



MACHAKOS UNIVERSITY

University Examinations for 2022/2023

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF BUILDING AND CIVIL ENGINEERING

THIRD YEAR SECOND SEMESTER EXAMINATION FOR

BACHELOR OF SCIENCE (CIVIL ENGINEERING)

HPH 307: BUILDING CONSTRUCTION AND TECHNOLOGY

DATE:

TIME:

INSTRUCTIONS

- This paper comprises of FIVE questions. Answer **THREE** questions
- Questions one is **Compulsory** and carries 30 marks
- Answer any other **TWO** questions

QUESTION ONE (30 MARKS)

- a) Define the following terms as used in building construction:
- Shuttering
 - Water proof treatment
 - Raft foundation
 - Fungal decay
 - Aggregates (5 marks)
- b) State and explain FIVE physical consideration on selection of a building site (5 marks)
- c) Outline FIVE purposes of soil investigation in construction works (5 marks)
- d) State and explain THREE advantages and TWO disadvantages of Flat roofs. (5 marks)
- e) Describe execution of building contract in the following terms:
- TWO major compensation events.
 - FOUR main design team members
 - FOUR main contract documents

(10 marks)

QUESTION TWO (20 MARKS)

- a) State FIVE considerations for choice of construction materials. (5 marks)
- b) Define the term rusting and corrosion of steel and explain their prevalent methods (5 marks)
- c) Describe Timber as a construction materials in the following properties:
 - i. Physical properties
 - ii. Compressive strength
 - iii. Tensile strength
 - iv. Effect of moisture
 - v. Fire resistance(10 marks)

QUESTION THREE (20 MARKS)

- a) Define the following terms as used in Construction contracts:
 - i. Contract
 - ii. Defect Liability Period
 - iii. Variation
 - iv. Early warning
 - v. Liquidated damages(10 marks)
- b) You have been appointed to initiate a new Government project by a Public Institution. State and explain FIVE methods of tender to consider during the procurement process of works and services (10 marks)

QUESTION FOUR (20 MARKS)

- a) Describe FIVE methods of Stone quarrying (10 marks)
- b) Discuss important physical properties of the following building materials.
 - i. Glass
 - ii. Lead
 - iii. Plastics
 - iv. Lime
 - v. Copper(10 marks)

QUESTION FIVE (20 MARKS)

- a) Differentiate between Tender security and Performance bond (4 marks)
- b) Briefly describe the process of procurement of a large Civil Engineering contract starting from tender documentation to tender award (6 marks)
- c) A bill of quantities is one of the main documents in a construction project. Briefly state and explain FIVE major importance of a priced Bill of quantities in the implementation of a project. (10 marks)