



University of South Australia

If you are required to use a calculator, please note the make and model here:

Calculator Make:

Calculator Model:

2006 Mid Year Examination

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| Student ID Number | | | | | | | | | | |
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| Family Name | |
| Given Names | |

Division of Information Technology, Engineering & the Environment

School of Natural & Built Environments

Course Name: Building Estimating 1N

Subject Area: BUIL

Catalogue Number: 2018

Examination Day: Monday

Examination Date: 26 June 2006

Examination Time: 6.30pm

Length of Exam: 2 hours (+ 10 minutes reading time)

Note: Entext students get an extra 20 minutes

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|--------------------|---------------|
| Examination Venue: | Ridley Centre |
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Instructions to Candidates

INSTRUCTIONS TO CANDIDATES:

- Attempt ALL four (4) questions
- All questions are of equal value
- State any assumptions made
- No reference materials are allowed
- Calculators are allowed
- This exam is worth 50% of the total course marks

EXAMINER: Sam Baroudi (Tel. 8302 2234)

EXAM REVIEWED BY: Tim O'Leary

Conduct in examinations

- Students are responsible for finding out their examination times and locations and for travelling to the venue. Examination times and locations are published on the University web site and advertised on the student portal. It is recommended that students arrive at least 15 minutes prior to the advertised start time.
- Students who arrive up to 30 minutes after the published start time will be permitted to enter the examination room but will not be allowed any additional time to complete the examination.
- Students who arrive more than 30 minutes after the published start time will not be permitted to enter the examination room and will receive a zero mark for that assessment.
- All students must bring with them, and display on their desk:
 - their student identification card: or
 - an alternative form of photographic identification such as a passport or driver's license. If a student does not provide acceptable photographic identification the invigilator will compare the student's likeness with University records in order to verify the student's identity;
- Where applicable, students must also display on their desk:
 - an approved disability access plan; and/or
 - an ENTEXT Card (for students who are entitled to extra time but have not been issued with an indicator on their student identification card)
- Unless otherwise specified in the course information booklet or as an agreed provision under Section 3: Moderation and Variation, a student must not take into the examination room any item with the potential to provide them or another student with an advantage, including but not limited to:
 - text books or any other book including dictionaries
 - calculators
 - mobile telephones, personal digital assistants, messaging devices or any other electronic device
 - notes, or other written documents
 - devices or personal items
 - examination answer booklets, attendance slips or scrap paper
- Any items specified as being allowed in the course information booklet must not be enhanced or tampered with in any way that provides an additional advantage to the student or any other student.

Procedures during the examination

- Every student must complete the attendance slip provided.
- The examination starting time may include a designated reading time for students. During this reading time, students are not permitted to write in the examination booklets but may complete attendance slips, fill in details required on the front cover of examination booklets, and make notes on loose-leaf paper provided. An invigilator will announce when the reading time has elapsed, after which students may write in the examination booklet.
- No student will commence writing answers until authorised by an invigilator. All students must stop writing when instructed by an invigilator. At the end of the examination all students must remain seated until all examination booklets have been collected.
- During an examination students are not permitted to speak to or communicate with any other student, or give or receive any form of assistance, academic or otherwise.

Procedures for leaving the examination room

- Students are not permitted to leave the examination room in the first 30 minutes after the published starting time or during the last 10 minutes of any examination.
- After the first 30 minutes of the examination has lapsed, a student can request to leave the examination room for a short break. When approval is given by an invigilator, the student will be supervised during the period of absence.
- Students wishing to permanently leave the examination room must hand all examination booklets to the invigilator who will endorse the booklets as correctly identifying the student. Students cannot remove any examination answer booklets, scrap paper or attendance slips from the examination room.

Breaches of examination procedures

- A breach of the examination procedures may constitute academic misconduct. Procedures are deemed to be breached even if it cannot be demonstrated that the student gained an advantage from the breach. For example, if a student takes a mobile telephone or device into the examination room but does not switch it on or remove it from their pocket, it may still constitute academic misconduct although the intent is recognised in determining an appropriate outcome.
- Breaches of the examination procedures will be recorded under Section 9: Academic Integrity of this manual whether they constitute academic misconduct or not.

