ELIZADE UNIVERSITY, ILARA-MOKIN. ONDO STATE

FACULTY: SOCIAL & MANAGEMENT SCIENCES
DEPARTMENTS: ACCOUNTING & FINANCE.
FIRST SEMESTER EXAMINATIONS: 2018/2019 ACADEMIC SESSION
COURSE CODE: ACC/ACF/BFN/BUS 309
COURSE TITLE: DECISION ANALYSIS
DURATION: 3 HOURS
INSTRUCTION: Attempt any four (4) Questions.

1. Consider the past sales of sachet water for 12 weeks by a sachet water distributor as shown in the table below. Use 3-week moving average method to forecast whole sachet water operations for the distributing company.

Sachet Water Sales Time Series

Week	1	2	3	4	5	6	7	8	9	10	11	12
Sales ('000 sachet packs	20	24	22	26	21	19	23	21	25	23	18	25

15 Marks

2. Max $\Pi = 6X_1 + 8X_2$

X_1, X_2

S.t. $30X_1 + 20X_2 \leq 300$

$5X_1 + 10X_2 \leq 110$

$X_1, X_2 \geq 0$

Use the simplex method in Linear Programming Problem to maximise profit or contribution.

15 Marks

3. Consider a situation where the mean arrival rate (m) is one customer in every 4 minutes and the mean service time ($1/\lambda$) is 2½ minutes per customer. Calculate:

i. The average number of customers in the system

ii. The expected customer time in the system.

iii. Probability that no customer is in the system (facility is idle) **15 Marks**

4. The following represents activities for a production line of famous engineering company in Calabar.

Assembly activity	Activity description	Activity time	Precedence relationship
A	Rivet top	0.20	-
B	Rivet bottom	0.15	-
C	Rivet to bottom	0.44	A,B
D	Assemble left valve	0.22	C
E	Assemble right valve	0.20	C
F	Add valve cover	0.44	D,E
G	Paint	0.4	F

Required:

a) Construct a precedence diagram ***3 Marks***

b) Compute available cycle time ***3 Marks***

c) Compute total idle time ***3 Marks***

d) Compute total work time ***3 Marks***

e) Compute balance delay ***3 Marks***

Suppose 940 units are required per day and 365 days per year

5. A computer centre has three expert programmers. The centre wants three application programmes to be developed. The head of the computer centre, after carefully studying the programmes to be developed, estimates the computer time in minutes required by the experts for the application programmes as follows:

Programmers

Programmes	A	B	C
1	120	100	80
2	80	90	110
3	110	140	120

Assign the programmers to the programmes in such a way that the total computer time is minimum.

6. A manager must choose between building a large or small plant for his new product. The demand of the product can be high or low with probabilities 0.45 and 0.55 respectively. If a small plant is built and the demand is low, the net annual return is ₦30m. if the demand is high, the manager may do nothing about it, or use over time or expand the plant. Doing nothing about high demand brings in a net return of ₦35m, over time net return of ₦40m and expanding the plant will bring a net return of ₦50m. if a large plant is built and the demand is high, the net annual return is ₦70m, but if the demand is low, the manager may do nothing giving a net return of ₦15m or he may reduce prices to stimulate demand bringing an annual net return of ₦60m.

Required: i. Construct a decision tree for this problem

ii. Analyzed the decision tree and advice the manager accordingly

15 Marks