Universiti Tun Hussein Onn Malaysia

UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION
SEMESTER II
SESSION 2023/2024

COURSE NAME	:	CONTRACT AND ESTIMATION
COURSE CODE	:	BFC 31602
PROGRAMME CODE	:	BFF
EXAMINATION DATE	:	JULY 2024
DURATION	:	2 HOURS 30 MINUTES
INSTRUCTIONS	:	1. ANSWER ALL QUESTIONS 2. THIS FINAL EXAMINATION IS CONDUCTED VIA ☐ Open book ☒ 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 **SEVEN (7)** PAGES

Q1 (a) Manpower is an important stakeholder category that will be directly performing physical construction work on site. State **FOUR (4)** types of manpower and explain their roles.

(12 marks)

(b) The Contracts Act 1950 governs the contract law in Malaysia. A contract, including a construction contract, is valid and enforceable by law if all the elements are satisfied. Explain all the **FIVE (5)** important elements to form a legally binding construction contract.

(13 marks)

Q2 (a) By referring to **Figures Q2.1 and Q2.2, and Table Q2.1,** calculate the built-up rate for **one cubic metre ($1m^3$)** excavation of soil (using machine) for the pad footing. Excavation for topsoil and formation level are to be excluded.

(11 marks)

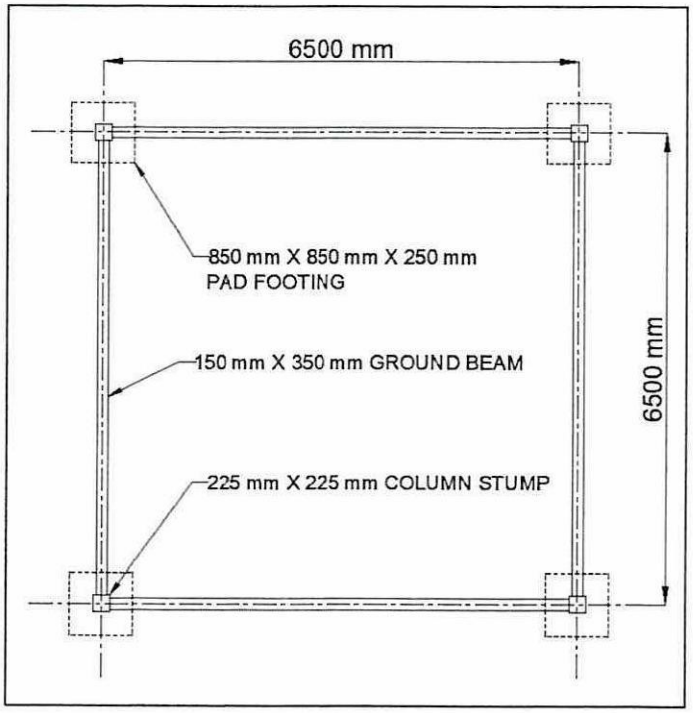

Figure Q2.1

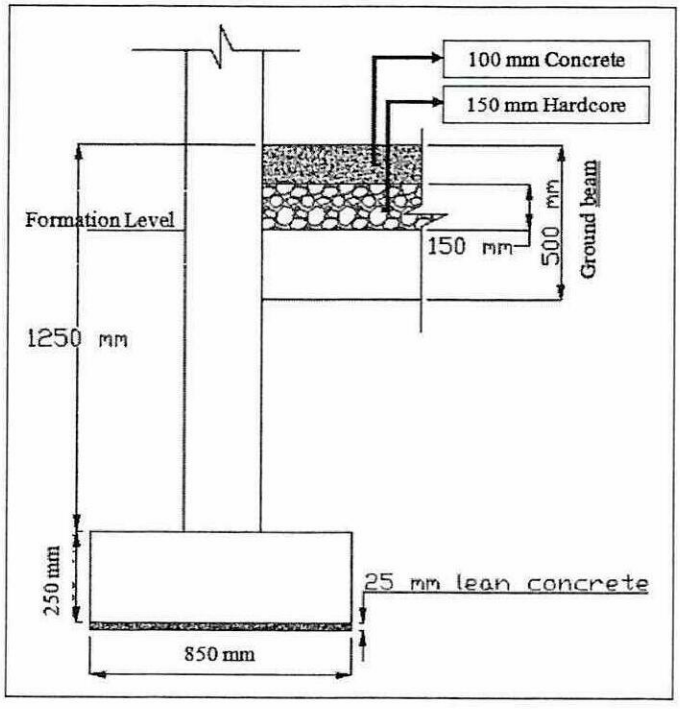

Figure Q2.2

Table Q2.1

Item	Rate
Working hour per day	8 hours
Worker salary (1 worker/ day)	RM 20.00/ hour
Rental rate for excavator	RM 60.00/ hour
Excavator operator	RM 60.00/ hour
Diesel consumed	5.00 litre/ hour
Lubricant oil consumed	0.25 litre/ hour
Cost of diesel	RM 3.50/ litre
Cost of lubricant oil	RM 30/ litre
Soil excavation not exceeding 1.50 m depth	1.5 m^3/ hour
Overhead cost and profit	18%