Procedures for breaches that cause disruption to an examination

- Any student disrupting the examination can be instantly dismissed from the examination room at the discretion of the chief invigilator. Where dismissal is the appropriate course of action, the chief invigilator will document the incident and provide a report to the Head of School or Director: Regional Engagement or nominee.
- The Head of School or Director: Regional Engagement or nominee will investigate the incident as either:
 - academic misconduct by following the procedures for formal inquiry set out in Section 9: Academic Integrity, or
 - misconduct under Statute 7: Student Misconduct.
- Where dismissal is not deemed appropriate by the chief invigilator, the student will be permitted to remain in the examination, and clause 6.6 will apply.

Procedures for breaches that do not cause disruption to an examination

- If a breach is detected that does not cause disruption to the examination, or is assessed by the chief invigilator as not warranting dismissal from the examination room, the invigilator will tell the student that the breach has been detected and will be reported.
- The invigilator will document the incident and will provide a copy of this report to the Academic Integrity Officer at the relevant school within 5 working days of the incident.
- If the Academic Integrity Officer considers that the breach constitutes academic misconduct, they will investigate the incident by following the procedures for managing alleged academic misconduct set out in Section 9: Academic Integrity.
- If the Academic Integrity Officer considers that the breach does not constitute academic misconduct, they will provide academic counselling to the student.

Question 1

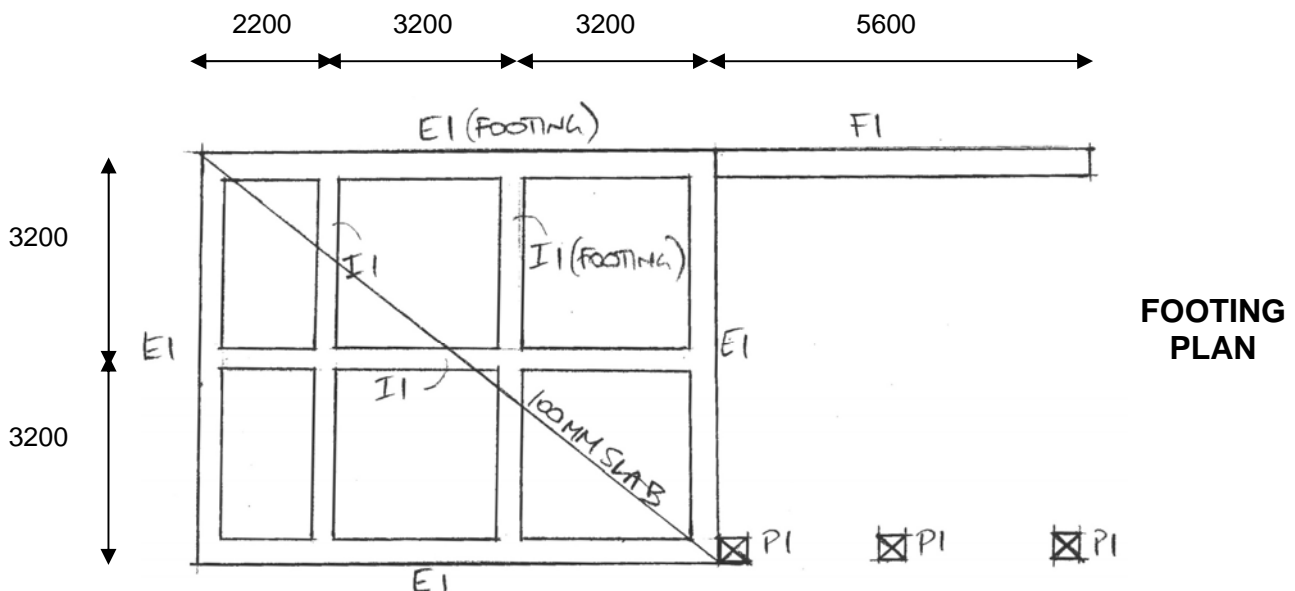
(25 Marks)

You are about to establish a new commercial construction company. It is vital that the tendering functions of your new company operate effectively. Explain typical tendering practices that would need to be adopted by you, the building contractor, to ensure that this occurs. Make reference to aspects such as the estimation of building works, tendering procedures and competitive approaches.

Question 2

(25Marks)

The drawing below represents the engineer's drawing of a proposed raft slab and associated footings in plan view. Price all concrete work requirements that you deem to be necessary to construct such works. The pricing should make allowance for all labour, materials and plant that would typically be required in this type of construction. Note that the excavated spoil from footing trenches has been specified to be removed from site. Calculate your estimate assuming that a level compacted basecourse platform will be provided by others. Use an appropriate format and show all calculations as necessary. Use the applicable rates shown on the next page.



