



TECHNICAL UNIVERSITY OF MOMBASA

**FACULTY OF ENGINEERING AND TECHNOLOGY IN CONJUNCTION WITH KENYA
INSTITUTE OF HIGHWAYS AND BUILDING TECHNOLOGY (KIHBT)**

DEPARTMENT OF BUILDING AND CIVIL ENGINEERING

UNIVERSITY EXAMINATION FOR:

HIGHER DIPLOMA IN BUILDING ECONOMICS

EBE 3119: MECHANICAL PLANT AND EQUIPMENT I A

END OF SEMESTER EXAMINATIONS
SERIES: OCTOBER 2016

TIME: 2 HOURS

Instruction to candidates

You should have the following for this examination

- Answer booklet
- Pocket Calculator

This paper consist of five question.

Answer any three questions of the five questions

All question carry equal marks

Maximum marks for each part of a question are as shown

This paper consist of two printed pages

QUESTION ONE (20 MARKS)

a) Explain the following:-

- i. Standard Plant
- ii. Special Plant

(4 marks)

b) Explain the following types of scrapers:-

- i. Three Axle scrapers
- ii. Towed scrapers
- iii. Two Axle scrapers

(6 Marks)

c) An item of plant has a cash price of Ksh. 860,000/-. Determine the cost of purchase by hire purchase if the initial deposit is 40% of the cash price, interest rate is 6.5% p.a. The payment period is 20 months. Also determine the monthly payment.

(5 Marks)

d) A contractor purchased an item of plant at cost of Ksh. 4700,000/- and its estimated economic life is 6 years. The plant is expected to work for 2500 hours per year. The average depreciation rate per year is 24%.

- i. Assuming a salvage value of ksh. 15,000?- at the end of 6 years, use straight line method to calculate the depreciation per hour.
- ii. Using the declining balance method, draw a table showing the value of plant at the end of each year.

(5 Marks)

QUESTION TWO (20 MARKS)

a) Outline FIVE factors that determine the choice of plants.

(5 Marks)

b) Explain SIX factors to be considered before hiring out a plant to a Contractor.

(6 marks)

c) Name FOUR factors affecting the choice of Plants.

(8 Marks)

d) Define the term “equipment”

(1 mark)

QUESTION THREE (20 MARKS)

a) Outline SIX advantages of using plants in engineering works.

(6 Marks)

b) Give FIVE advantages of owning a Plant over hiring or leasing of the same.(5 Marks)

c) Explain the following types of Plant maintenance:-

- i) Preventive maintenance
- ii) Planned maintenance

iii) Servicing and Cleaning

(9 Marks)

QUESTION FOUR (20 MARKS)

- a) Explain the following types of plant operating costs and give four examples each:-
i) Ownership costs
ii) Running cost
(8 Marks)
- b) State THREE advantages of purchase by Installment
(3 Marks)
- c) Explain the following types of plant depreciation:-
i) Straight line method
j) Declining balance
k) Sinking fund
l) Sum of the year digit
(8 Marks)
- d) Define the term Plant
(1 Mark)

QUESTION FIVE (20 MARKS)

- a) Explain the features of the following trucks:-
i. Articulated trucks
ii. Rigid trucks
(8 Marks)
- b) State FIVE precautions to be adhered to when handling lifting appliances
(5 Marks)
- c) Explain the differences between the following plant equipment:-
i. Elevator
ii. Excavators
(4 Marks)
- d). Explain the operations mechanisms of lorry mounted cranes.
(3 Marks)