



MACHAKOS UNIVERSITY

University Examination 2018/2019

SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF BUILDING AND CIVIL ENGINEERING

SECOND YEAR SPECIAL/SUPPLEMENTARY EXAMINATION FOR

DIPLOMA IN CIVIL ENGINEERING

BCECD 205 ENGINEERING MATERIALS II

DATE: 31/7/2019

TIME: 2.00-4.00 PM

INSTRUCTIONS: Answer questions **ONE** and any other **TWO** questions.

1. a) i Define the term concrete (2 marks)
- ii Discuss 3 properties of hard concrete (6 marks)
- b) Discuss 3 ingredients used in preparation of concrete (6 marks)
- c) Sketch two machines used in compacting concrete (10 marks)
- d) Using a sketch discuss column formwork (6 marks)
- 2 a) Outline wet process of manufacturing ordinary Portland cement (8 marks)
- b) State three advantages and disadvantages of wet process of manufacturing cement (6 marks)
- c) Discuss the precaution taken when placing concrete (6 marks)
- 3 a) With aid of sketches, discuss the following joints in concrete: -

- i. construction joint
 - ii. isolation joint (6 marks)
- b) Sketch a suitable formwork for a circular 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 5 ingredients present in cement and state their functions (10 marks)
- b) Explain 2 types of finishes applied to concrete surfaces (5 marks)
 - c) Discuss two methods of batching concrete ingredients (5 marks)