



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: 4/12/2015

Time: 2:00 – 4:00 PM

INSTRUCTIONS:

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

1.
 - (a) State five reasons for using a construction plant (5 marks)
 - (b) Sketch and label the following excavating plants and state two functions of each:-
 - (i) Back actor
 - (ii) Wheeled face shovel (10 marks)
 - (c) Discuss the following methods of maintaining plants:-
 - (i) Planned maintenance
 - (ii) Preventive maintenance (6 marks)
 - (d) With an aid of sketch, discuss percussion drilling. (4 marks)
 - (c) Sketch a tilting drum mixer (5 marks)

2.
 - (a) With an aid sketch, discuss skimmer 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)
3.
 - (a) Using sketches', differentiate between a hoist and crane. (10 marks)
 - (b) Sketch a telescopic boom forklift (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 = 8T

Haulage speed (full) = 12Km/hr

Haulage speed (empty) = 17km/hr

Loading time = 4min

Dumping time = 1.2 min

Accelerating /decelerating = 0.9min

If the length of haul road is 5km and the efficiency of the scraper is 93%. Calculate the productivity for 8hr day of the scraper and the number of scrapers required for the project (10 marks)
 - (b) Sketch any two plants used in bitumen laying. (10 marks)
5.
 - (a) Describe three types of explosive used in blasting. (6 marks)
 - (b) Outline safety precaution to be observed when blasting (8 marks)
 - (c) Sketch a sheep wheel roller (6 marks)