THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

(A Constituent College of JKUAT)

(A Centre of Excellence)

Faculty of Engineering & Technology

DEPARTMENT OF BUILDING & CIVIL ENGINEERING

DIPLOMA IN ARCHITECTURE

EBC 2313: BUILDING SERVICES

SPECIAL/SUPPLEMENTARY EXAMINATION
SERIES: OCTOBER 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) With the aid of a sketch, explain the connection of cold water service to a consumer or building from the local authority's water main. **(7 marks)**

b) (i) With the aid of sketches differentiate between deep and shallow wells.
(ii) Explain the need to store water for domestic use. **(7 marks)**

c) Describe any **TWO** types of materials used in the manufacture of sanitary appliances. **(6 marks)**

Question Two (20 Marks)

a) It has been established that a local authority's water main's pressure is not adequate to supply cold water to the 6^{th}, 7^{th} and 8^{th} floors of a residential building. Name and describe a suitable system for supplying water to these floors. **(8 marks)**

b) The following information relates to a proposed cold water distribution system with a single draw off point:

- Discharge (flow rate) = 1.1 litres/sec
- Pressure head = 4.5cm
- Effective length of pipe = 28m

Using Thomas Box formular, determine the internal diameter of the distribution pipe. **(5 marks)**

Question Three (20 Marks)

a) With the aid of a sketch, describe a water solar heating system for domestic use. **(7 marks)**

b) (i) State the **TWO** classes of sanitary appliances
(ii) State the **SIX** factors to be considered when specifying sanitary appliances. **(8 marks)**

c) Differentiate between single and double trap siphoric water closets. **(5 marks)**

Question Four (20 marks)

a) (i) With the aid of a sketch, illustrate the construction of a brick inspection chamber.
(ii) State any **FIVE** principles of good drainage. **(8 marks)**

b) (i) State any **FOUR** ventilation requirements.
(ii) Compute the ventilation rate for an office room given:

- Fresh air supply requirement per person = $50m^3/hr$
- Room volume = $100m^3$
- Occupancy = 5 persons

c) With the aid of a sketch, illustrate the single stack system of above ground drainage. **(4 marks)**

Question Five (20 marks)

a) (i) State the objectives of land drainage
(ii) Explain the principle of land drainage **(8 marks)**

b) With the aid of a sketch, describe the water test on a newly laid drainage system. **(6 marks)**

c) With the aid of a sketch, describe the ring circuit of electricity power supply. **(6 marks)**