(b) Open tendering, selective tendering, and negotiate tendering are common methods of tendering used in construction project. Discuss **FOUR (4)** factors that need to be considered to determine which tendering method is suitable to be used in a construction project.

(8 marks)

(c) Variation order normally revolves around change or alteration in design, quality, and quantity of works during construction stage. Describe **THREE (3)** impacts of variation order towards the construction project timeline.

(6 marks)

Q3 (a) A new government school project development has been proposed near the existing business and housing area, at Jalan Batu Pahat - Kluang, Johor. Open tender bidding approach will be implemented in the project where a new design intended to give a unique appearance to the school will be prepared by the Public Works Department of Malaysia. Choose and explain in detail a suitable procurement method for appointing the best contractor for this project.

(11 marks)

(b) Explain **TWO (2)** purposes of Liquidated Ascertained Damages (LAD) and provide an example of calculating LAD amount for a project to be completed within 3 years with contract sum of RM100,000,000.00. State any necessary assumption you made for the calculation purpose.

(8 marks)

(c) Depending on the nature of the project duration and contractor's financial capability, describe **TWO (2)** common approaches for client disbursing interim payment to the contractor.

(6 marks)

Q4 **Figures Q4.1, Q4.2, Q4.3,** and **Q4.4** show the layout and cross-section details of a construction project. Calculate the following items according to the given figures and **Table Q4.1**:

(a) reinforced concrete (RC) in ground slab (in m^3)

(5 marks)

(b) reinforcement bars (high tensile, HT) in pad footing and ground beam (in kg)

(14 marks)

(c) mild steel (MS) bars for links in column stump (in kg).

(6 marks)

