



UNIVERSITY OF RUHUNA

Faculty of Engineering

End-Semester 6 Examination in Engineering: November 2022

Module Number: CE6301

Module Name: Construction Processes and Technology

[Three Hours]

[Answer all questions, each question carries twelve marks]

Q1.

- a) Explain the importance of carrying out proper building setting out to construct structurally stable and aesthetically feasible buildings. [2.0 Marks]
- b) What are the special precautions that have to be taken during building setting out for a multi-storey building compared to a single-storey building? [2.0 Marks]
- c) Assume that you are required to set out a building plan shown in Figure Q1 (a) in the land shown in Figure Q1 (b). (Use pages 4 and 5 of the question paper when answering and attach those to the answer booklet). The building line is 2.0m away from the boundaries of all roads. Residential house A has been constructed with a blind wall on the boundary of the land for the proposed house. For the other side 2.3 m rare space should be reserved.
- Marking all the necessary reservation, sketch the building plan on the given land with suitable orientation. Give reasons for your selection. Marking of external wall positions are sufficient.
 - Briefly explain the procedure of setting out the first line.
 - Mark the positions of necessary corners/reference pegs and profile boards on the house plan shown in Figure Q1 (a). [8.0 Marks]

Q2.

- a) Explain four main ingredients of clay and their functions, which is used to produce good bricks. [4.0 Marks]
- b) Describe four different defects in clay bricks. [2.0 Marks]
- c) Explain a field test for each of following building materials.
- Selection of suitable clay to produce bricks
 - Selection of bricks
 - Selection of sand [6.0 Marks]

Q3.

- a) Describe the construction procedure for following items.
- i Movements joints in a cement rendered floor
 - ii Cast-in-situ terrazzo floor
 - iii Ceramic tiled floor
- [6.0 Marks]
- b) What are the functions of providing following adjustments in a building construction?
- i 10 mm thick mortar joints between bricks in walls
 - ii Plinth plaster in foundation
- [4.0 Marks]
- c) Sketch and name main elements of a door frame.
- [2.0 Marks]

Q4.

- a) What are the factors that have to be considered for physical site organization of a construction project?
- [2.0 Marks]
- b) What are the mandatory site facilities that should be provided by the contractor?
- [2.0 Marks]
- c) You are expected to prepare a site planning layout for a five-storey building project. The land for the proposed construction project is shown in Figure Q4. The site is situated in a rural location. Total project duration is around 18 months. During first six months, earth work, concrete work and bricks work have to be carried out. Mainly ready mixed concrete is to be used and those will be transported from the nearby city. Small quantities of concrete will be made at the site using a concrete mixer. All the labourers are hired from outside with an agreement that they are provided all the site facilities. Bar bending is also planned to do as an on-site activity. Accommodations for administrative staff are located at outside locations but offices should be provided on site. Contractor's expectation is to store materials at least for two weeks' time period at the site. Considering these information, sketch the necessary site facilities. (Use page 6 of the question paper when answering and attach it to the answer booklet.)
- [4.0 Marks]
- d) Briefly explain one special consideration that has to be taken when providing storage facilities for each of the following construction materials.
- i Cement
 - ii Aggregates
 - ii Bricks
 - iii Roof tiles
- [4.0 Marks]

Q5:

- a) "Construction sites are prone to accidents from very low to catastrophic severity impacts". Do you agree with this statement? Explain with reasons. [3.0 Marks]
- b) The contractor is responsible for implementation of safety at the construction or work site. Briefly explain the factors that a contractor should comply with to address safety requirements. [3.0 Marks]
- c) What are the direct and indirect costs associated with an accident in a construction site? [3.0 Marks]
- d) Explain best practices for more effective construction safety management. [3.0 Marks]

