



MACHAKOS UNIVERSITY

University Examinations 2016/2017

SCHOOL OF ENGINEERING AND TECHNOLOGY
DEPARTMENT OF BUILDING AND CIVIL ENGINEERING

SECOND YEAR FIRST SEMESTER EXAMINATION FOR DIPLOMA IN CIVIL
ENGINEERING

BCECD 207: CIVIL ENGINEERING MATERIALS II

DATE: 5/6/2017

TIME: 8:30 – 10:30 AM

INSTRUCTIONS

- This paper comprises of **five** questions
- Question **one** is **compulsory** and carry 30 marks
- Answer any **other two** questions

- Define the term concrete (2 marks)
 - Discuss 4 properties of hard concrete (6 marks)
 - Discuss 3 ingredients used in preparation of concrete (3 marks)
 - Sketch any two machines used in transporting concrete (10 marks)
 - Using sketches, discuss the following joint used when concreting:-
 - Expansion joint
 - Contraction joint (6 marks)
- Outline wet method of manufacturing ordinary Portland cements (6 marks)
 - Sketch the following machines used in compacting concreting:-
 - poker vibrator
 - I form vibrator (10 marks)
 - Discuss precaution taken when placing concrete (4 marks)

3. a) With aid of sketches, discuss the following joints in concrete:-
- i. horizontal joint
 - ii. Isolation joint (6 marks)
- b) Sketch a suitable formwork for a rectangular concrete column (10 marks)
- c) Discuss 4 qualities of good concrete (4 marks)
4. a) Differentiate between additives and admixtures stating two examples of each (5 marks)
- b) Explain the following test carried on concrete:-
- i. Crushing test
 - ii. Tensile test (5 marks)
- c) Discuss 3 methods of curing concrete (9 marks)
5. a) Discuss two methods of batching concrete ingredients (5 marks)
- b) Explain concrete mix design (5 marks)
- c) Discuss any 5 ingredients present in cement and state their functions (10 marks)