THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

(A Constituent College of JKUAT)

(A Centre of Excellence)

Faculty of Engineering & Technology

DEPARTMENT OF BUILDING & CIVIL ENGINEERING

HIGHER DIPLOMA IN CONSTRUCTION

EBC 3133: CONSTRUCTION TECHNOLOGY & SERVICES II

END OF SEMESTER EXAMINATION
SERIES: AUGUST 2012
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 any **THREE** questions
Maximum marks for each part of a question are as shown
This paper consists of **THREE** printed pages

Question One (20 Marks)

a) (i) Define the term timbering as applied in Civil Engineering Construction.
(ii) Outline **THREE** main reasons for timbering excavations.
(iii) With the aid of a sketch, illustrate timbering to a typical building services shaft. **(8 marks)**

b) Briefly explain any **TWO** characteristics that make the following materials suitable for formwork construction
i) Plastic
ii) Steel
iii) Timber. **(6 marks)**

c) With the aid of a sketch, illustrate shattering to a beam and slab to be concreted monolithically. **(6 marks)**

Question Two (20 marks)

a) With the aid of a sketch, describe the construction of a raking shore system to a defective masonry wall carrying three floor slabs. **(6 marks)**

b) (i) Briefly explain the need for a scaffolding system during construction of buildings.
(ii) With the aid of a sketch, describe a scaffolding system suitable for a high-risen building construction.
(iii) State the safety precautions to be observed in the erection of a scaffolding system**. (14 marks)**

Question Three (20 marks)

a) With the aid of sketches, differentiate between:
i) Infill walling, and
ii) Curtain walling. **(8 marks)**

b) (i) State **THREE** factors to be considered when selecting a roof type for a wide span industrial building in terms of roof lighting.
(ii) State the **TWO** main challenges facing the designer when designing large industrial or factory buildings. **(5 marks)**

c) With the aid of sketches, illustrate the following types of roof lights:
i) North light
ii) Monitor roof light **(7 marks)**

Question Four (20 marks)

a) With the aid of sketches:
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)**

Question Five (20 marks)

a) With the aid of sketches, describe the following forms of building construction.
i) Skeletal construction
ii) Load bearing-wall construction and;
iii) Box frame construction **(9 marks)**

b) Briefly discuss the advantages and disadvantages of employing upper floors
i) In-situ concrete floor
ii) Precast (units) concrete floors. **(4 marks)**

c) With the aid of a sketch, illustrate the construction of a 'beam and block' floor.**(7 marks)**