

NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY
FACULTY OF THE BUILT ENVIRONMENT

DEPARTMENT OF ARCHITECTURE
AAR 3203 BUILDING SERVICES II

PART III BACHELOR OF ARCHITECTURAL STUDIES (HONOURS) DEGREE
PART II BACHELOR OF QUANTITY SURVEYING (HONOURS) DEGREE
2011-2012 ACADEMIC YEAR
SECOND SEMESTER EXAMINATIONS – MAY 2012

Instructions

Time: 3 Hours

Answer Question 1 and any other three.

Use sketches and illustrations where appropriate in your answers.

QUESTION 1

Your client has acquired a single storey (brick under tile/asbestos) house which is close to a busy road and noisy school grounds. He wants to use the building as a recording studio but the acoustical properties of the building are not good enough for the intended purpose. Having been tasked to make design changes to the building fabric for it to suite the intended use, outline the changes you would make in terms of materials, building components and construction techniques.

[25]

QUESTION 2

- a) A room measuring 15x10x4 requires ventilation by means of a ductwork to provide 7 air changes per hour. If the average velocity of air in the duct is 5m/sec, calculate the diameter of the main circular duct for the room. (10)
- b) Explain any three mechanical ventilation systems that can be incorporated to improve internal environmental conditions of a building. (15)

[25]

QUESTION 3

- a) Your client is considering constructing a multi storey building with a refuse chute but is a bit sceptic about this disposal system highlighting problems of noise and foul smell from internal wall contaminations among others. Suggest chute design options that can aid meeting this client's needs. (12)
- b) Make an assessment of the two most common underground drainage systems (separate and combined) and advise on the best system that urban local authorities can enforce to their communities. (13)

[25]

QUESTION 4

You have been contracted to carry out field tests on two projects, one is a newly laid drain and the other is an old existing sewer line. Discuss the most appropriate tests for these two projects. [25]

QUESTION 5

- a) Design a septic tank with a biological filter to serve a farm compound of 50 persons, assuming the following factors:
 - depth of filter is 1.8m
 - filter to be circular
 - depth of humus tank to be 1m with length twice breadth.
- b) What factors should be taken into consideration when sitting the location of the septic tank.
- c) Discuss the benefits of using the septic tank to this community. [25]

END