Universiti Tun Hussein Onn Malaysia

UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION
(ONLINE)
SEMESTER II
SESSION 2020/2021

COURSE NAME	:	CONSTRUCTION ENGINEERING
COURSE CODE	:	BFC21002
PROGRAMME CODE	:	BFF
EXAMINATION DATE	:	JULY 2021
DURATION	:	2 HOURS
INSTRUCTION	:	ANSWER **ALL** QUESTIONS

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

Q1 (a) Site Investigation is the process of collecting information, assessment of the data and reporting potential hazards beneath a site that is unknown. The purpose of a site investigation is conducted for obtaining information about subsurface conditions at the site proposed for construction. In your opinion, explain the importance and the conduct of the following activities for ground condition investigation.

(i) Desk studies.
(ii) Boreholes.
(iii) Trial Pits.

(12 marks)

(b) Building construction in a hilly region requires comprehensive planning, site selection and design for slopes and sustainable construction practices. Hilly regions, though tempting to construct a structure, have wide variations in geology, geomorphology, climate, altitude and materials resources have to take special measures to give the building the required structural strength. Site selection is one of the prime challenges while constructing in hilly areas. Some of the things that you need to keep in mind include whether or not the location is landslide vulnerable or located on a slope or a sequence of rock structures or have existing subsurface water with existing streams. Therefore, once the site investigation has been taking place, the pre-construction activities or earthwork can be started.

(i) Demonstrate the overall process of earthwork.

(5 marks)

(ii) By relating to the site's area mentioned in the paragraph above, prepare the activities involves during site clearing.

(8 marks)

Q2 (a) Foundation is part of the structure that transfers the load from the structure constructed on it as well as its weight over a large area of soil in such a way that the amount does not exceed the ultimate bearing capacity of the soil and the settlement of the whole structure remains within a tolerable limit. From your point of view, explain in detail **FIVE (5)** important factors that need to be considered before choosing a foundation system for a sub- structure.

(10 marks)

(b) A twenty-storey residential condominium is a plan to be built in the North part of Peninsular Malaysia. In order, to attract more buyers and make more profits, the developer plan to build this building near the coastline of the Southeast Asia Sea and the soil condition of the construction site is soft clay with a low bearing capacity value. As an engineer, you are assigned to design the foundation of this building. Identify the suitable type of foundation for this project and with the aid of a sketch, illustrate the procedure of constructing this type of foundation.

(15 marks)

Q3 (a) **FIGURE Q3** shows the cross-section for a double-storey house. Based on the figure, answer the following questions.

(i) Detail B consists of elements of the cantilever structure. Define **TWO (2)** things that need to be done here before and during concreting works.

(5 marks)

(ii) Detail A consists of the joint for the column, first-floor beam and slab. The most important thing to note here is the method of joint during concreting work. Explain **FOUR (4)** steps on how the concreting work for the first-floor beam and slab should be done. You must include in your answer how the joint between the column and first-floor beam should be carried out before concreting work can be executed.

(8 marks)

(b) AQZ Sdn. Bhd. is a G7 contractor and has been awarded a few building construction tenders. Most of the projects are involving tall building and required to finish within time. Propose **TWO (2)** type of formwork suitable for the building and give **FOUR (4)** reasons for the selection.

(12 marks)

Q4 Infrastructure can be defined as the basic facilities and systems serving a city or a country. It is all the services and facilities needed for the operation of a society.

(a) As a civil engineer, differentiate construction of the reinforced concrete wall (RC wall) and Crib wall according to your understanding.

(2 marks)

(b) When designing a retaining wall, explains the form of earth pressure that need to be considered.

(4 marks)

(c) List **SEVEN (7)** of infrastructure in the construction industry.

(7 marks)

(d) Demonstrates **FOUR (4)** factors that should be considered in determining a bridge-type which related to economy, safety and aesthetics.

