

**NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY**  
FACULTY OF THE BUILT ENVIRONMENT

**DEPARTMENT OF ARCHITECTURE**

BACHELOR OF ARCHITECTURE (HONOURS) DEGREE

**2010-2011 ACADEMIC YEAR**

PART III – SUPPLEMENTARY EXAMINATIONS – AUGUST 2011

**AAR 3203 – BUILDING SERVICES II**

**Instructions**

***Time: 3 hours***

*Choose any four questions.*

*Number all sheets*

**QUESTION ONE**

- (a) Discuss the most suitable methods of collecting refuse in the following circumstances/environments:
- (i) Industrial areas
  - (j) High density suburbs
  - (k) Tall buildings in town. [15]
- (b) Calculate the gradient required for a private sewer flowing half full bottle at a velocity of 0.8m/s. [10]

**QUESTION TWO**

- (a) Explain the following terms used in waste disposal:
- (i) Soil water
  - (ii) Anti – siphon pipe
  - (iii) Sewer
  - (iv) Waste water
  - (v) Sewerage [10]
- (b) Calculate the diameter of a main surface water drain for an asphalt covered car park measuring 100x75m. Assume the following:
- Rainfall intensity – 50mmk/hr
  - Velocity – 0,8m/sec
  - Impermeability factor – 60 [15]

### **QUESTION THREE**

(a) Discuss the following causes to lose of seals in traps.

- (i) Induced siphonage
- (ii) Wavering alt
- (iii)Capillary action
- (iv)Self siphonage
- (v) Momendum (15)

(i) On each of the above advice on measures that can be taken to harness the problem. (10)

[25]

### **QUESTION FOUR**

- Underground drainage systems from buildings are categorised into three (3) . Discuss any two (2). [25]