



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 209: CONSTRUCTION PLANTS AND EQUIPMENTS

DATE: 19/12/2017

TIME: 8.30-10.30 AM

INSTRUCTIONS

Answer Question One and Any Other Two Questions

1.
 - a) State five reasons of using construction plants on site (5 marks)
 - b) Sketch and label the following excavating plants and state two functions of each:-
 - i Bulldozer
 - ii Scraper (10 marks)
 - c) Discuss 2 methods of maintaining plants (6 marks)
 - d) With an aid of sketch, discuss grader (4 marks)
 - e) With aid of Sketch, discuss telescopic forklift (5 marks)
2.
 - a) with an aid sketch, discuss guy derrick and state where it is used (8 marks)
 - b) Using sketches differentiate between a skimmer and dragline and state where each is used (12 marks)
3.
 - 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 = 12T

Haulage speed (full) = 15Km/hr

Haulage speed (empty) = 17km/hr

Loading time = 6min

Dumping time = 1.5 min

Accelerating /decelerating = 0.8min

If the length of haul road is 15km 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 of excavation plant (6 marks)
- b) Outline safety precaution to be observed when blasting (8 marks)
- c) Differentiate between rotary and percussion methods of drilling (6 marks)