



MACHAKOS UNIVERSITY COLLEGE

(A Constituent College of Kenyatta University)
University Examinations for 2015/2016

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF BUILDING AND CIVIL ENGINEERING

FIRST SEMESTER EXAMINATION FOR DIPLOMA IN CIVIL ENGINEERING

BCECD 207: CIVIL ENGINEERING MATERIALS II

Date: 4/12/2015

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*

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|----|-----|------|--|------------|
| 1 | (a) | (i) | Define the term concrete | (2 marks) |
| | | (ii) | Discuss material used for making concrete | (6 marks) |
| | (b) | | Discuss 3 types of Portland cements | (3 marks) |
| | (c) | | Sketch any two machines used in compacting concrete | (10 marks) |
| | (d) | | Discuss two methods of curing concrete | (6 marks) |
| 2. | (a) | | Outline six qualities of good concrete | (6 marks) |
| | (b) | | Sketch two equipments used for transporting concrete | (10 marks) |
| | (c) | | Discuss how concrete should be placed. | (4 marks) |
| 3. | (a) | | With aid of sketches, discuss the following joints in concrete:- | |
| | | (i) | Horizontal joint | |
| | | (ii) | Expansion joint | (6 marks) |

- (b) Sketch a suitable formwork for a rectangular concrete column. (10 marks)
- (c) Discuss dry process method of manufacturing cements. (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) Compression test
 - (ii) Tensile test (5 marks)
- (c) Outline 5 precautions to be observed when mixing concrete (10 marks)
- 5. (a) Discuss two methods of batching concrete ingredients. (5 marks)
- (b) Explain concrete mix design (6 marks)
- (c) Explain the effects of the following on the strength of concrete:-
 - (i) Compaction
 - (ii) Segregation
 - (iii) Water /cement ratio
 - (iv) Bleeding (9 marks)