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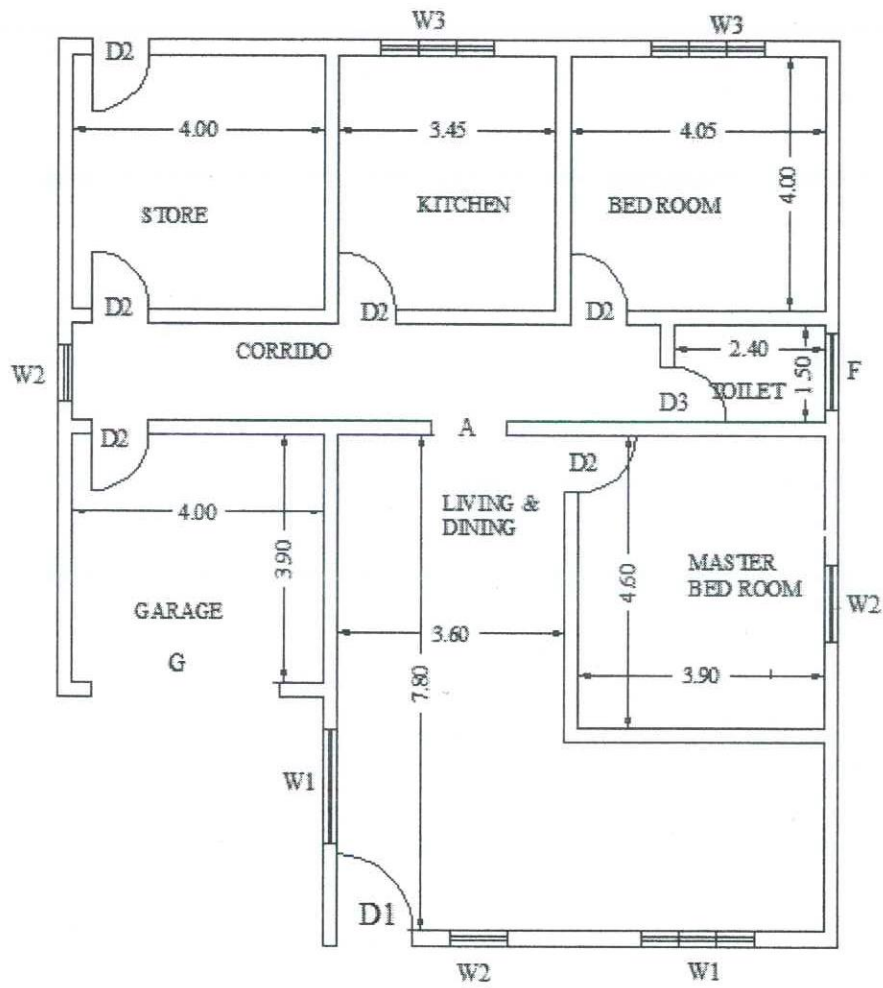


Figure Q1(a): Proposed House Plan

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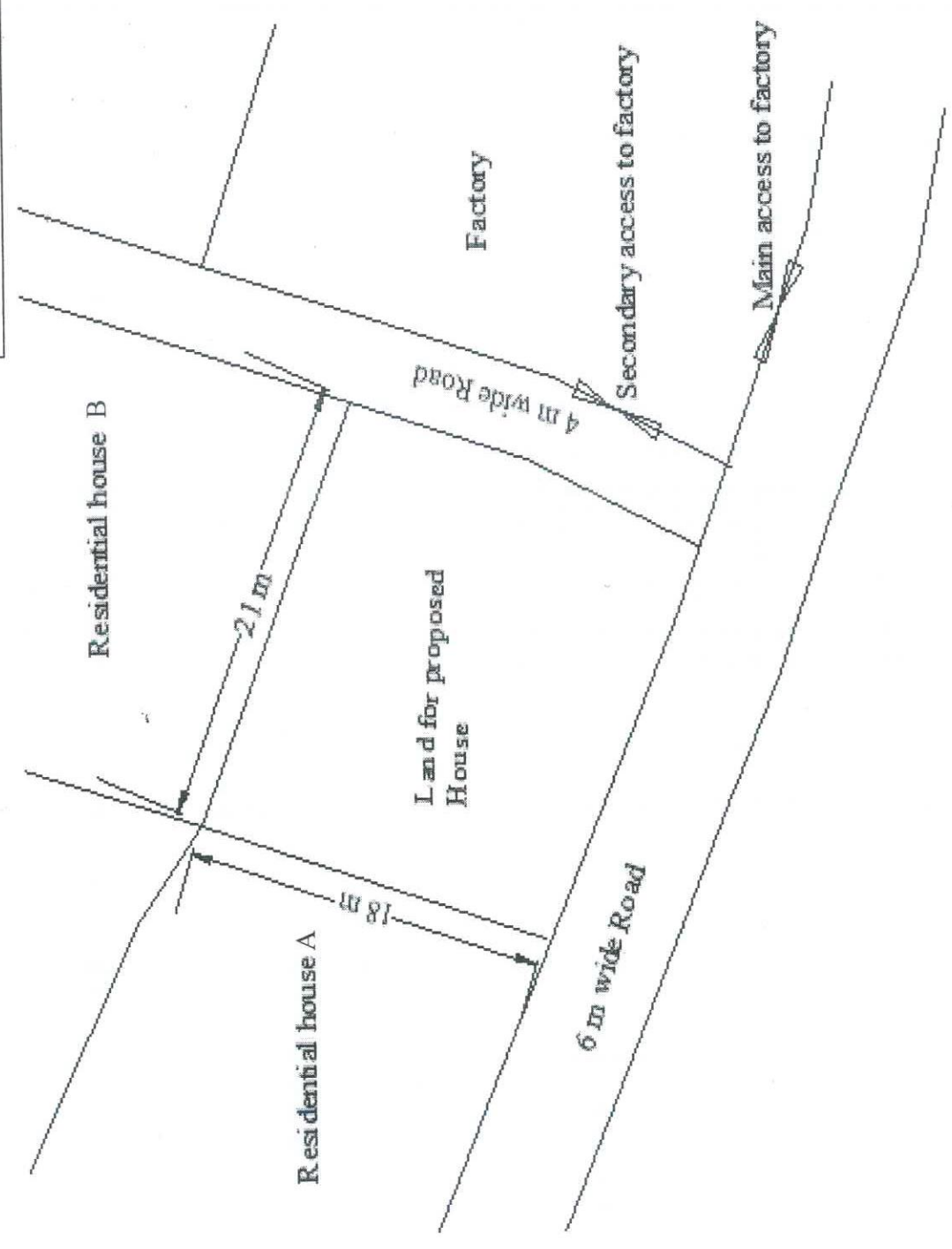


