



UNIVERSITY OF RUHUNA

Faculty of Engineering

End-Semester 6 Examination in Engineering: November 2017

Module Number: CE6301 Module Name: Construction Processes and Technology

[Three Hours]

[Answer all questions, each question carries twelve marks]

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- Q1. a) Describe special considerations need to be taken in setting out of a multi-story building compared to the setting out process of a single story building. [2.0 Marks]
- b) Referencing the building lines is important during construction even though all threads showing the building lines cannot be kept owing to the disturbance for site works. Identify two methods that could be used to re-establish and refer the building lines whenever required. [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 5 and 6 of the question paper when answering and attach those to the answer booklet). The building line is 3.0 m away from the boundaries of the main roads and 2.0 m away from the secondary roads. From the other two boundaries of the land minimum 1.5 m clearance should be provided with the external building walls.
- i Marking all the necessary reservation, sketch the building plan on the given land with suitable orientation. Give reasons for your selection (regarding building plan, marking of external wall positions are sufficient).
- ii Draw the positions of necessary corners/reference pegs and profile boards on the house plan shown in Figure Q1 (a). [8.0 Marks]
- Q2. a) i. Identify the meaning of "Resilient Flooring" [1.0 Marks]
- ii. List six types of cement, other than Ordinary Portland Cement, which are used for different applications. [3.0 Marks]
- iii. Identify four features need to ensure in a quality formwork system. [2.0 Marks]

- b) i Name two types of wheels use in angle grinder with their intended applications. [2.0 Marks]
- ii. A road construction project is oversee by a Project Manager. The project duration is 24 months. Two Site Engineers, a Quantity Surveyor and a Project Accountant is assigned to the Project Manager. Each Site Engineer is assisted by a Technical Officer and two Supervisors. In addition to that, Stores Manager directly reports to the Project Manager and Health and Safety Officer reports to one Site Engineer. Considering above details, sketch the site organizational chart for this project. [2.0 Marks]
- iii. List two contract documents available in a construction site office. [2.0 Marks]

- Q3. a) Draw a sketch of an "Engineering Brick" and annotate the dimensions, header and stretcher faces. [1.0 Marks]
- b) List the two chemical compounds that gives a colour to the clay bricks [1.0 Marks]
- c) Describe four defects that could be found in clay bricks [4.0 Marks]
- d) Draw the brick laying pattern for two layers for the following (Use the graph sheets provided).
- i 225 mm thick brick wall at a ^{corner} ~~corner~~ using Heading bond.
- ii 225 mm thick brick wall at a corner using Flemish bond. [4.0 Marks]
- e) Explain the in-situ test to verify the strenght of clay bricks without the support of a laboratory testing machine. [2.0 Marks]

- Q4. a) Draw a window and mark parts of window. [3.0 Marks]
- b) How to determine left or right-handed lever in the door? [2.0 Marks]

- c) Define the following terms of roof.
- i. Wall plate
 - ii. Common rafters
 - iii. Ridge
 - iv. Eaves
 - v. Valley
 - vi. Hip Rafter

[3.0 Marks]

- d) Write the short note for type of roof?
- i. Pitched roof
 - ii. Butterfly roof
 - iii. Gable roof
 - iv. Lean-to roofs

[4.0 Marks]

- Q5. a) Define the following terms of safety.
- i. Safety
 - ii. Accidents
 - iii. Hazards
 - iv. Risk

[2.0 Marks]

- b) What are the general requirements to prevention accidents in construction site?

[3.0 Marks]

- c) Write the short note for type of hazards in construction site?
- i. Chemicals hazards
 - ii. Physical hazards
 - iii. Biological Hazards
 - iv. Ergonomic hazards

[4.0 Marks]

- d) What are the direct and indirect costs associated with an accident in a construction site?

