



THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

(A Constituent College of JKUAT)
Faculty of Engineering and Technology

DEPARTMENT OF BUILDING AND CIVIL ENGINEERING
HIGHER DIPLOMA IN BUILDING & CIVIL ENGINEERING

EBC 2313: BUILDING SERVICES

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 (20 marks)

- a) State the importance of building services (6 marks)
- b) Briefly describe a Step by Step method for Water Supply pipe sizing (8 marks)
- c) Briefly describe the procedure of determining equivalent lengths of pipe to allow for frictional losses in taps and valves in the design of a domestic plumbing system. (6 marks)
- d) With the aid of a sketch, describe a Typical combined Drainage Layout in a Urban Residential estate. (10 marks)

SECTION B (Answer any TWO questions from this section)

Question 2 (20 marks)

- a) Briefly describe the **THREE** stages of water treatment processes (6 marks)
- b) With the aid of a sketch, describe a typical Mains water distribution system to an urban settlement scheme (8 marks)
- c) State **THREE** main factors which would indicate the need for provision of a cold water storage tank (6 marks)

Question 3 (20 marks)

- a) Briefly describe the **TWO** types of drainage systems for domestic buildings (6 marks)
- b) Briefly describe the Design consideration of a typical Domestic Drainage Installation (6 marks)
- c) With the aid of a sketch, describe a typical eave detail of a pitched roof drainage system (8 marks)

Question 4 (20 marks)

- a) State **THREE** disadvantages of hopper and gully in Domestic Drainage Installation (6 marks)
- b) Briefly describe the **TWO** classifications of waste generated from domestic buildings (5 marks)
- c) Briefly describe **THREE** approaches in the design of a combined drainage installation combined system. (9 marks)

Question 5 (20 marks)

- a) Briefly describe the natural sources of thermal generation in buildings (6 marks)

- b) Briefly describe the measures to be taken to achieve heat balance in buildings in the following elements
- (i) Roof
 - (ii) Walling
 - (iii) Openings
 - (iv) Floors
- (8 marks)
- c) State the factors that would contribute to thermal generation in a building
- (6 marks)