



THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

((A Constituent College of JKUAT)

(A Centre of Excellence)

**Faculty of Engineering &
Technology in Conjunction with
Kenya Institute of Highways and
Building & Technology (KIHBT)**

DEPARTMENT OF BUILDING & CIVIL ENGINEERING

HIGHER DIPLOMA IN BUILDING ECONOMICS ENGINEERING

EBE 3305: MECHANICAL PLANT AND EQUIPMENT III

END OF SEMESTER EXAMINATION

SERIES: AUGUST 2012

TIME: 2 HOURS

Instructions to Candidates:

You should have the following for this examination

- *Answer Booklet*
- *A Scientific 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 **TWO** printed pages

Question One (20 Marks)

- a) State **SIX** factors considered when selecting pile driving plant and equipment. **(6 marks)**
- b) With the aid of a sketch, explain the operation of single acting diesel hammer. **(8 marks)**
- c) State **THREE**:
 - i) Advantages
 - ii) Disadvantages of single acting diesel hammer **(6 marks)**

Question Two (20 marks)

- a) Briefly explain the operation of single acting steam hammer. **(3 marks)**
- b) State **THREE**:
 - i) Advantages
 - ii) Disadvantages of single acting steam hammer **(6 marks)**
- c) (i) With the aid of a sketch, describe the operation of drop hammer, in raked frame.
(ii) State the **THREE** advantages and **THREE** disadvantages of drop hammer. **(11 marks)**

Question Three (20 marks)

- a) With the aid of a sketch, describe the operation of
 - i) Two smooth wheeled rollers (Tandem)
 - ii) Three smooth wheeled rollers
 - iii) Tamping rollers **(14 marks)**
- b) Explain **THREE** factors affecting compactive effort **(6 marks)**

Question Four (20 marks)

With the aid of sketch, briefly explain the following types of plants.

- a) Compressors **(6 marks)**
- b) Breakers **(5 marks)**
- c) Beam vibrator **(5 marks)**
- d) Vibrating plate compactors **(4 marks)**

Question Five (20 marks)

- a) Briefly explain the operation of the following
 - i) Self propelled pressure sprayer
 - ii) Barber greene paver **(10 marks)**
- b) With the aid of a sketch, describe the semi-rotary hand pump. **(10 marks)**