UTHM
Universiti Tun Hussein Onn Malaysia

UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION
(ONLINE)
SEMESTER II
SESSION 2020/2021

COURSE NAME	:	CONSTRUCTION ENGINEERING
COURSE CODE	:	BFR 21503
PROGRAMME CODE	:	BFR
EXAMINATION DATE	:	JULY 2021
DURATION	:	3 HOURS
INSTRUCTION	:	ANSWER **ALL** QUESTIONS

THIS QUESTION PAPER CONSISTS OF **FOUR (4)** PAGES

Q1 (a) Architectural Site Investigation is one of the important tasks to be carried out before we can start the design and construction process for a specific land. Explain the following investigation tasks based on your understanding.

(i) Land use zoning.
(ii) Right of access.
(iii) Surrounding Neighbourhood Activities.

(9 marks)

(b) During the process of investigating a land, you have found that the Local Authority has set the land Plot Ratio as 1:4.5. The land size is 18,300m². Calculate the maximum building storey allowed to be built on the land.

(3 marks)

(c) **FIGURE Q1** shows the contour line of the land to be developed. Referring to the plan, answer the following questions.

(i) Based on the given building plinth level, propose the land grading levels for the construction by showing the land to be cut and filled.

(6 marks)

(ii) Based on your proposal, calculate the estimation volume of land being cut and filled on the land.

(7 marks)

Q2 (a) Building foundation is a sub structure component that transfers the building load to the ground. From your point of view, explain **FOUR (4)** factors that need to be considered in choosing the type of foundation system for a building.

(12 marks)

(b) Pad footings are commonly used for shallow foundations in order to carry and spread concentrated loads, caused by columns. Sketch a cross section of a pad footing showing how it is located on soil and its connection to the stump.

(3 marks)

(c) As an architect appointed to design a hotel building, you are also required to design an auditorium inside the hotel. Elaborate your design strategies in order to minimize column usage inside the large auditorium space. You may use sketches to help your elaboration.

(10 marks)

Q3 (a) On site concrete strength evaluation is commonly done for existing concrete structure testing. Explain the following concrete testing method, the pros and the cons of each testing.

(i) Compression Test On Concrete Cores
(ii) Rebound Hammer for Concrete Strength

(8 marks)

(b) Isolation joint plays an important method to join two different materials in construction especially when involving concrete. Using sketches, show how isolation joints are usually used.

(5 marks)

(c) Based on your opinion and understanding about concrete, justify the reasons why concrete is still a popular choice of construction material after so many years.

(12 marks)

Q4 You are appointed as an architect for a development of a low rise apartment blocks to be built on slope. With an intention to minimize land cutting and filling of the slope, you have to determine the level of the blocks differently.

(i) Explain the factors that you have to consider when proposing the level of the apartment blocks for your design.

(12 marks)

(ii) The developer is asking your opinion regarding the best type of formwork to be used for the project. Propose (2) type of formworks and justify your reasons.

(13 marks)

– END OF QUESTIONS –

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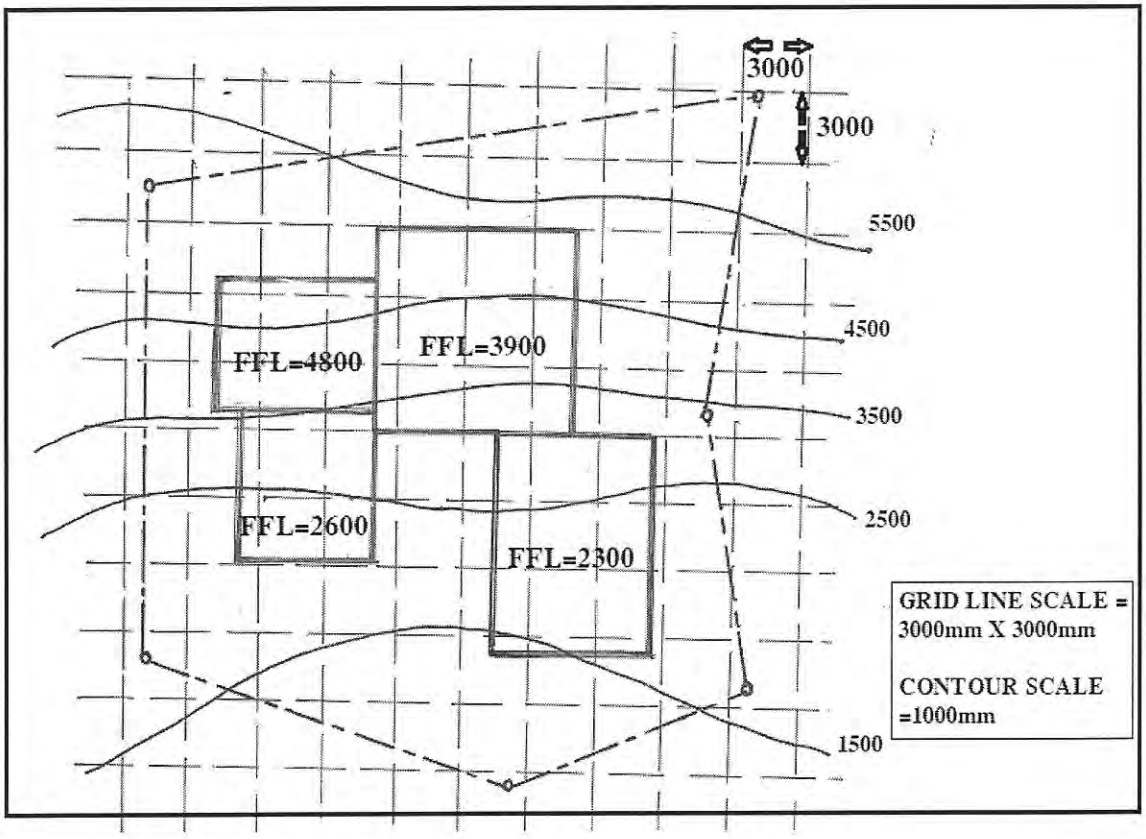

FIGURE Q1