



MACHAKOS UNIVERSITY

University Examinations 2017/2018

SCHOOL OF ENGINEERING
DEPARTMENT OF BUILDING AND CIVIL ENGINEERING

SECOND YEAR FIRST SEMESTER EXAMINATION FOR DIPLOMA IN CIVIL
ENGINEERING

BCECD 207: CIVIL ENGINEERING MATERIALS II

DATE: 15/12/2017

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 wet concrete (6 marks)
 - Discuss 3 ingredients used in preparation of concrete (3 marks)
 - Sketch any two machines used in mixing concrete (9 marks)
 - Using sketches, discuss a form work for casting rectangular column concreting (10 marks)
- Outline dry method of manufacturing ordinary Portland cements (6 marks)
 - Discuss the following type of cements:-
 - Rapid hardening Portland cement
 - Ultra-rapid hardening Portland cements
 - White cement
 - Pozzallana cement (10 marks)
 - Discuss precaution taken when placing concrete (4 marks)

3. a) With aid of sketches, discuss the following joints in concrete:-
i Expansion joint
ii Isolation joint (6 marks)
- b) Sketch a suitable formwork for a circular concrete column (10 marks)
- c) Discuss 4 qualities of a good concrete (4 marks)
4. a) Differentiate between additives and admixtures stating two example of each (5 marks)
- b) Explain the following test carried on concrete:-
i Crushing test
ii Slump test (6 marks)
- c) Sketch and label 3 machines used in compacting 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)