



Mid Year 2005 Final Examination

University of South Australia

Student ID:		Student Name:	
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DIVISION OF INFORMATION TECHNOLOGY, ENGINEERING & THE ENVIRONMENT
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SCHOOL OF NATURAL & BUILT ENVIRONMENTS
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Subject Area:	CIVE	Catalogue Number:	2002
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CONSTRUCTION 2N

Examination Day: Monday	Examination Date: 20th May 2005
Examination Time: 2pm	Length of Exam: 3 Hour Exam time preceded by 10 minutes of reading time. Note : Entext students 3.5 Hour Exam time preceded by 10 minutes of reading time.

Examination Venue:	Ridley Centre
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Instructions to Candidates

INSTRUCTIONS TO CANDIDATES:

- This exam is worth 50% of the total course marks
- Attempt to answer **five (5) questions** only. Note that Question 6 provide alternative part questions for you to answer.
- Feel free to illustrate any of your answers with carefully drawn sketch details, suitably annotated.
- All questions are of equal value
- No reference materials are allowed.
- State any assumptions made

EXAMINER: Sam Baroudi (Tel. 8302 2234)
EXAM REVIEWED BY : Stefan Hornlund



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Question 1

(20 Marks)

You have been appointed as the Site Manager on a large industrial development north of the city. The new building is over 5000 square metres in area and consists of a factory intended to manufacture car components. Also note that the development is in close proximity to residential dwellings. Discuss the types of items that the Site Manager might need to address when doing their preliminary builder's site investigation for this project (ie. prior to commencement of construction) as well as the issues and concerns involved in each.

Question 2

(20Marks)

The Portal Frame structural system is quite commonly used in Australian building projects. Discuss your understanding of this system in relation to the following.

- What type of building would typically incorporate a portal frame system and why?
- Discuss the materials and members used in its construction?
- Discuss how lighting costs can be minimised in buildings incorporating portal frames? Illustrate with diagram(s).
- Discuss considerations in respect to metal roof and wall claddings as applied to this system, ie. construction aspects.

Question 3

(20 Marks)

The decision on whether to use Tilt-up Wall construction or Precast Wall construction for an industrial or commercial building can depend largely on the situation at hand. Note that they are both good systems that are commonly used within the building industry. Discuss these walling systems in reference to the following.

- What are the major differences between these two walling systems?
- Choose one of the walling systems and discuss its advantages over the other.
- Would the two erection processes be similar? Explain why by referring to the processes involved.
- Which system would you use to clad a multistory building in the city giving your reasons why?

Question 4

(20 Marks)

Construction of suspended concrete floors using either temporary formwork or permanent formwork is normally a consideration for the building's designers. The option chosen ultimately affects the way in which a building is constructed. Discuss the construction of these floors in respect to the following.

- Can these floor construction techniques be used in one way and two way spanning slabs? Explain your answer.
- Discuss the considerations to be made when using temporary plywood formwork for suspended floors.



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- c. Outline the typical construction for a floor using permanent steel deck formwork.
- d. What is your opinion of precast panels in suspended floor construction? What do you understand about how they are part of the floor construction process.

Question 5

(20 Marks)

Multistorey buildings have many aspects that need careful attention during the design and construction phases. To not do so could lead to various problems as well as the loss of money on these projects. Discuss the following questions in relation to various aspects involved in this type of work.

- a. What do you understand by the term “underpinning” particularly in relation to city buildings that are built next to each other?
- b. Outline the processes involved in providing for a steel framed structure, ie. supply and erection.
- c. Explain how embracing the concepts of simplicity, standardisation and symmetry can create economical solutions in these types of buildings.
- d. What is “curtain walling” in multistorey construction and does it have any disadvantages to consider when proposing its use?

Question 6

(20 Marks)

Answer only four (4) of the following questions in respect to industrial/commercial buildings. All are of equal value. Clearly indicate which questions are being answered.

- a. Discuss aspects of maintaining flexibility in any given floor plan whilst considering the economic impact in doing so.
- b. What does the acronym “LVL” stand for when discussing timber? Discuss what you know about this product.
- c. What is the area between the ceiling and the underside of a suspended floor known as? What type of items might be found in this area and what are some of the considerations to be made in respect of them?
- d. Nominate three items that could be considered as “temporary works” and briefly describe the purpose of each.
- e. If the client asked you for advice on how to expedite a project or about ideas involving rapid construction what suggestions could you offer him/her?
- f. Discuss two types of roofing construction on commercial buildings making note of advantages and disadvantages.

END OF QUESTIONS