



UTHM

Universiti Tun Hussein Onn Malaysia

UNIVERSITI TUN HUSSEIN ONN MALAYSIA

**FINAL EXAMINATION
SEMESTER II
SESSION 2021/2022**

| | | |
|------------------|---|--|
| COURSE NAME | : | CONTRACT AND ESTIMATION |
| COURSE CODE | : | BFC 35503 |
| PROGRAMME CODE | : | BFF |
| EXAMINATION DATE | : | JULY 2022 |
| DURATION | : | 3 HOURS |
| INSTRUCTION | : | <ol style="list-style-type: none">1. ANSWER ALL QUESTIONS.2. THIS FINAL EXAMINATION IS AN ONLINE ASSESSMENT AND CONDUCTED VIA CLOSED BOOK.3. STUDENTS ARE PROHIBITED TO CONSULT THEIR OWN MATERIAL OR ANY EXTERNAL RESOURCES DURING THE EXAMINATION CONDUCTED VIA CLOSED BOOK |

THIS QUESTION PAPER CONSISTS OF **SIX (6)** PAGES

- (c) The construction project will be executed after the acceptance all of the necessary terms and conditions in the contract document by the contractual parties namely, the client and the main contractor. Explain the contractual obligations between a main contractor and an employer (client) during the project execution.

(8 marks)

Q3 (a) ABC, a manufacturer of household products is proposing a build of a new warehouse to accommodate its business expansion. For the project, ABC insists to work with a team that having worked together with the company many times before. Early time completion is a major critical factor for the project. Minimum client intervention and change orders without compromising the quality of the warehouse is also expected during the project.

- (i) Recommend a most suitable procurement method and explain how it can satisfy all the aforementioned requirements?

(10 marks)

- (ii) Explain the process (from inception to completion) of the project delivered using the recommended procurement method in Q3(a)(i).

(10 marks)

- (b) If the ABC Company wants to apply for the extension of works within 6 months before the end of the project original completion date, the reasonable reasons are to be discussed between the top management and technical staff. Explain **TWO (2)** reasons for delay that allow contractor to obtain the 'Certificate of Delay and Extension of Time'.

(5 marks)

Q4 You are assigned to do a quantity measurement for work below lowest floor finish (WBLFF) element of a school canteen building. Based on **FIGURE Q4(a) - (b)** and **TABLE Q4**, perform a quantity measurement of the following items:

- (a) Lean concrete for pad footing (in m³).

(1 mark)

- (b) Concrete for pad footing, column stump and ground beam (in m³).

(6 marks)

- (c) Reinforcement bars in pad footing, column stump and ground beam (in kg).

(12 marks)

- (d) Links in column stump and stirrups in ground beam (in kg).

(6 marks)

–END OF QUESTIONS–

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TABLE Q2: Labour constant and items rate

| Item | Labour constant / Rate / % |
|---|----------------------------|
| Cement | RM280.00/m ³ |
| Fine aggregate | RM35.00/m ³ |
| Course aggregate | RM30.00/m ³ |
| Rental rate of concrete mixer machine (6 days/week) | RM300.00/week |
| Productivity of concrete mixer machine | 5m ³ /hour |
| No. of labours needed to operate concrete mixer machine | 2 labours/machine |
| Labour constant (productivity) for concrete mixing | 3 hours/m ³ |
| Concrete wastage percentage | 30% |
| Labour salary (8 hours working/day) | RM30.00/day |
| Profit | 15% |

