

**The University of Melbourne
Semester 2, 2005**

Faculty of Architecture, Building and Planning

Subject Number: 702-412

Subject Title: Advanced Services

Exam Duration:2hours

Reading Time:15 mins

This paper has3 pages

Authorised materials:

No lecture notes or other material may be brought into the examination.
Electronic calculators are not required. Drawing instruments may be used in the examination.

Instructions to Invigilators:

This exam paper may be removed from the examination room at the completion of the exam.

Instructions to Students:

Candidates should attempt three (3) questions. One from Part 1 and two from Part 2

Lodging of paper with Baillieu library:

This exam paper can be lodged with the Baillieu Library after the completion of the examination period.

Part 1
YOU MUST ANSWER THIS QUESTION

Question 1. (40 %)

Describe in detail the various elements of a ducted air-conditioning system for a commercial office building incorporating both central and remote air handling units. Your answer must include:

- A description of the requirements of the system in terms of space, structure, location, and maintenance.
- A description of a typical distribution system explaining location and sizing of ducts and registers.
- An explanation of the advantages and disadvantages of this type of system.
- A description of the overall effect on building design of this type of system.

Part 2

YOU MUST ANSWER TWO QUESTIONS FROM THE LIST BELOW

Question 2 (30 %)

Indoor air quality has been called 'the biggest challenge facing Facility Managers' in workplace environments. Explain fully the relationships between indoor air quality and the incidence of sick building syndrome and building related illness.

Question 3 (30 %)

According to the Intelligent Building Institute, an Intelligent Building is one that provides a productive and cost effective environment through optimisation of its four basic elements – structure, systems, services, and management – and the inter-relationship between them. Using examples, describe fully how Intelligent Buildings work in practice.

Question 4 (30 %)

Over the past decade or two there has been an expansion of services offered in respect of Post Occupancy Evaluation of buildings. Explain fully whether the use of such services is justified and evaluate some of the methodologies and techniques of evaluation adopted by professionals for clients.

Question 5 (30 %)

Australia along with other westernized countries, has embraced the concept of ecologically sensitive design in buildings through the development of assessments such as Greenstar and AGR energy rating. Discuss in detail, using examples, the benefits and shortcomings of these 'off the shelf' environmental assessments.

Question 6 (30 %)

Describe a range of different building types (eg school, hospital) that would be likely to incorporate each of the following motorised vertical transportation systems. In each case, explain reasons for your choice connecting design requirements of the building type with requirements or features of the system.

- i. Hydraulic Lift
- ii. Traction Lift
- iii. Escalator

Question 7 (30 %)

With reference to the Second Law of Thermodynamics, explain in detail at least two strategies for reducing metered energy consumption in a commercial office building.

Question 8 (30 %)

With reference to principles of thermal comfort, explain how ESD features such as displacement ventilation and/or chilled ceiling panels may provide improved thermal comfort conditions when compared to a typical ducted air-conditioning system.

This is the end of the examination paper