Technical University of Mombasa

Faculty of Engineering and Technology

DEPARTMENT OF BUILDING AND CIVIL ENGINEERING

HIGHER DIPLOMA IN BUILDING & CIVIL ECONOMICS
(KIHBIT)

EBE 3113 : CONCRETE AND TIMBER TECHNOLOGY I

SUPPLEMENTARY: EXAMINATIONS

SERIES: APRIL 2014

TIME: 2 HOURS

INSTRUCTIONS TO CANDIDATES:

1. You should have the following for this paper
   - *Answer booklet*
   - *Scientific calculator*
2. This paper consists of ***FIVE*** questions.
3. Answer any **THREE** Questions

*This paper consists of **3 PRINTED** pages*

QUESTION ONE

a) State six advantages of concrete over other construction materials **(6 marks)**

b) Explain the properties and uses of the following types of cement
   (i) High alumina cement
   (ii) Extra rapid hardening cement
   (10 marks)

c) State four advantages of grinding fine cement **(4 marks)**

QUESTION TWO

a) State five precautions taken when storing cement **(5 marks)**

b) Briefly explain the following types of artificial coarse aggregates:-
   (i) Expanded clay
   (ii) Air cooled blast furnace slag **(7 marks)**

c) Using sketches explain the four states of absorption and surface moisture of aggregates.
   (8 marks)

QUESTION THREE

a) Briefly describe the determination of crushing value of aggregates **(8 marks)**

b) Explain the following
   (i) Bulking of sand
   (ii) Determination of clay by field setting test **(6 marks)**

c) (i) State the qualities s of good sand
   (ii) Briefly explain the storage of aggregates on site **(6 marks)**

QUESTION FOUR

a) Explain the following types of concrete
   (i) Plain concrete
   (ii) Reinforced concrete
   (iii) Prestressed concrete
   (6 marks)

b) Explain the influence of the following to crushing strength of concrete
   (i) Age of concrete
   (ii) Temperature
   (iii) Water /Cement ration
   (iv) Type of cement and its quality. **(10 marks)**

c) State four factors that determines the rate of creep. **(4 marks)**

QUESTION FIVE

a) With the aid of a sketch, illustrate deformation of concrete under load (modulus of elasticity) **(8 marks)**

b) Explain three disintegrating effects that affects useful life of concrete **(6 marks)**

c) Briefly describe placing of concrete under water **(6 marks)**