[3.0 Marks]

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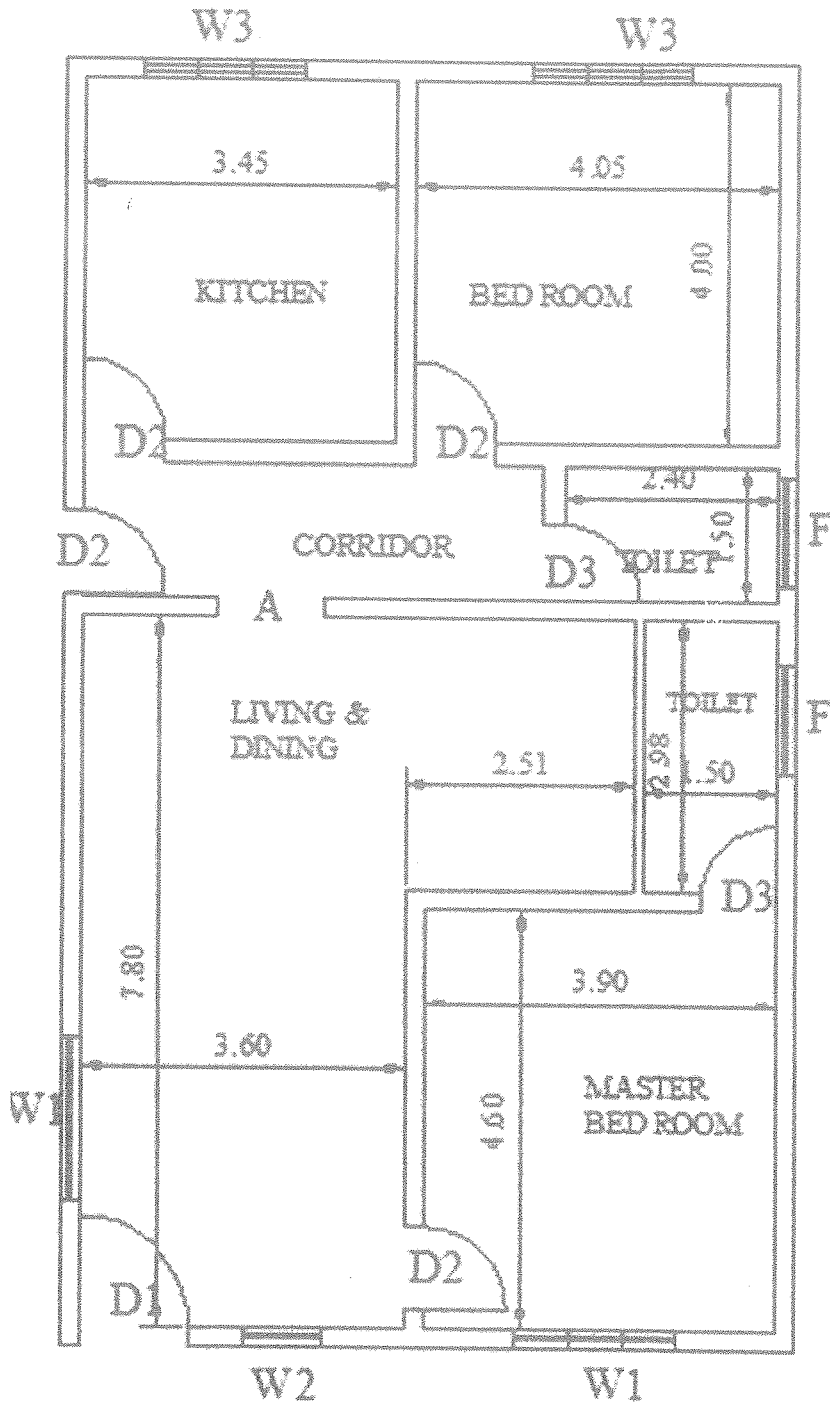


