

# QUESTION 6.17

FLOW/CHART :  
BETWEEN

DEPT	A	B	C	D	E
A	-	0	450	500	600
B		-	700	0	250
C			-	0	850
D				-	200
E					-

DISTANCE MATRIX:

	1	2	3	4	5
(A) 1	-	20	70	120	140
(B) 2		-	50	100	120
(C) 3			-	50	70
(D) 4				-	20
(E) 5					-

COST ESTIMATION:

$$\begin{aligned} \text{ABCDE} &: 0(0) + 450(70) + 500(120) + 600(140) + \\ & 50(700) + 0(100) + 250(120) + 0(50) + 850(70) \\ & + 200(20) = 304,000 \end{aligned}$$

$$\begin{aligned} \text{BA CDE} &: 450(50) + 500(100) + 600(120) + 700(70) + \\ & 120(0) + 140(250) + 850(70) + 200(20) = 292,000 \end{aligned}$$

CBADE:

$$450(70) + 500(50) + 600(70) + 700(20) + 250(120) + 850(140) + 200(20) = 265,500$$

DBCAE:

$$= 450(50) + 500(120) + 600(20) + 700(50) + 250(120) + 850(70) + 200(140) = 247,000$$

EBCDA:

$$= 450(50) + 500(20) + 600(140) + 700(50) + 250(20) + 850(70) + 200(120) = 240,000$$

ACBDE:

$$= 450(20) + 500(120) + 600(140) + 700(50) + 250(70) + 850(120) + 200(20) = 311,500$$

ADCBE:

$$= 450(70) + 500(20) + 600(140) + 700(50) + 250(20) + 850(120) + 200(120) = 291,500$$

AECDB:

$$= 450(70) + 500(120) + 600(20) + 700(70) + 250(120) + 850(50) + 200(100) = 245,000$$

ABDCE:

$$= 450(120) + 500(70) + 600(140) + 700(100) + 250(120) + 850(20) + 200(70) = 304,000$$

ABEDC:

$$= 450(140) + 500(120) + 600(70) + 700(120) + 250(50) + 850(70) + 200(500) = 331,000$$

ABCED:

$$= 450(70) + 500(140) + 600(120) + 700(50) + 250(100) + 850(50) + 200(20) = 280,000$$

∴ lowest cost is achieved using layout

EBCDA i.e 240,000

therefore final arrangement is EBCDA.