TECHNICAL UNIVERSITY OF MOMBASA

Faculty of Engineering & Technology

DEPARTMENT OF BUILDING & CIVIL ENGINEERING

DIPLOMA IN BUILDING & CIVIL ENGINEERING

EBC 2313: BUILDING SERVICES

END OF SEMESTER EXAMINATION
SERIES: APRIL 2015
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 of the **FIVE** questions

Maximum marks for each part of a question are as shown
Use neat, large and well labeled diagrams where required
This paper consists of **THREE** printed pages

Question One

a) State the significance of the following environmental factors in the design and provision of building services.
   (i) Moisture
   (ii) Air movement
   (iii) Day lighting
   (iv) Heat
   (v) Sound **(5 marks)**

b) Describe a stip by stip method for domestic water supply pipe sizing **(9 marks)**

c) Describe a procedure of determining critical discharge of a stationary appliance including allowance for frictional losses in taps, valves and connections in the design of a domestic plumbing system **(6 marks)**

Question Two

a) Describe the THREE stages of water treatment processes for domestic supply **(6 marks)**

b) With the aid of a sketch describe a Typical Layout of mains water distribution system to an urban settlement scheme **(8 marks)**

c) State THREE main factors indicating the need for provision of a cold water storage tank for a residential house **(6 marks)**

Question Three

a) Describe the TWO types of drainage systems for domestic buildings **(4 marks)**

b) Describe the design consideration of a typical domestic drainage installation **(8 marks)**

c) Explain THREE approaches in the design of drainage installation combined system **(8 marks)**

Question Four

a) Define the following terms used in psychrometry:
   (i) Wet bulb temperature
   (ii) Dew point
   (iii) Humidity ratio **(6 marks)**

b) Describe methods of controlling moisture movements into and within a building **(6 marks)**

c) Moist air at 20^{o}C dry bulb and 60% saturation. Using a psychometric chart determine (chart 01):
   (i) Humidity ratio
   (ii) Dew point
   (iii) Enthalpy of the mixture
   (iv) The wet bulb temperature **(8 marks)**

Question Five

a) Describe the natural sources of thermal generation in buildings **(6 marks)**

b) Describe measures to be taken to achieve heat balance in buildings in the following elements:

(i) Roof
(ii) Walling
(iii) Windows
(iv) Floors **(8 marks)**

c) State the factors that contribute to Thermal generation in a building **(6 marks)**