOND SEMESTER EXAMINATIONS – MAY 2011

Instructions ***Time: 3 Hours***

Choose one part from question 1 and answer the rest.
Use freehand sketches and illustrations where appropriate in your answers.

QUESTION 1

"Since air conditioning is both expensive to install and maintain, it is best avoided if possible. This may possibly be achieved by careful building design."
Explain, with aid of sketches where possible, design methods that you can use in various situations / building types to maximise internal environmental comfort without use of mechanical ventilation or air conditioning systems. [25 marks]

OR

"If air conditioning is the only answer to adequate comfort in a building then the main choice of system can be considered"
Assess the pro and cons of the following air conditioning systems in a bid to make the right choice in any given situation:

i. Central plant system
ii. Self contained room units
iii. Air and water system / fan coil units. [25 marks]

QUESTION 2

a) Criticise the use of a refuse chute as a means of disposing solid waste in tall buildings. [10 marks]

b) Discuss the following waste management systems and also relate their suitability to our Bulawayo community:

i. Landfill
ii. Incineration
iii. Recycling [15 marks]

QUESTION 3

Authorities of a newly developing mission school have approached you to advise on and design the most appropriate sewage treatment plant for the school. All they have indicated is that the targeted

population is 600 inclusive of staff members and farm workers and that the waste and effluent will be used to aid farming activities at the mission.

a) Clearly state all your assumptions and design the required system. [15 marks]

b) Explain to the authorities how the system will operate. [10 marks]

QUESTION 4

a) Distinguish between soil and waste water. [4 marks]

b) Differentiate with sketches a Wash-down WC from a Double seal siphonic WC pan. [6 marks]

c) Your youngster who has visited you has marvelled why Nust administration ablutions do not have cisterns attached to WC pans. Give a satisfactory lecture to the boy. [6 marks]

d) State factors that determine the size of gutters of any given building. [4 marks]

e) Sketch the cross sections of channels that can be used for storm water drainage. [5 marks]

END