



**NATIONAL OPEN UNIVERSITY OF NIGERIA**  
**91, CADASTRAL ZONE, UNIVERSITY VILLAGE, JABI, ABUJA**  
**FACULTY OF MANAGEMENT SCIENCES**  
**2021\_2 EXAMINATION**

**COURSE CODE : ENT 704: QUANTITATIVE METHODS.**  
**CREDIT UNIT: 2**

**TIME ALLOWED: 2 HOURS**

- INSTRUCTIONS:**
- 1. Indicate your Matriculation Number clearly**
  - 2. Attempt questions one (1) and any other two (2) questions. Three questions in all**
  - 3. Question one (1) is compulsory and carries 30marks, while the other questions carry 20marks each.**
  - 4. Present all your points in coherent and orderly Manner**

1. The table below shows the optimistic, most likely and pessimistic time estimates in weeks of a project.

Activity	Optimistic	Most likely	Pessimistic
1-2	20	23	38
1-3	12	15	18
2-5	10	13	16
2-4	30	48	66
3-4	22	37	52
4-5	14	20	26

- (a) Compute the expected duration for every activity
  - (b) Construct the network and use it to locate the critical path of the project.
  - (c) Find the expected time to complete the project
  - (d) Find the standard deviation of the critical path
  - (e) Find the probability that the project will be complete in 92 or less weeks.
2. The table below gives information about an installation project.

Activity	Preceding Activity	Normal Time	Crash Time	Normal Cost	Crash Cost
A	-	9	7	25,000	40,000
B	A	5	4	10,000	17,500
C	-	8	6	25,000	45,000
D	C	5	3	10,000	25,000
E	B,D	4	3	15,000	27,500

				85,000	155,000
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The overhead cost per day is given as 15,000. Determine:

- (a) the critical path and its duration
  - (b) the total normal cost of finishing the project
  - (c) the minimum cost and the duration of the project
3. ASALEJEJE Enterprises Manufactures and sells variety of Traditional Cloths (Kampalla, Adire, Offi), which has been selling very well. They are Manufactured in these three cities: Abeokuta, Iseyin and Oyo Alafin and distributed to Lagos, Ijebu Ode and Ibadan.

Source/Location	Lagos	Ijebu Ode	Ibadan
Abeokuta	220	210	240
Iseyin	180	190	210
Oyo Alafin	300	320	360

The manufacturing capacity (per month) of Abeokuta, Iseyin and Oyo Alafin are 250, 300 and 200 respectively, while the demand are 190, 240 and 320 at Lagos, Ijebu Ode and Ibadan respectively.

The quantities inside the cell represent the unit costs in naira of transporting traditional cloth from one source to one location.

- (a) Formulate the above as a transportation Problem.
  - (b) Obtain an initial basic feasible solution to the problem.
  - (c) Hence, how should ASALEJEJE enterprises transport the Traditional Cloth so as to minimize the total cost of transportation via North West Corner Method?
4. (a) What is Production Management?
- (b) Explain different types of modeling
  - (c) Differentiate between transportation problem and assignment problem