



# THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

(A Constituent College of JKUAT)

*Faculty of Engineering and Technology*

DEPARTMENT OF BUILDING AND CIVIL ENGINEERING

**HIGHER DIPLOMA IN CONSTRUCTION**

EBC 3134: CONSTRUCTION TECHNOLOGY & SERVICES II

**END OF SEMESTER EXAMINATION**

SERIES: DECEMBER 2011

**TIME: 2 HOURS**

## **Instructions to Candidates:**

You should have the following for this examination

- *Answer Booklet*
- *Calculator*
- *Drawing Instruments*

This paper consists of **FIVE** questions

Answer question **ONE (COMPULSORY)** from **SECTION A** and any other **TWO** questions from **SECTION B**

Maximum marks for each part of a question are clearly shown

This paper consists of **THREE** printed pages

**SECTION A (COMPULSORY)**

**Question 1 (30 marks)**

- a) (i) Define the term timbering as applied in civil engineering construction  
(ii) State the **THREE** main reasons for timbering  
(iii) With the aid of sketch, illustrate timbering to a typical building services tunnel (7 marks)
- b) Briefly explain the following concepts of construction stating the suitability of each:-
- (i) Framed construction  
(ii) Load bearing wall construction (6 marks)
- c) Briefly describe any **FIVE** types of walling materials (5 marks)
- d) Briefly describe any **THREE** types of upper floor construction (6 marks)
- e) Briefly describe **FOUR** types of roof covering (6 marks)

**SECTION B (Answer any TWO questions from this section)**

**Question 2 (20 marks)**

- a) With the aid of a sketch, describe the construction of raking shores (6 marks)
- b) (i) Briefly state the need for a scaffolding system during construction of buildings  
(ii) Differentiate between the following two types of scaffolding systems:
- Putlog scaffolds
  - Independent scaffolds (14 marks)

**Question 3 (20 marks)**

- a) Briefly explain **FOUR** ways of wind bracing a multi-storey framed structure (8 marks)
- b) State **THREE** factors to be considered when selecting a roof type for a wide span industrial building in terms of roofing lifting (6 marks)
- c) With the aid of sketches, describe the following types of roof lights
- (i) North light  
(ii) Monitor roof light (6 marks)

**Question 4 (20 marks)**

- a) With the aid of sketch:-
- (i) Differentiate between 'facings' and 'claddings'

- (ii) Illustrate the construction of a curtain wall to a multi-storey reinforced concrete framed structure (11 marks)
- b) With the aid of single line diagrams illustrate the following types of lattice truss roof construction
- (i) Symmetrical Pitch lattice truss roof
  - (ii) Asymmetrical Pitch-North Light lattice truss roof
  - (iii) Lattice steel girder flat roof (9 marks)
- c) Translucent or transparent roofing sheets may be used for roofing industrial buildings so as to admit natural day light into the building
- (i) Briefly explain the following phenomenon associated with the above construction:
    - Solar heat gain
    - Consideration
  - (ii) Briefly explain **TWO** ways of reducing the above effects in a building (6 marks)

**Question 5 (20 marks)**

- a) (i) State the **THREE** different methods of classifying doors
- (ii) State any **THREE** reasons for incorporating a sliding/folding door in a building design. (6 marks)
- b) With the aid of sketches describe the following:-
- (i) A double left straight sliding door
  - (ii) An end folding sliding door with four leaves (6 marks)
- c) With the aid of a sketch illustrate the construction of a Vertically Sliding Sash Window with a Solid Frame (8 marks)