



UNIVERSITY OF RUHUNA

Faculty of Engineering

End-Semester 5 Examination in Engineering: May 2023

Module Number: CE5301

Module Name: Construction Processes and Technology

[Three Hours]

[Answer all questions, each question carries twelve marks.]

Q1.

- a) "Setting out is done on the principle of whole to part." Briefly explain this statement. [2.0 Marks]
- b) Briefly explain with sketches what aspects of a building are controlled during the setting out procedure. [3.0 Marks]
- c) Graphically illustrate a setting out procedure for a horizontal building curve. [2.0 Marks]
- d) Assume that you are required to set out a rural drainage scheme where the trench, bedding materials, pipes have to be laid to a specific design gradient.
 - i Discuss with sketches how this setting out is carried out using tools that can be made locally from simple materials.
 - ii Specify at what type of locations the manholes are required to be placed. [5.0 Marks]

Q2.

- a) List two causes of cracks in brick walls and suggest preventive measures that can be taken during construction. [2.0 Marks]
- b) List four situations in which a raft foundation is recommended for a building. [2.0 Marks]
- c) Briefly discuss with sketches the various types of piles that can be used for foundation works. [3.0 Marks]
- d) Briefly explain with sketches the bored pile construction procedure when drilling through loose soil or very soft clay below the water table. [2.0 Marks]
- e)
 - i. What are the indications of ground subsidence beneath a building?
 - ii. Discuss how the building can be restored through an underpinning process of the existing foundation. [3.0 Marks]

Q3.

- a) What is meant by a construction mobilization plan? List out four items available in a mobilization plan. [3.0 Marks]
- b) What are the considerations that need to be accounted for while planning the layout of a construction site? [2.0 Marks]
- c) Specify the factors to be considered in selecting the tower crane location of a multistory construction project. [2.0 Marks]
- d) List two advantages of using each of the following site documents.
 - i. Method statement sheet
 - ii. Variation orders[3.0 Marks]
- e) Briefly discuss the use of having an organization chart for a construction project. [2.0 Marks]

Q4.

- a) Briefly explain the construction technique using slip forms. [2.0 Marks]
- b) List four features of a good mortar mix used for wall plastering. [2.0 Marks]
- c)
 - i. What are the effects of rising dampness in a brick masonry wall?
 - ii. List two preventive measures that can be taken to overcome rising dampness.[4.0 Marks]
- d) Develop a roof plan for the house shape shown in Figure Q4 and name the parts of the roof. [4.0 Marks]

Q5.

- a) Briefly explain the followings.
 - i Use of an embankment foundation
 - ii Benefits of soil compaction in improving soil properties[4.0 Marks]
- b) What are the reasons for excessive moisture content of soil layers during an embankment construction and, suggest how to prevent them from happening? [2.0 Marks]
- c) Briefly explain the challenges faced during tunnel construction using a tunnel-boring machine and, suggest remedial measures to overcome these challenges. [3.0 Marks]
- d)
 - i. Briefly explain the steps of laying a pipe in an open trench.
 - ii Specify how the possible migration of surrounding soil of a pipeline can be prevented by using various techniques. [3.0 Marks]

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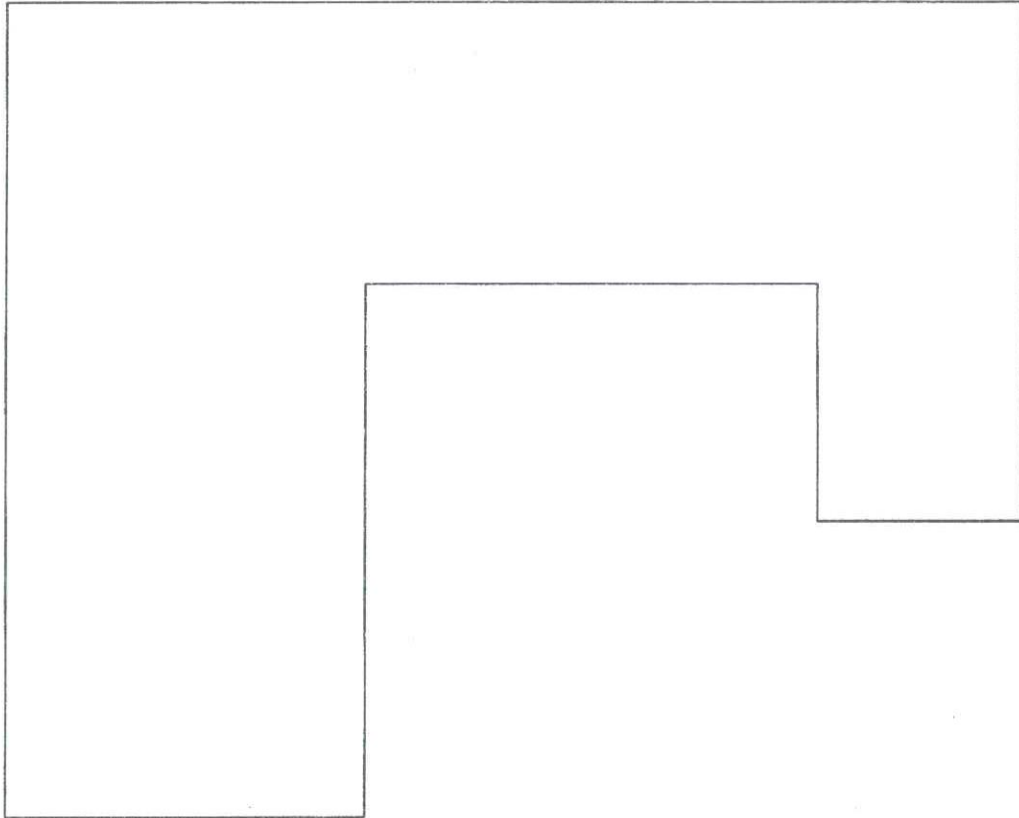


Figure Q4: House Shape