



# 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 209: CONSTRUCTION PLANTS AND EQUIPMENTS

Date: 11/8/2016

Time: 11:00 – 1:00 pm

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## INSTRUCTIONS:

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

- State five factors to consider when selecting of an excavating plant. (5 marks)
  - Sketch and label the following excavating plants and state two functions of each:-
    - Back Actor
    - face shovel (10 marks)
  - Discuss the following methods of maintaining plants:-
    - Planned maintenance
    - Preventive maintenance (6 marks)
  - With an aid of sketch, discuss angle dozer (4 marks)
  - Sketch a tandem (5 marks)
- With an aid sketch, discuss scraper and state where it is used. (8 marks)
  - Using sketches differentiate between a gantry and guyed derricks and state where each is used (12 marks)

3.
  - (a) Using sketches, differentiate between a hoist and crane (10 marks)
  - (b) Sketch a fork lift and state where it is used (5 marks)
  - (c) Sketch and label a mobile crane (5 marks)
  
4.
  - (a) The following data was obtained from a manufacturer's specification for a scraper.
 

Scraper capacity = 9T

Haulage speed (full) = 12Km/hr

Haulage speed (empty) = 15km/hr

Loading time = 5min

Dumping time = 1.5 min

Accelerating /decelerating = 0.8min

If the length of haul road is 8km 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 transporting and lifting plant. (6 marks)
  - (b) Outline safety precaution to be observed when blasting. (8 marks)
  - (c) Sketch a tamping board vibrator. (6 marks)