Figure Q1(b): Land for the Proposed House

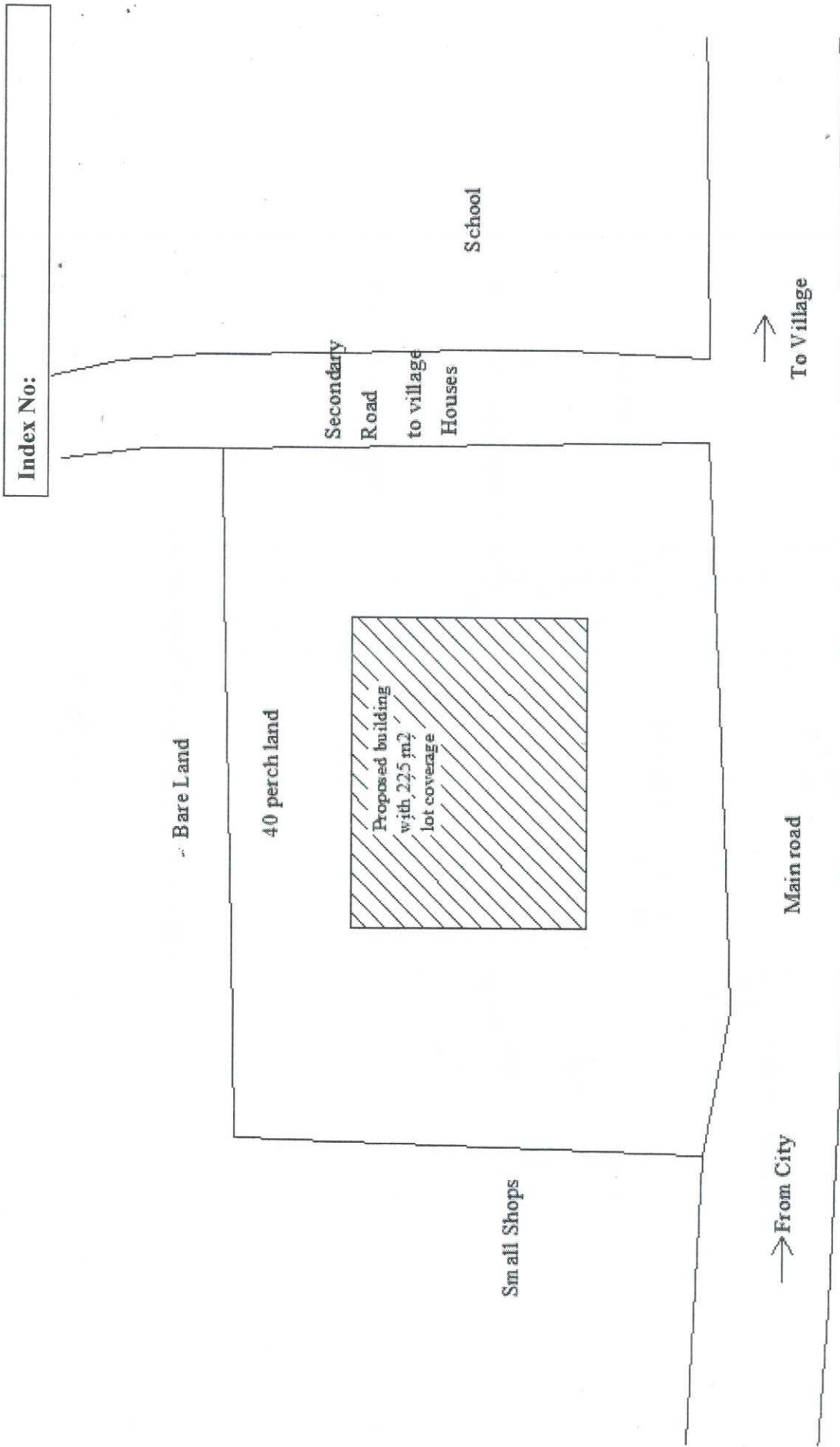


Figure Q4: Location Plan for the Proposed Building Construction