



TECHNICAL UNIVERSITY OF MOMBASA
**Faculty of Engineering &
Technology**

DEPARTMENT OF BUILDING & CIVIL ENGINEERING
HIGHER DIPLOMA IN BUILDING & CIVIL ENGINEERING (HDBC 12J)

EBC 3234: CONSTRUCTION TECHNOLOGY & SERVICES IV

SPECIAL/SUPPLEMENTARY EXAMINATION

SERIES: OCTOBER 2013

TIME ALLOWED: 2 HOURS

Instructions to Candidates:

You should have the following for this examination

- *Answer Booklet*

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 **TWO** printed pages

Question One

- a) Explain the connection of water supply from a local authority mains to a building. **(4 marks)**
- b) With the aid of a sketch describe the following:
- (i) The direct system of cold water supply
 - (ii) The indirect system of hot water supply **(16 marks)**

Question Two

- a) A cold water storage cistern is positioned in the roof space of a bungalow such that the height between the water surface in the cistern and draw-off point is 3.0m, and the total length of the pipe is equal to 20m. Assuming a discharge of 1 litre/second, and using Thomas Box formula, determine the bore diameter of the pipe **(12 marks)**
- b) (i) Describe any **THREE** methods of testing drains against leakages.
- (ii) With the aid of a sketch, describe an out-fall discharging into a stream. **(8 marks)**

Question Three

- a) (i) State **THREE** factors that may necessitate subsoil drainage in a building site. **(6 marks)**
- (ii) With the aid of sketches, describe any **THREE** drainage patterns **(6 marks)**
- b) With the aid of a sketch, describe the drainage of a reinforced concrete flat roof **(8 marks)**

Question Four

- a) (i) Define the term maintenance as applied to buildings
- (ii) Differentiate between “planned maintenance” and unplanned maintenance of buildings. **(8 marks)**
- b) A one storey residential building is to be investigated to ascertain its structural stability:
- (i) State the information required before conducting the investigation
 - (ii) Outline the required investigation **(12 marks)**

Question Five

- a) Briefly explain the following:
- (i) The **THREE** essential to all fires **(6 marks)**
 - (ii) Fire-resistance of building elements **(4 marks)**
 - (iii) Fire protection of building elements **(4 marks)**
- b) Explain the following fire tests:
- (i) Fire propagation test
 - (ii) Non-combustibility test
 - (iii) Ignitability test **(6 marks)**