TECHNICAL UNIVERSITY OF MOMBASA

Faculty of Engineering & Technology

DEPARTMENT OF BUILDING & CIVIL ENGINEERING

UNIVERSITY EXAMINATION FOR BACHELOR OF SCIENCE IN CIVIL ENGINEERING (BSCE 13M)

ECE 2501: ENGINEERING MANAGEMENT I

END OF SEMESTER EXAMINATION
SERIES: AUGUST 2013
TIME ALLOWED: 2 HOURS

<u>**Instructions to Candidates:**</u>
You should have the following for this examination
-   *Answer Booklet*
This paper consists of **FIVE** questions.
Answer question **ONE (COMPULSORY)** in section **A** and any other **TWO** questions from section **B**
Maximum marks for each part of a question are as shown
This paper consists of **THREE** printed pages

SECTION A

Question One (Compulsory)

a) Outline the main features of a plant policy for a construction company. **(6 marks)**

b) Highlight the key aspects considered when selecting plant. **(5 marks)**

c) With the aid of a typical example, outline any THREE methods of depreciating plant. **(9 marks)**

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d) Discuss the main factors involved in maintaining inventory the costs involved and the possible disadvantages of maintaining low inventory and high inventory levels.

SECTION B (Attempt any TWO questions)

Question Two

Rearrange the following activities according to relationship, determine the critical path and tabulate the total float for the network. **(20 marks)**

ACTIVITY	DURATION	PROCEDING ACTIVITY
T	7	Q
M	4	H
J	9	F
B	3	A
Q	8	L, P
H	8	E, D
L	6	H, G, K
M	6	H
P	3	O
F	15	A
S	12	O
E	8	B
C	4	A
K	3	J
O	3	H
U	4	R, S, T
A	9	-
D	15	B
G	2	C
R	6	M, N

Question Three

Brollo-Co, is drawing production plans for the coming year. Three products are available with the following characteristics.

Product		P	Q	R	S
Amount per unit					
Selling price		300	425	575	
Cost of materials		75	80	60	
Labour – grade	A	200	150	-	
	B	150	200	200	
	C	100	300	150	
Variable overheads		150	300	300	

Fixed Costs 2,350,000 per annum.

Each grade of labour is paid – 300 per hour but skills are specific to grade. The annual supply of each grade is limited as follows (maximum

Grade A   7,000hrs

B   12,000hrs

C   14,000hrs

a) Calculate the product mix which will maximize profit for the year and state the amount of profit.

b) Calculate the minimum price at which the sale of product Q would be worthwhile.   **(10 marks)**

Question Four

a) List two methods of depreciating plant   **(6 marks)**

b) A mechanical shovel of capacity 1.2m3, was purchased at ksh 12,500,00. It has working life of 6 years, and a resale value of ksh 3,500,000. Determine its production capacity per hour. Assume all other necessary data not provided.   **(14 marks)**

Question Five

There are three mutually exclusive options, P, Q, R. A conditional profit table has been prepared as follow:

Profit in 000

Outcome

		1	H	H
Option	P	120	125	240
	Q	(75)	180	240
	R	90	60	250

Probabilities of each outcome occurring   -   0.3   0.8   0.4

Which option should be selected using:

    (i)   The maximum criterion
    (ii)   The minimax regret criterion
    (iii)   The expected values criterion?   **(20 marks)**