

**The University of Melbourne
Semester Two 2003**

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 WHEREVER 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**VERTICAL TRANSPORTATION****8 MARKS**

Your client wishes to develop an exclusive three-storey block of apartments. The apartments will require a single lift; notwithstanding their exclusive nature, simplicity and low capital cost of the installation are of great importance. The permanent population to be served will total about a dozen individuals in a location with deep rock impacting the entire site. Explain the salient features of the vertical transportation arrangement you would recommend in the circumstances.

QUESTION 2**SUSTAINABILITY****20 MARKS**

As a property developer/builder or architect with experience in environmentally sustainable design (ESD) outcomes for office buildings in central business locations you are approached for advice by a potential client considering a sustainable multistorey investment in the Melbourne central business district. The client is without any ESD background. Concisely explain

- (a) the rationale and drivers associated with ESD
- (b) the generic range of ESD possibilities that you would address in an initial presentation to the client.

QUESTION 3**INDOOR AIR QUALITY IN CONVENTIONALLY AIRCONDITIONED ENVIRONMENTS****18 MARKS**

- (a) Describe aspects of airconditioning system and building design applying to a large office building that you would pay particular attention to in order to provide optimum long-term indoor air quality.
- (b) Explain what is meant by the term Sick Building Syndrome.

QUESTION 4**REFRIGERATION AND COOLING****20 MARKS**

- (a) Schematically describe vapour compression refrigeration supplying cooling effect to remotely located air handling equipment and where heat is rejected by means of cooling tower plant. Include in your answer an explanation of the function of the cooling tower plant.
- (b) Explain your understanding of
 - (i) the term **heat pump**
 - (ii) the psychrometrics of conventional evaporative cooling
 - (iii) the term **indirect evaporative cooling**

QUESTION 5**SERVICES INTEGRATION****17 MARKS**

Describe the salient features of the interstitial services floor concept applied to hospital/laboratory and other complex building types. Include in your answer the reasons for and key features of arrangements put in place at:

- (i) the Salk Institute Laboratories
- (ii) the Centre Georges Pompidou

QUESTION 6**HEATING AND DISTRICT SERVICES****17 MARKS**

- (a) Explain your understanding of the concept of district services applicable to major property developments. Include the essence of combined heat and power arrangements in your answer.
- (b)
 - (i) describe the salient features of the 'diverent' jet-air technique applicable to the heating and cooling of industrial and like buildings
 - (ii) explain your approach to the accommodation of boiler and associated plant in multistorey buildings.

END OF EXAMINATION