

ASSIGNMENT

CHAPTER NO. 6

QUESTION NO. 6.17

Submitted To :

DR. HARIS BAZIZ

Submitted By :

GROUP NO. 10

11 - 1E - 65

11 - 1E - 56

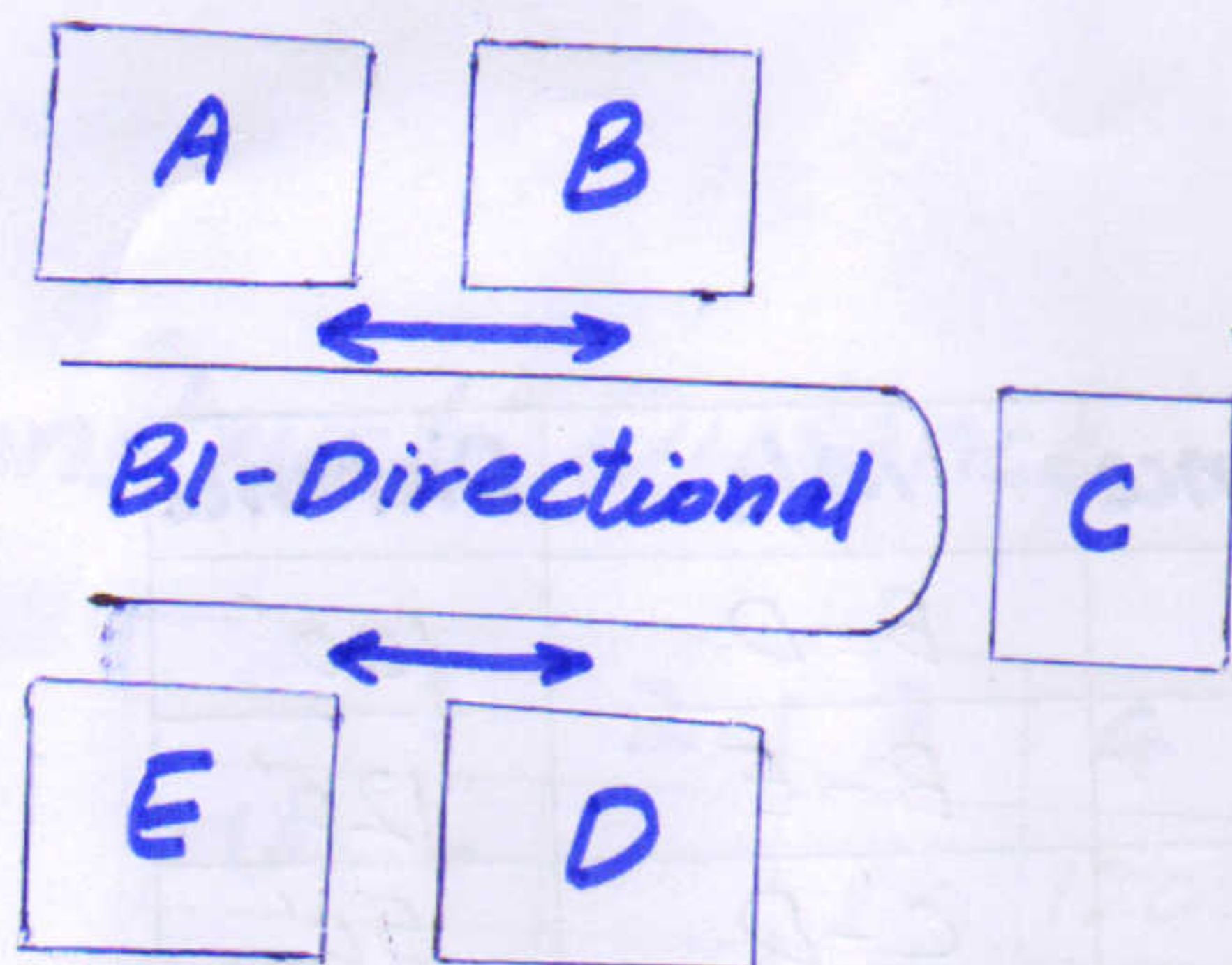
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Dated :

19 - 11 - 2014

QUESTION NO. 6.17Data:

- Five machines located in a manufacturing cell are arranged in a "U" configuration as shown in the layout below. The material handling system employed is a bidirectional conveyor system.
- Determine the best machine arrangement given the product routing information and production rates in the table.



Data:

Product	M/c sequence	Prod. Rate
1	B-E-A-C	100
2	C-E-D	200
3	B-C-E-A-D	500
4	A-C-E-B	150
5	B-C-A	200

M/c	Distance	M/c	Distance
A-B	20'	B-D	100'
A-C	70'	B-E	120'
A-D	120'	C-D	50'
A-E	140'	C-E	70'
B-C	50'	D-E	20'

Solution:

- Construct Flow-b/w chart based on Routing Information:

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

- Construct Distance matrix:

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

• Arrangements / Cost :

• ABCDE :  $450(70) + 500(120) + 600(140) + 50(700) + 250(120) + 850(70) + 200(20)$   
 $= 304,000$

• BACDE :  $450(50) + 500(100) + 600(120) + 700(120) + 250(140) + 850(70) + 200(20)$   
 $= 292,000$

• CBADE :  $450(70) + 500(50) + 600(70) + 700(120) + 250(120) + 850(140) + 200(20)$   
 $= 265,000$

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

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

• ACBDE :  $450(70) + 500(120) + 600(140) + 700(50)$

$$= 311,500$$

$$\bullet \text{ ADCBE} : 450(70) + 500(20) + 600(140) + 700(50) \\ + 250(20) + 850(120) + 200(120)$$

$$= 291,500$$

$$\bullet \text{ AECDB} : 450(70) + 500(120) + 600(20) + 700(70) \\ + 250(120) + 850(50) + 200(100)$$

$$= 245,000$$

$$\bullet \text{ ABDCE} : 450(120) + 500(70) + 600(140) + 700(100) \\ + 250(120) + 850(20) + 200(70)$$

$$= 304,000$$

$$\bullet \text{ ABEDC} : 450(140) + 500(120) + 600(70) + 700(120) \\ + 250(50) + 850(70) + 200(500)$$

$$= 331,000$$

$$\bullet \text{ ABCED} : 450(70) + 500(140) + 600(120) + 700(50) \\ + 250(100) + 850(50) + 200(20)$$

$$= 280,000$$

• Final Arrangements :

**EBCDA**