



**NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY**

**FACULTY OF BUILT ENVIRONMENT**

**DEPARTMENT OF ARCHITECTURE**

**BUILDING SERVICES II**

**AAR 3203**

**Supplementary Examination Paper**

**July 2016**

This examination paper consists of 2 pages

**Time Allowed: 3 hours**

**Total Marks: 100**

**Examiner's Name: R. Muvungani**

**INSTRUCTIONS**

1. Answer all questions
2. Use of calculators is permissible

**MARK ALLOCATION**

<b>QUESTION</b>	<b>MARKS</b>
1.	25
2.	25
3.	25
4.	25
<b>TOTAL</b>	<b>100</b>

### QUESTION ONE

- a. Differentiate ventilation from air conditioning [5]
- b. Explain how sound attenuation is achieved in air conditioning ducts [10]
- c. Discuss the benefits of air conditioning a building [10]

### QUESTION TWO

- a. Critique the use of a refuse chute as a means of disposing solid waste in tall buildings. [15]
- b. Discuss problems that are associated with sewage treatment systems [10]

### QUESTION THREE

- a. A 375mm diameter sewer pipe with 15mm wall thickness has an invert level of 54.665. If the ground level is 56.940, calculate the pipe's:
  - i. Soffit level [4]
  - ii. Depth from ground level [3]
  - iii. Lower depth [3]
- b. Critique the use of the following pipes in underground drainage systems:
  - i. Vitrified clay pipes [5]
  - ii. Concrete pipes [5]
  - iii. Cast iron pipes [5]

### QUESTION FOUR

- a. Distinguish between soil and waste water. [5]
- b. Differentiate with sketches a Wash-down WC from a Double seal siphonic WC pan. [20]