

NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY
FACULTY OF THE BUILT ENVIRONMENT
DEPARTMENT OF ARCHITECTURE
BACHELOR OF ARCHITECTURAL STUDIES (HONOURS) DEGREE
2013 – 2014 ACADEMIC YEAR
PART 111 – SECOND SEMESTER EXAMINATIONS – MAY 2014
AAR 3203 BUILDING SERVICES II

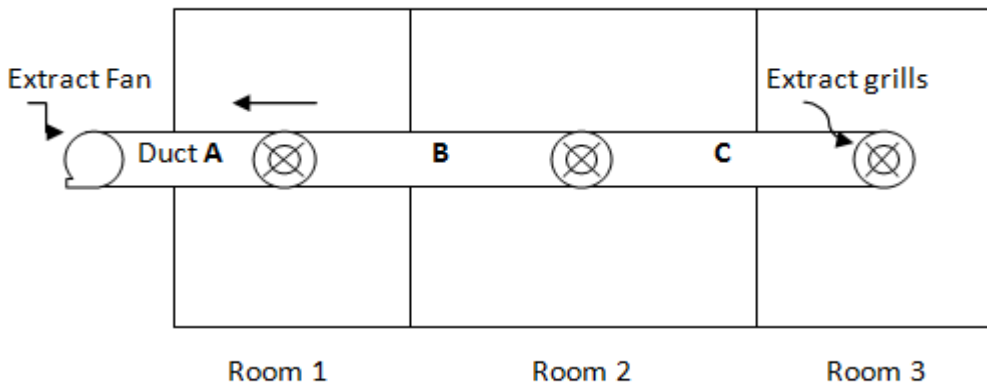
Instructions

Time: 3 Hours

- Choose any four questions.
- Use sketches where appropriate.

QUESTION 1

- a. Explain the factors that govern the selection of the most appropriate air-conditioning system for a given building or project. (10)
- b. The diagram below shows natural inlet mechanical extract ventilation system for a particular building. From the information given determine the diameters of duct A, B and C given that the average velocity of air flow through duct A is 4m/s.



Room	Room air change	Room Dimensions
1	5	8x10x4
2	3	12x10x4
3	6	7x10x4

(15)

[25]

QUESTION 2

- a. Your client, who has a household of 10 pupils and owns an unserviced plot in Rangemore of size 100x100m, requires a private sewage disposal system. Considering that the loam soils in the area are suitable for any disposal system, design the most appropriate system for this client (justifying your choice) and explain to him/her how it works. (15)
- b. Discuss factors that you would consider for the proper siting of this disposal system. (10)
- [25]**

QUESTION THREE

- a. Explain the following terms that are associated with room acoustics
- i. Active acoustics
 - ii. Echoes
 - iii. Flutter
 - iv. Reflection
 - v. Passive acoustics (5)
- b. Describe various measures that a designer can consider for good acoustics in a multi-purpose hall. (20)
- [25]**

QUESTION 4

- a. Describe any two soundness tests that can be done on underground drainage systems using different techniques. (20)
- b. Outline the conditions under which a single stack system can be used according to the model building by-laws. (5)
- [25]**

QUESTION 5

- a. Explain the importance of service ducts in buildings (5)
- b. With the aid of sketches detail various types of these service ducts. (20)