



# 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 209: CONSTRUCTION PLANTS AND EQUIPMENTS**

**DATE: 6/6/2017**

**TIME: 8:30 – 10:30 AM**

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## INSTRUCTIONS

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

- a) State five factors to consider when selecting an excavator (5 marks)
  - b) Sketch and label the following excavating plants and state two functions of each:-
    - i. Dragline
    - ii. Telescopic Fork lifts (10 marks)
  - c) Discuss 2 methods of acquiring plants:- (6 marks)
  - d) With an aid of sketch, discuss angle dozer (4 marks)
  - e) Sketch a rear dumper (5 marks)
- a) with an aid sketch, discuss guy derrick and state where it is used (8 marks)
  - b) Using sketches differentiate between a grader and scraper and state where each is used (12 marks)
- a) Using sketches, differentiate between a back actor and cram shelf (10 marks)
  - b) Sketch a hoist and state where it is used (5 marks)

- c) Sketch and label a sheep wheel roller (5 marks)
4. a) The following data was obtained from a manufacturer's specification for a scraper.
- Scraper capacity = 10T  
Haulage speed (full) = 15Km/hr  
Haulage speed (empty) = 16km/hr  
Loading time = 5min  
Dumping time = 1.5 min  
Accelerating /decelerating = 0.8min
- If the length of haul road is 12km and the efficiency of the scraper is 85%.  
Calculate the productivity for 9hr day of the scraper and the number of scrapers required for the project (10 marks)
- b) Sketch any two plants used in concreting (10 marks)
5. a) Describe factor affecting the productivity excavation plant (6 marks)
- b) Outline safety precaution to be observed when blasting (8 marks)
- c) Differentiate between rotary and percussion method of drilling (6 marks)