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**UTHM**  
Universiti Tun Hussein Onn Malaysia

**UNIVERSITI TUN HUSSEIN ONN MALAYSIA**

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

COURSE NAME : CONSTRUCTION ENGINEERING  
COURSE CODE : BFR 21503  
PROGRAMME CODE : BFR  
EXAMINATION DATE : JULY 2022  
DURATION : 3 HOURS  
INSTRUCTION

1. ANSWER ALL QUESTIONS
2. THIS FINAL EXAMINATION IS 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 **FOUR (4)** PAGES

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- Q1** The purpose of the site investigation is to establish the suitability of the site for building, the surrounding environment, and the extent of initial work required. This information offered by engineers is very valuable for building planning, adaptation of the site and design prior to the beginning of the construction process.
- (a) Clarify the significance of site investigation in the field of construction engineering. (8 marks)
  - (b) Discuss in detail how the investigation must progress through the **SIX (6)** stages associated with site investigation. (12 marks)
  - (b) Soil strata are often collected for investigation while analyzing building construction sites. Illustrate the form and label the soil strata. (5 marks)
- Q2**
- (a) An appropriate drain ensures that all materials may be relocated to a different location without causing damage to the floor of the work area. If water is not removed, it will destroy the soil and any other areas underneath it in the long run. Explain **FIVE (5)** the most commonly used systems of ground water drainage (10 marks)
  - (b) Foundation is part of the structure that comes into direct contact with the ground and is responsible for the transmission of load. Describe **THREE (3)** different types of foundation with the aid of illustrations and their respective applications. (9 marks)
  - (c) With aid of illustration, explain the process of constructing a concrete column. (6 marks)
- Q3**
- (a) **Figure Q3 (a)** shows a rectangular plot, which is to be excavated to the given reduced level. By assuming the area is subdivided into square method, calculate the volume of earth to be excavated (excavated level = 10.00m) (15 marks)
  - (b) Scaffolding is an integral part of any construction project. Discuss **FIVE (5)** advantages of scaffolding system. (10 marks)

- Q4** (a) Loads are distributed in many ways in building structure, based on your knowledge answer the following:
- (i) Define the flow of the load distribution in a building and how the load is distributed. (3 marks)
  - (ii) Sketch the load distribution in a double storey building. (4 marks)
- (b) The Ground beam is the beam that supports the building walls, joists, etc. The ground beams are usually directly on the ground, but might be supported by end piers. Explain the ground beam construction process using sketches (12 marks)
- (c) Illustrate and label the components on the formwork wall. (6 marks)

– END OF QUESTIONS –

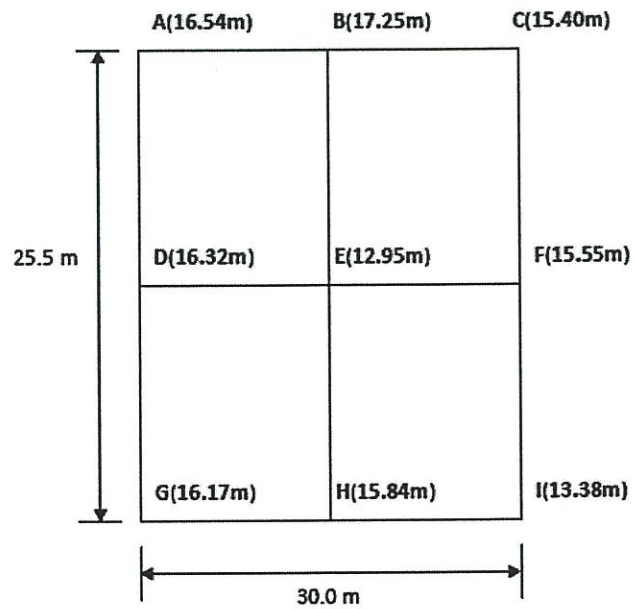
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**FIGURE Q2 (c)**



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