

**The University of Melbourne
Semester Two 2002**

Faculty of Architecture, Building and Planning

Subject Number: 702 412
702 654

Subject Title: Advanced Services
Advanced Services (Masters)

Student Number

Reading Time: 15 minutes

Exam Duration: 2 hours

This paper has **3 pages**

Authorised Materials:

No materials other than writing materials

Instructions to Invigilators:

Students require script books.
The examination paper may be removed from the examination room at the completion of the exam period.

Instructions to Students:

Answer all questions
Marks total 100

**ANNOTATED FREEHAND SKETCHES SHOULD BE USED WHENEVER
APPROPRIATE TO ILLUSTRATE ANSWERS.**

Written responses should be concise and to the point.

Paper to be held by Baillieu Library after the completion of the examination period.

QUESTION 1 HEALTHY BUILDINGS 20 MARKS

Explain your understanding of building related illness and sick building syndrome arising in airconditioned environments. Include in your answer an explanation of cause/ suspected cause and recommended solutions.

QUESTION 2 INDUSTRIAL HEATING AND COOLING 20 MARKS

Explain your understanding of the key issues and various suitable solutions to heating and cooling industrial buildings. Include in your answer an explanation of the psychrometrics applicable to your recommended approach to cooling.

QUESTION 3 VERTICAL TRANSPORTATION 20 MARKS

Explain

- (i) key selection criteria providing "quality" and "quantity".
- (ii) the essence and anatomy of traction systems including safety features. Your description should cover 1:1 roping and conventional machine room arrangements.
- (iii) the essence and anatomy of hydraulic systems.
- (iv) the fundamental features of and applications for escalator systems.

QUESTION 4 REFRIGERATION/AIRHANDLING 20 MARKS

- (i) Schematically describe the basic vapour/compression refrigeration cycle as represented in a packaged window or through-the-wall unit.
- (ii) Explain points you would make for and against the use of absorption refrigeration equipment.
- (iii) Explain the essential features of a fan-coil airhandling system where central refrigeration and boiler plant serves remotely located airhandling packages.

QUESTION 5**SUSTAINABLE ENERGY AND SERVICES
INTEGRATION CASE STUDIES****20 MARKS**

- (i) One of the objectives of the 60L building in Melbourne is to reduce energy consumption and greenhouse gas emissions. In relation to the services of this commercial office building describe initiatives that have been put into place in order to achieve satisfactory thermal comfort for the occupants and discuss the principles involved.
- (ii) Explain the overriding design issues addressed and solutions adopted for services distribution and accommodation in
 - a. The Herman Miller "Action" factory. Include an explanation of the toilet facilities concept.
 - b. The Salk Institute. Include general explanation of the interstitial services floor concept.

END OF EXAMINATION