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ID: 14267

Date: \_\_\_\_\_

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QUESTION NO: 01.

(a).

A: **GENERAL PROCESS CHARTS.**

Give the main points of an existing process the redesigned process and the characterized and expect better process.

It characterizes the process by:  
The number of conditions per class.

The given time that they take in each activity class.

The percentage of the total processing time spent on each category.

(b).

A: **DISADVANTAGES**

Only focus average activity times.

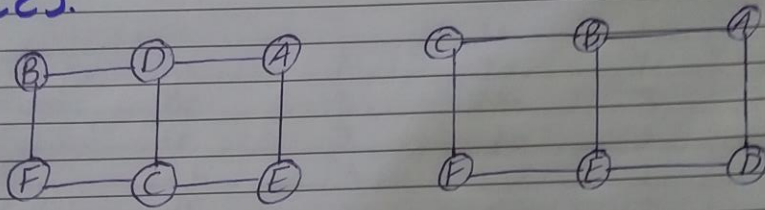
If the process includes several variants or products with different directions (multiple direction through

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the process) each product need  
its own activity chart.  
Cannot show parallel activities.

(c).



	A	B	C	D	E	F
A		20		20		80
B			10		75	
C				15		90
D					70	

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### LD Calculations for Two Designs

	Current design			Proposed Design	
Centers	Load	Distance	LD score	Distance	W score
(A <sub>1</sub> , B <sub>1</sub> )	20	2	40	1	20
(A <sub>1</sub> , D <sub>1</sub> )	20	1	20	1	20
(A <sub>1</sub> , F <sub>1</sub> )	80	3	240	3	240
(B <sub>1</sub> , C <sub>1</sub> )	10	2	20	1	10
(B <sub>1</sub> , E <sub>1</sub> )	75	3	225	1	75
(C <sub>1</sub> , D <sub>1</sub> )	15	1	15	3	45
(C <sub>1</sub> , F <sub>1</sub> )	90	1	90	1	90
(D <sub>1</sub> , E <sub>1</sub> )	70	2	140	1	70
			790		570

### QUESTION NO: 02

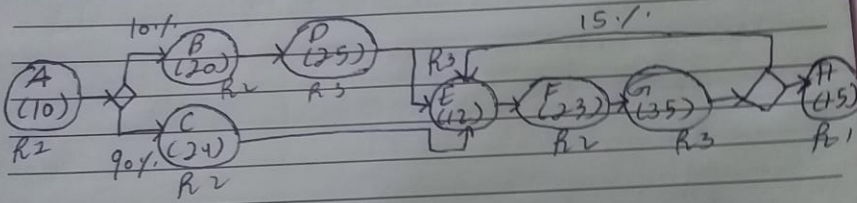
(a).

A the WIP was 3 jobs for 10 min, 6 jobs for 20 min, 5 jobs for 20 min and 2 jobs for 10 min. Then, the average WIP is calculated as follows:

$$\text{Average WIP} = \frac{3 \times 10 + 6 \times 20 + 5 \times 20 + 2 \times 10}{10 + 20 + 20 + 10}$$
$$= 4.5 \text{ jobs}$$

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(b)  
(i)



$$CT = 10 + 0.1(20 + 25) + 0.9 \times 24 + 1.15 \times (12 + 23 + 35) + 15$$
$$= 131.6$$

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(ii)

$$\begin{aligned} \text{Process Time} &= 12 + 0.1(18+17) + 0.9 \times 30 + \\ &+ 1.15 \times (12+25+7) + 10 \\ &= 103.1 \text{ min} \end{aligned}$$

Activity	Waiting Time (min)	Processing time (min)
A	20	12
B	15	18
C	5	30
D	12	17
E	3	12
F	5	25
G	8	7
H	5	10
I	15	25
J	5	20
K	4	10

The CT efficiency can now be found as follows:  
$$\text{CT efficiency} = 103.1 / 131.6$$
$$= 0.78$$

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Activity	Processing Time	Resource Requirement	Number of Jobs
A	2	R1	1
B	5	R1	0.3
C	8	R2	1
D	3	R2	1.1
E	4	R2	1.1
Inspection	4	-	1.1
F	2	R1	1
G	4	R3	1
H	2	R3	1

Resource	Unit Load (min)	Unit Capacity Job/min	Available Resources	Pool Capacity Jobs/min
R1	$2 + 5 \times 0.3 = 5.5$	1/5.5	2	$2/5.5 = 0.36$
R2	$8 + 1.1 \times (3 + 4) = 15.7$	1/15.7	2	$2/15.7 = 0.13$
R3	$4 + 2 = 6$	1/6	1	$1/6 = 0.17$

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A: STEPS:

**Step: 1: Identify the constraint.**

This tells us where to focus our improvement efforts, since we know that only an improvement at the constraint makes a difference.

**Step: 2: Optimize the constraint.**

Before adding capacity, we need to use the capacity we already have. Optimize means doing everything possible to use the constraint.

**Step: 3: Subordinate the non-constraints.**

The job of all non-constraints is to subordinate their decisions to the constraint's needs.



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**Step: 4: Elevate the constraint.**

Once we have completed the previous steps does it make sense to add more capacity and thereby increase system performance.

**Step: 5 Return to Step: 1.**

If the current constraints are eliminated, Don't lose inertia, continuous improvement is necessary.