Figure Q1(a): Proposed House Plan

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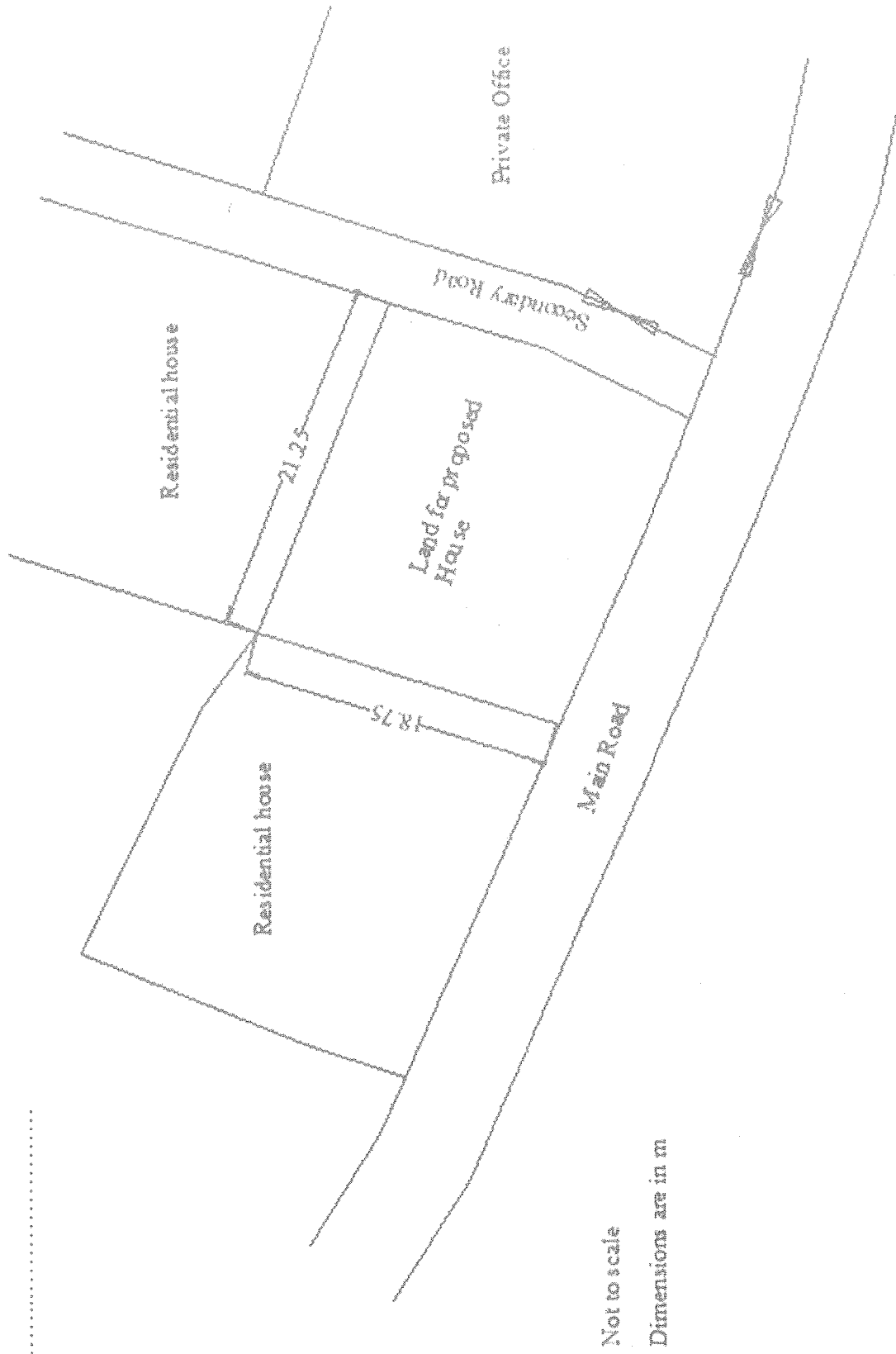


Figure Q1 (b): Land for the Proposed House