THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

((A Constituent College of JKUAT)

(A Centre of Excellence)

Faculty of Engineering & Technology

DEPARTMENT OF BUILDING & CIVIL ENGINEERING

UNIVERSITY EXAMINATION FOR DEGREE IN BACHELOR OF SCIENCE IN CIVIL ENGINEERING

ECE 2501: ENGINEERING MANAGEMENT I

END OF SEMESTER EXAMINATION
SERIES: AUGUST 2012
TIME: 2 HOURS

Instructions to Candidates:

You should have the following for this examination

- *Answer Booklet*

This paper consists of **FIVE** questions
Answer question **ONE (COMPULSORY)** and any other **TWO** questions
Maximum marks for each part of a question are as shown
This paper consists of **THREE** printed pages

Question One (COMPULSORY - 30 Marks)

a) Outline **FIVE** factors that affect the selection of construction equipment for a project. **(10 marks)**

b) State **THREE** advantages and **TWO** disadvantages of crawler mounted dozers. **(10 marks)**

c) A construction equipment costs $500,000 and it is decided to depreciate it at 10% p.a on the reducing balance method. What will be its written down value after 25 years. **(10 marks)**

Question Two (20 marks)

a) Briefly explain the following categories of Inventory of items:
- **i)** Raw material and spares
- **ii)** Work in process
- **iii)** Finished goods inventory **(6 marks)**

b) A construction company uses 50,000 units of an items per annum which are purchases at $10 each, the ordering and handling cost are $150 each, and carrying cost are 15% of the purchase price per annum:
- **i)** Calculate the Economic Order Quantity
- **ii)** Calculate the Economic Order Quantity if the firm purchases machinery that can produce 250,000 units per annum. **(14 marks)**

Question Three (20 marks)

a) A company that produces construction equipment has developed a new product. They can either test the market or abandon the project. Test market costs $ 50,000; likely outcomes are (favourable = 0.7) or failure (P = 0.3). If favourable, they could either abandon or produce it when demand is anticipated to be

Low	P = 0.25	Loss	$ 100,000
Medium	P = 0.6	Profit	$ 150,000
High	P = 0.15	Profit	$ 450,000

If test market indicates failure, the project would be abandoned. Abandonment at any stage results in a gain of $ 30,000 from the special machinery used. Draw the decision tree showing the nodes and probabilities **(20 marks)**

Question Four (20 marks)

a) A construction company has been awarded a contract to build an office block. The project has been broken down into a number of activities.

Activity	Immediately Preceding Activity	Duration in Months	Total Cost $ (000)
A	-	8	100
B	-	2	75
C	A	3	135
D	A	7	70
E	B	5	160
F	C,D	9	225
G	D	2	30
H	D,E	4	90
I	G,H	3	55

Construct a network diagram for this project and hence determine the minimum project duration and its associated cost. The over heads of this project are $ 5000 per month **(20 marks)**

Question Five (20 marks)

a) Define the following terms as used in project evaluation:
- **i)** Formative evaluation
- **ii)** Summative evaluation **(4 marks)**

b) Outline any **FIVE** factors to be considered when evaluating a project. **(10 marks)**

c) A constructor wishes to borrow $12,000 to finance a project. The interest rate is 5% per year. If the borrowed amount and interest are paid back after 3 years, what is the total amount of the repayment? **(6 marks)**