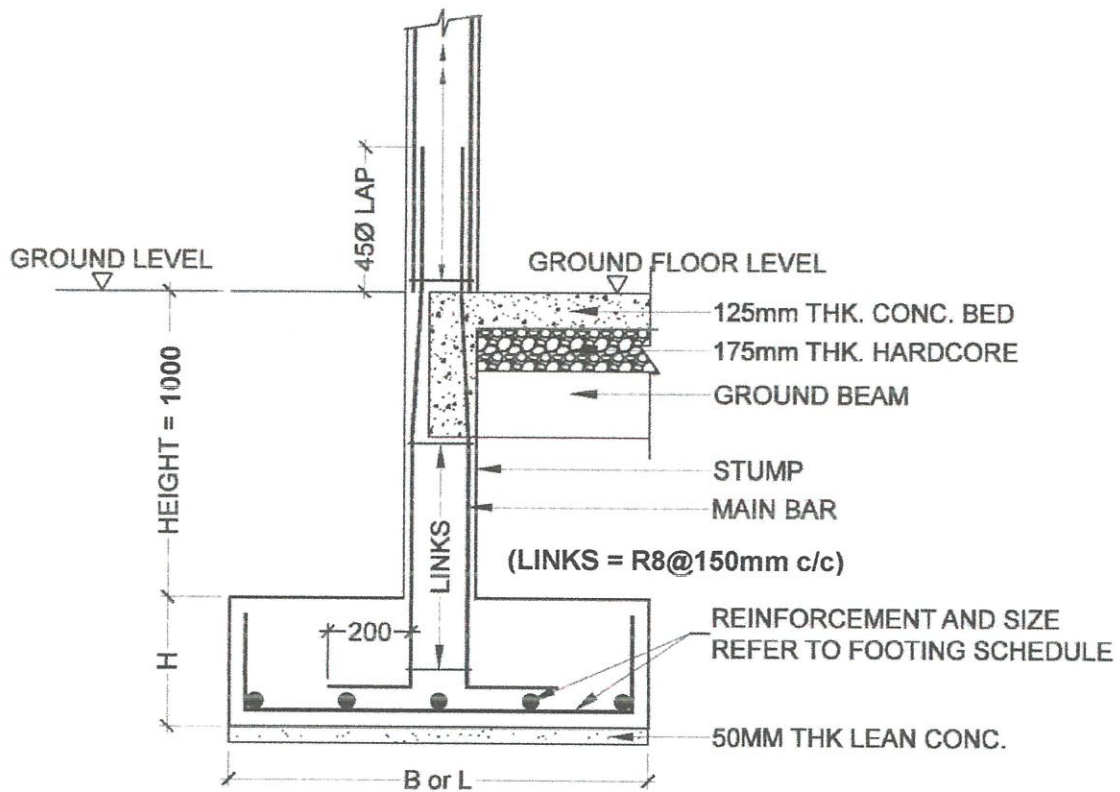
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PAD FOUNDATION REINFORCEMENT SCHEDULE



| FOOTING SCHEDULE | | |
|------------------|-------------------|--------------------|
| Type | B x L x H | Main Reinforcement |
| F1 | 1250 x 1250 x 600 | T16@150 (B/W) |

- NOTES :
1. ALL DRAWINGS ARE NOT TO SCALE
 2. ALL DIMENSIONS ARE IN MILIMETRE (MM) UNLESS OTHERWISE NOTED.
 3. ALL CONCRETE COVERS SHALL BE 40 MM THICK.
 4. LEAN CONCRETE SHALL BE OF GRADE 7 CONCRETE
 5. PAD FOOTING, COLUMN STUMP AND GROUND BEAM SHALL BE OF GRADE 25 CONCRETE

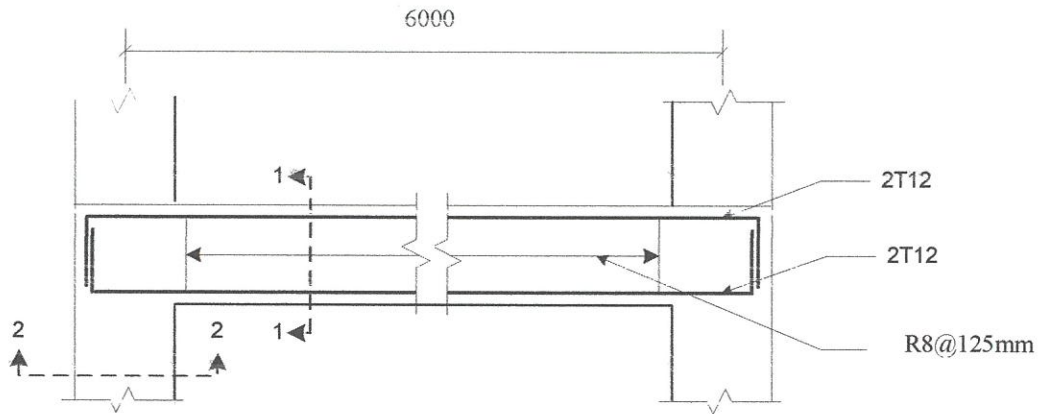
FIGURE Q4 (a)

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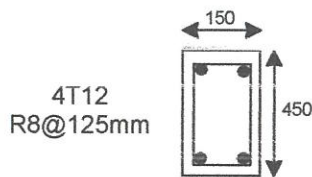
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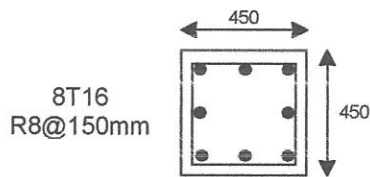
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TYPICAL GROUND BEAM CROSS SECTION (150 x 450)



SECTION 1-1:
GROUND BEAM



SECTION 2-2: COLUMN/
COLUMN STUMP

FIGURE Q4 (b)

TABLE Q4 - Conversion Table for Round Bar

| SIZE (MM) | MASS PER UNIT LENGTH (KG/M) |
|-----------|-----------------------------|
| 06 | 0.222 |
| 08 | 0.395 |
| 10 | 0.616 |
| 12 | 0.888 |
| 16 | 1.579 |
| 20 | 2.466 |
| 25 | 3.854 |
| 32 | 6.313 |

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