Footings Schedule

External (E1) 300mm wide by 500mm deep with 3 x Y16 reinforcing bars top and bottom (ie. 6 in total) lapped 900mm at joins with W8 ligatures at 900mm centres.

Internal (I1) 300mm wide by 400mm deep with 3 x Y16 reinforcing bars top and bottom (ie. 6 in total) lapped 900mm at joins with W8 ligatures at 900mm centres.

Fence (F1) 350mm wide by 500mm deep with 4 x Y16 reinforcing bars top and bottom (ie. 8 in total) with W8 ligatures at 900mm centres.

Pads (P1) 400mm x 400mm x 400mm unreinforced

The floor slab is 125mm thick with F82 fabric reinforcing.

All concrete is N25 strength grade.

Applicable Rates

Concrete Works - N25 concrete supply \$130 per cubic metre; Y16 reinforcing bars \$21 per 6m length; F82 fabric \$7 per square metre; W8 ligatures \$8 each; damp proof membrane \$65 per 50 square metre roll; excavator hire \$75/hour; labour allowance \$35/hour; bobcat hire \$55/hour; truck hire (6 cubic metre capacity) \$70/hour; dump fees \$120 per load. Nominate prices for any items that you feel may be required but are not given.

Question 3

(25 Marks)

A new shopping centre is currently being tendered by the company you work for. In your capacity as the building estimator you are to provide costings for all the required works. The following items are a selection of requirements that need to be costed by you for inclusion within the tender. Price these requirements as would be typically required for such a tender, ie. Make all necessary allowances in an appropriate format. Show all calculations.

- a) Price the internal ceiling and wall linings to a series of speciality shops in the complex. There are 6 shops at 9.2 metres x 4.5 metres and 4 shops at 6.8metres x 3.5metres. All surfaces are flush finished with cornices to the room perimeters and insulation above ceilings. Ceilings are 2.7 metres high. Allow only for the lining works and assume the metal ceiling and wall frames are allowed elsewhere in the costing.

Rates: Use the following "all in rates" - supply, fix & flush wall plasterboard \$23 per square metre; supply, fix & flush ceiling plasterboard \$21 per square metre; supply & fix cornice \$7 per lineal metre; supply & fix insulation \$6 per square metre.

- b) A series of structural steel beams and columns need to be allowed for as per the engineer's requirements. The requirements include: 6 beams - 250UB31 @ 5.5metres each and 12 columns - 310UB40 (ie. UC) @ 3.2metres each. Include 15% on the overall steel weight for cleats, brackets, etc.

Rates: Apply the quoted rates: \$2800 per tonne to supply/fabricate/prime; \$500 for delivery to site; \$900 per tonne to erect which includes craneage; and a prime cost sum of \$300 for special bolts that are yet to be specified. Also allow to grout beneath column base plates at \$38 each.

- c) A brick wall is required to the western boundary. It measures 26.5 metres in length and 6.14 metres high (to top of header course). It is a solid brick wall (ie. two skins) with no openings in it. The wall is constructed in standard faced brickwork. Provide a header course on edge to cap off the top of the wall. Allow control joints at a maximum of 6 metre centres.

Rates: The following rates are to be used: face brickwork - supply \$625 per 1000 bricks, laying \$1050 per 1000 bricks; mortar & sundries \$95 per 1000 bricks; laying brick headers \$18 per metre; control joints \$8.00 per metre.

Question 4

(25 Marks)

Discuss only four (4) of the following issues in relation to estimating building works. Answers should be kept separate to each other. Clearly indicate which questions are being answered.

- a) What is the difference between a contract (ie. client) contingency and a builder's contingency in the costing of buildings? How do they operate and why are they sometimes necessary?

- b) Estimators commonly request subcontractors price a complete "tender package" in respect to their trade? Discuss what items an estimator must assess when comparing subcontractor quotations in respect to such a situation.
- c) Describe what an "addendum" is as compared to what a "variation" is. Give an example of how each could occur.
- d) Discuss how the use of computers has changed estimating practices and procedures.
- e) Discuss 3 items that an estimator needs to take note of when conducting a site visit for tender purposes?
- f) Describe the practice known as "collusion" by contractors in the tendering of projects. What is your ethical stance on the practice and why?

END OF QUESTIONS