(12 marks)

– END OF QUESTIONS –

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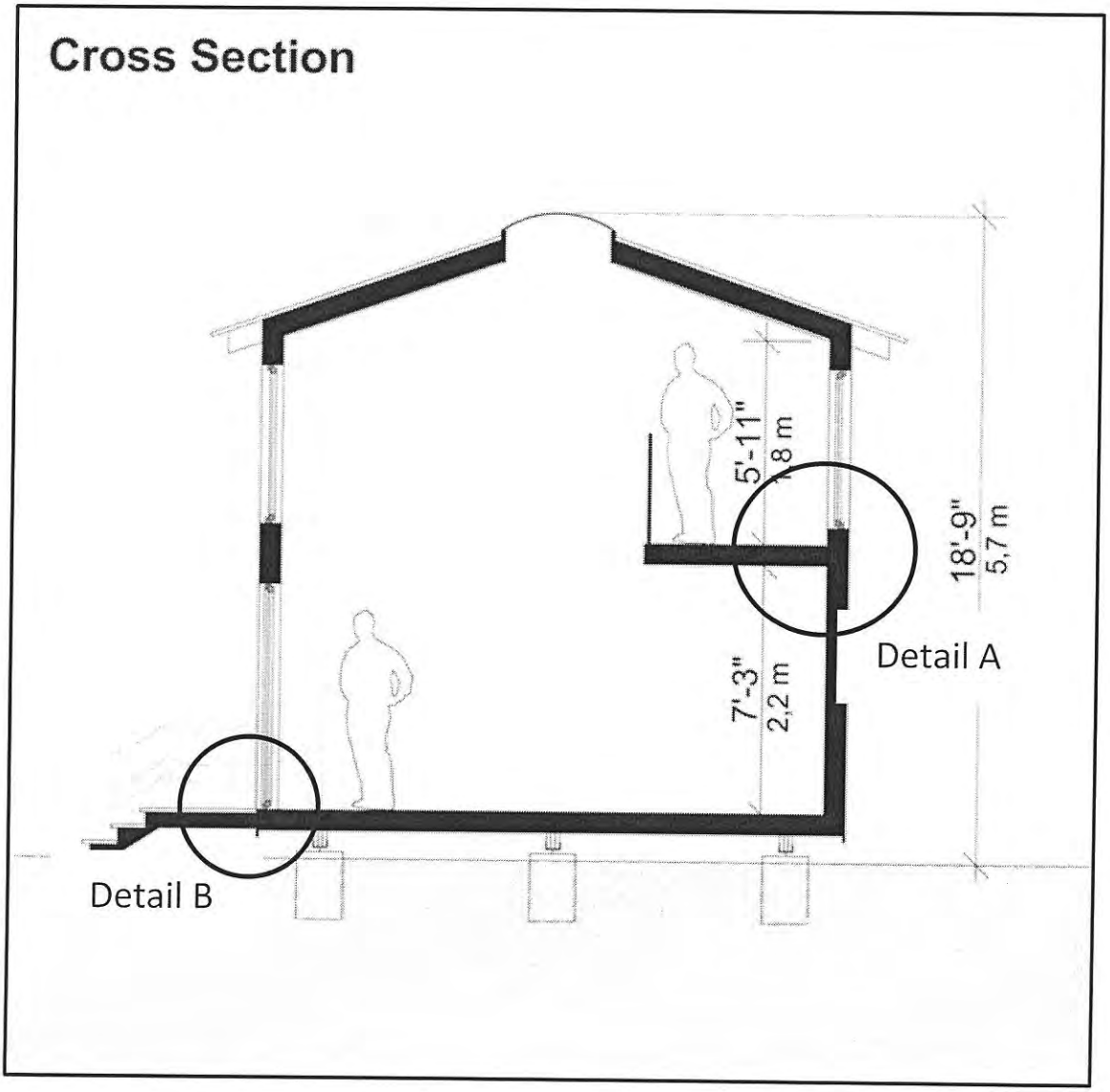

FIGURE Q3