



ELIZADE UNIVERSITY, ILARA-MOKIN,
ONDO STATE, NIGERIA
DEPARTMENT OF MECHANICAL ENGINEERING

SECOND SEMESTER EXAMINATIONS

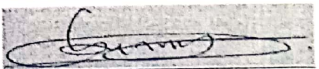
2017/2018 ACADEMIC SESSION

COURSE: GNE 502 – Engineering Management (2 Units)

CLASS: 500 Level General Engineering

TIME ALLOWED: 2 Hours: 30 Min.

INSTRUCTIONS: Answer Any Four (4) Questions


HOD'S SIGNATURE

Date: July/August, 2018

Question 1

- a. Define the term "Forecasting".
- b. Topfun manufacturing company has to cast 2 products X and Y using 2 methods. The time required for producing them are:

Casting	Machine/Production	Fretting hour(h)
X	4	2
Y	3	6

There are two lathes and four fretting machines, work hour is 36hrs. Variable costs for both castings are N10/unit and total fixed costs amount to N120/week. The selling price of casting X is N20/unit & Y N22/unit. How many of each of X & Y should be made in order to maximize profit?

C. Define the term Financial Statements. (15 marks)

Question 2

- a. Explain briefly the term "Accounting Methods".
- b. Given the network analysis in Figure Q2b, the PERT time estimates of the activities are written along the activity arrows in the order to-tm-tp.
 - i. In a tabular form, compute the Expected Time and Variance for each activity.
 - ii. Compute the Expected Duration and standard deviation for the following paths of the network.

(1) 10-20-50-80-90

- (2) 10-30-50-70-90
- (3) 10-40-60-80-90

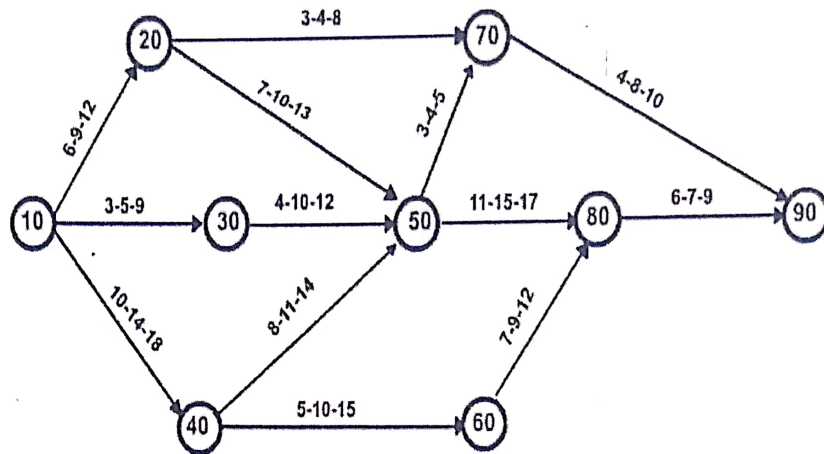


Figure Q2b

(15 marks)

Question 3

- a. Write short notes on the following
 - i. Balance Sheet
 - ii. Cash-flow Statement
 - iii. Income Statement
- b. List and explain briefly 3 types of Forecasting.
- c. Elizade Motors desires to locate a plant in western states of Nigeria. After preliminary analysis of the F.C.T, where the plant could be located. Four towns were chosen for further scrutinizing and considerations, they are; Ilara-Mokin, Abeokuta, Ibadan and Ikole-Ekiti. The table below shows the factors and weights assigned to each town by management. In a tabular form, determine the scores of each town and state the best location for Elizade motors plant.

Factor	Weight	Towns			
		Ilara-Mokin	Abeokuta	Ibadan	Ikole-Ekiti
Labour	3.0	8	8	6	5
Taxes	2.5	7	8	6	6
Raw Materials	2.0	8	6	7	7
Materials	1.5	7	9	6	5

(15 marks)

Question 4

- a. With the aid of sketches, explain briefly 4 types of plant layout available.
- b. The table below shows the sales of the textbook “Engineering Law and Management” of Topfun Publications for the last 10 months (Column 2) and the

Forecast sales (column 3). Showing all workings, complete the table and calculate the following;

- a. Bias Error
- b. Mean Square Error
- c. Standard Error
- d. Mean Absolute Error
- e. Mean Percentage Error

1	2	3	4	5	6	7
Year	Actual Sales	Forecast Sales	Forecast Error	Squared Error	Absolute Value of Error	Mean % Error
1	10,000	11,000				
2	15,000	16,000				
3	9,000	8,000				
4	7,000	9,000				
5	10,000	11,000				
6	11,000	10,000				
7	8,000	5,000				
8	12,000	10,000				
9	14,000	10,000				
10	10,000	8,000				
	Total					

(15 marks)

Question 5

- a. Define the following
 - i. Work study
 - ii. Time study
 - iii. Ergonomics

- b. Explain briefly the differences and similarities between Automated Guided Vehicles (AGVs) and Robotic Delivery Systems.
- c. Discuss briefly the Facility Layout Problems (FLPs) and identify possible solutions.
- d. List and discuss briefly 3 computer aided facility programs you know.

(15 marks)

Question 6

- a. What is Industrial Psychology?
- b. List and explain briefly 4 steps in budget control.
- c. List and explain briefly any four (4) functions of Management.
- d. Using graphical method, maximize $Z = 2x + 5y$, given the constraints

$$x+2y \leq 16$$

$$5x+3y \leq 45$$

$$x,y \geq 0$$

(15 marks)