



**THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE**

**(A Constituent College of JKUAT)**

(A Centre of Excellence)

# **Faculty of Engineering & Technology**

DEPARTMENT OF BUILDING & CIVIL ENGINEERING

**DIPLOMA IN BUILDING & CIVIL ENGINEERING**

**DIPLOMA IN CIVIL ENGINEERING**

EBC 2215: CONSTRUCTION PLANT & EQUIPMENT

**SPECIAL/SUPPLEMENTARY EXAMINATION**

**SERIES: OCTOBER 2012**

**TIME: 2 HOURS**

**Instructions to Candidates:**

You should have the following for this examination

- *Answer Booklet*

- *Calculator*

This paper consists of **FIVE** questions. Answer any **THREE** questions

Maximum marks for each part of a question are as shown

This paper consists of **THREE** printed pages

**Question One (20 Marks)**

- a) Identity **SEVEN** operations requiring construction plant, name **TWO** types of plant for each operation. **(7 marks)**
- b) State the advantages of regular maintenance of plant. **(6 marks)**
- c) Briefly explain preventive maintenance. **(7 marks)**

**Question Two (20 Marks)**

- a) With the aid of a sketch, describe pan mixer. **(9 marks)**
- b) The following data was available for a scraper of capacity of 12 Tonnes.
- Haul length – 2500m
  - Haul speed (full) – 10km/hr
  - Haul speed (empty) – 20 km/hr
  - Dumping time – 0.8 minutes
  - Loading time – 1.5 minutes
  - Acceleration/Deceleration – 1.0 minutes

Calculate the productivity for a 9 hour day for one scraper and the number of scrapers if the efficiency is 90% **(11 marks)**

**Question Three (20 Marks)**

- a) (i) State **FOUR** factors determining plant operating costs
- (ii) Explain the two categories of operating costs, listing **FOUR** examples of each. **(10 marks)**
- b) With the aid of sketch, describe the operation of drag-line. **(10 marks)**

**Question Four (20 marks)**

- a) With the aid of a sketch, describe self supporting tower crane. **(10 marks)**
- b) State the precautions taken:
- i) When using lifting plant
  - ii) When handling misfires after blasting **(10 marks)**

**Question Five (20 marks)**

- a) Explain **THREE** factors affecting comparative effort of vibrating rollers. **(6 marks)**
- b) (i) State **SIX** factors considered in choosing pile driving plant
- (ii) With the aid of a sketch, describe the operation of a single acting diesel hammer. **(14 marks)**