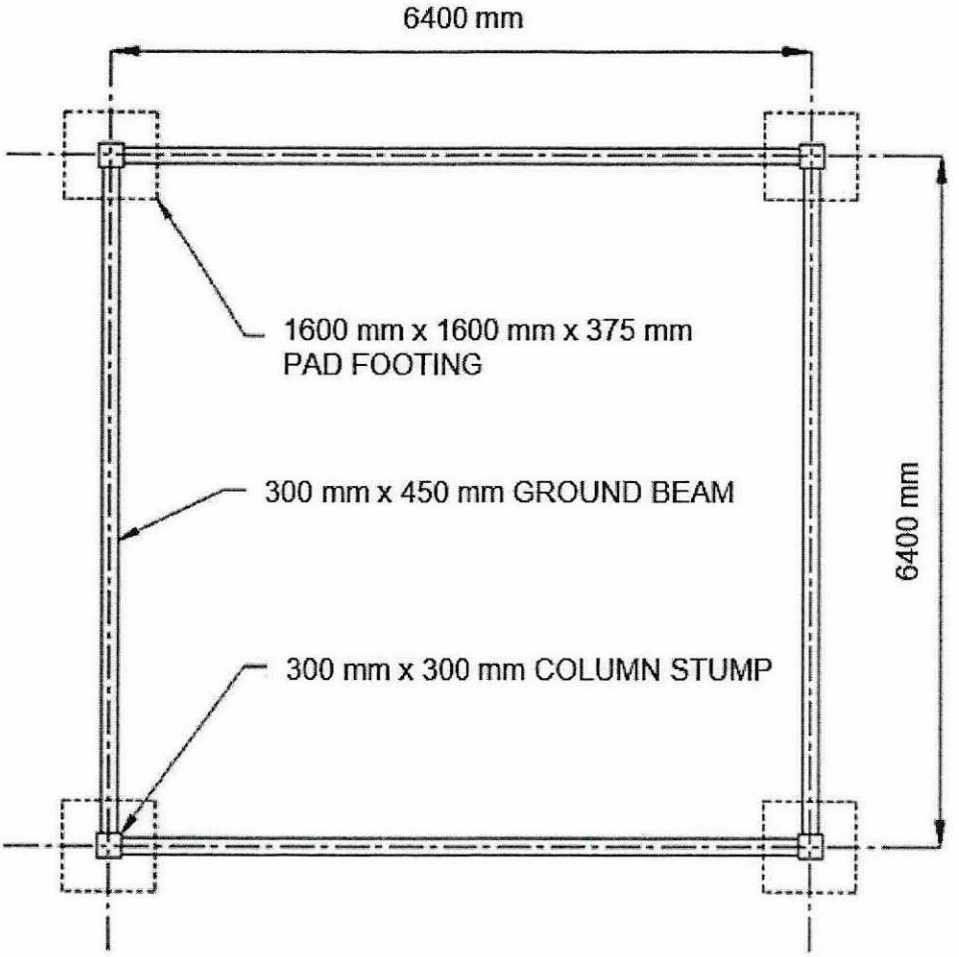

Figure Q4.1

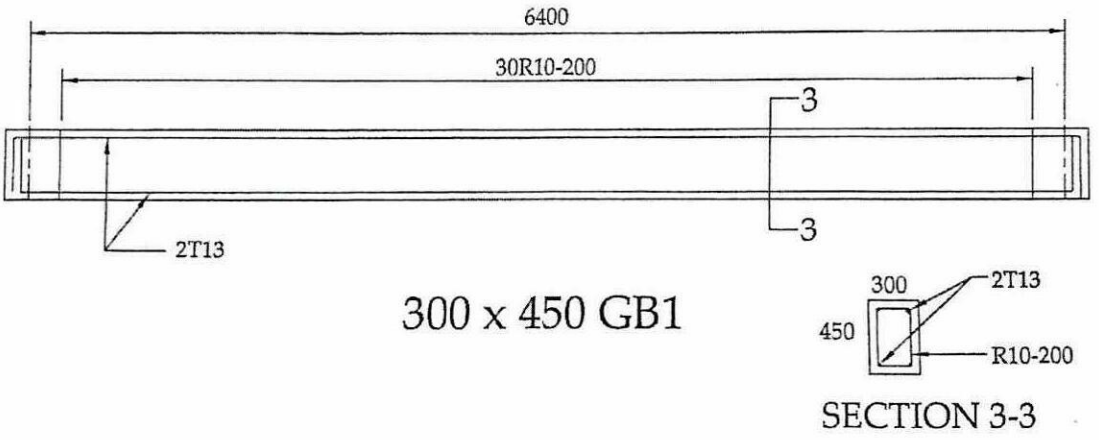

Figure Q4.2

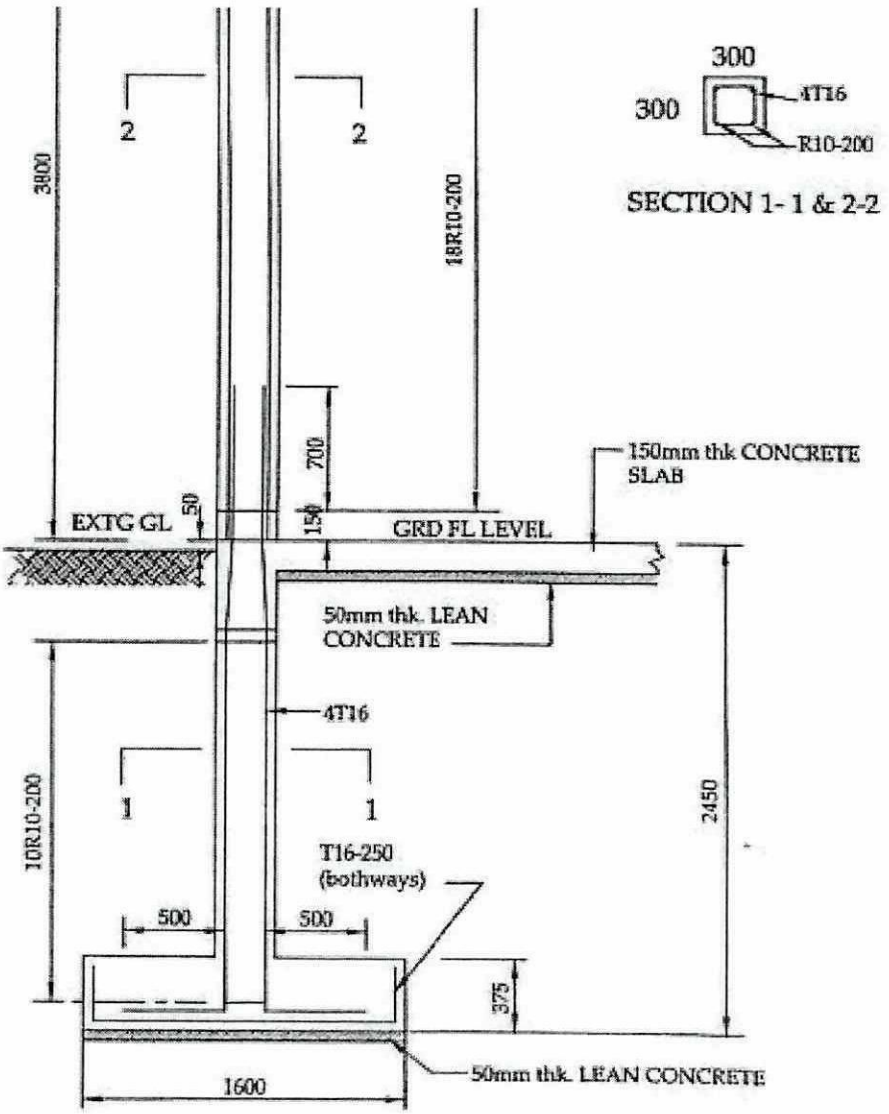

Figure Q4.3

NOTES:

1. ALL DRAWINGS ARE NOT TO SCALE
2. ALL DIMENSIONS ARE IN MILIMETRE (MM) UNLESS OTHERWISE NOTED.
3. ALL CONCRETE COVERS SHALL BE OF 50 MM THICK.
4. LEAN CONCRETE SHALL BE OF GRADE 12 CONCRETE.
5. PAD FOOTING, COLUMN STUMP, GROUND BEAM AND GROUND SLAB SHALL BE OFF GRADE 30 CONCRETE.

Figure Q4.4: Technical notes

Table Q4.1 - Conversion table for round bar

SIZE (MM)	MASS PER UNIT LENGTH (KG/M)
10	0.616
12	0.888
13	1.040
14	1.210
16	1.579
20	2.466

- END OF QUESTIONS -

BFC35503 / BFC31602 – TAKING OFF SHEET

NAME:_____ **MATRIC NUM.:**_____

DIMENSION			UNIT	DESCRIPTION

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