



TECHNICAL UNIVERSITY OF MOMBASA

**Faculty of Engineering & Technology  
in Conjunction with  
Kenya Institute of Highways and  
Building & Technology (KIHBT)**

DEPARTMENT OF BUILDING & CIVIL ENGINEERING

HIGHER DIPLOMA IN CONSTRUCTION (BUILDING ECONOMICS OPTION)

EBE 3113: CONCRETE & TIMBER TECHNOLOGY I

SPECIAL/SUPPLEMENTARY EXAMINATION

SERIES: APRIL 2015

TIME ALLOWED: 2 HOURS

**Instructions to Candidates:**

You should have the following for this examination

- *Answer Booklet*
- *Drawing Instruments*

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 **TWO** printed pages

### **Question One**

- a) Briefly explain the application of the following types of cement:  
(i) Ordinary Portland cement  
(ii) Rapid Hardening Portland cement  
(iii) Low Heat Portland Cement **(6 marks)**
- b) With the aid of a sketch, outline the slump test **(10 marks)**
- c) State the **FOUR** features that distinguish plastic shrinkage cracks on horizontal surfaces from other types of cracks **(4 marks)**

### **Question Two**

- a) State **SIX** general requirements for formwork **(6 marks)**
- b) Outline the aggregate sieving test **(6 marks)**
- c) State the **FOUR** precautions observed during placing of concrete **(8 marks)**

### **Question Three**

- a) Name and explain **FIVE** factors that influence the strength of concrete **(10 marks)**
- b) State **SIX** causes of increase in temperature of concrete **(6 marks)**
- c) Explain **TWO** advantages of post-tensioning **(4 marks)**

### **Question Four**

- a) Name and explain **FIVE** objectionable minerals and salts that may occur in natural aggregates **(10 marks)**
- b) Briefly outline the method for determining compressive strength of concrete cubes **(10 marks)**

### **Question Five**

- a) Briefly explain the **THREE** separate properties that constitute workability **(6 marks)**
- b) State **FIVE** ways of reducing void content of any particular mixture of concrete **(5 marks)**
- c) Briefly explain **THREE** factors causing disintegrating effects on concrete **(6 marks)**
- d) Explain the following terms:  
(i) Modulus of elasticity  
(ii) Creep **(3 marks)**