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Paper bpe
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Question No: 01

a) Define General Process Chart and how it characterizes the process?

Ans :

General process chart:

Summarizes the current process the redesigned process and the expected improvements

Characterizes the process by The number of activities per categoryThe amount of time spent in each activity category

The percentage of the total processing time spent on each category

Clearly indicates

Major problems with the existing process

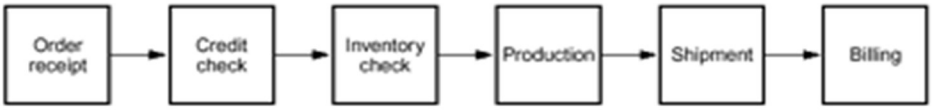
How the redesigned process remedies these problems

Theses problems measured are in terms of the time and the percentage of time spent on value and non-value adding activities

characterizes the process

The different shapes of boxes connected with lines or arrows used to represent different steps in a process. The most common shapes in the general process chart are Start, Terminator, Connector, Process, Decision, Data, and Document. aids in assisting reasoning by displaying information

1. *Define the process to be diagrammed. Write its title at the top of the work surface.*
2. *Discuss and decide on the boundaries of your process: Where or when does the process start? Where or when does it end? Discuss and decide on the level of detail to be included in the diagram.*
3. *Brainstorm the activities that take place. Write each on a card or sticky note.*
4. *Arrange the activities in proper sequence.*
5. *When all activities are included and everyone agrees that the sequence is correct, draw arrows to show the flow of the process.*
6. *Review the flowchart with others involved in the process (workers, supervisors, suppliers, customers) to see if they agree that the process is drawn accurately*.

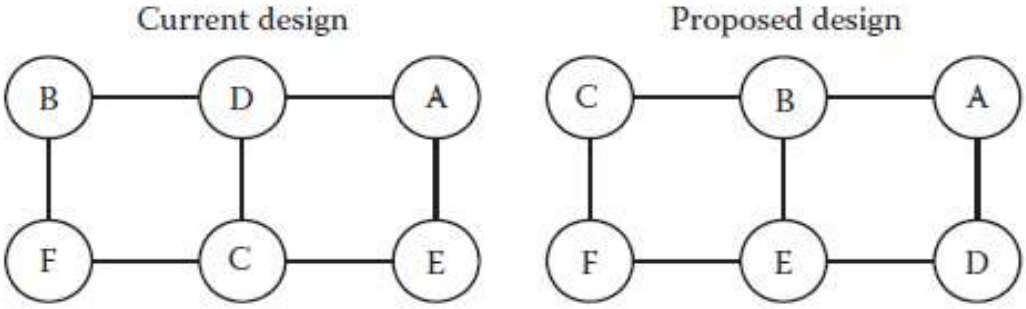


b) List disadvantages of Process Activity Chart

Ans :

- *Disadvantages*
  - *Only considers average activity times*
  - *If the process includes several variants with different paths (i.e. multiple paths through the process) each variant needs its own activity chart*
  - *Cannot depict parallel activities*
  - *High work-in-progress and expensive material handling*
  - *Compared to the product layout*
  - *Required constant inspection high gap*
  - *Required highly skilled operators*
  - *Required expensive machines*

c) Compute Load Distance (LD) scores for the below given current and proposed designs and identify which design is the better one;



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

Ans :

LD calcutation for two designs

	Current design			proposed design	
Centers	**load**	**distance**	**LD score**	**distance**	**LD score**
(A,B)	**20**	**2**	**40**	**1**	**20**
(A,D)	**20**	**1**	**20**	**1**	**20**
(A,F)	**80**	**3**	**240**	**3**	**240**
(B,C)	**10**	**2**	**20**	**1**	**10**
(B,E)	**75**	**3**	**225**	**1**	**75**
(C,D)	**15**	**1**	**15**	**3**	**45**
(C,F)	**90**	**1**	**90**	**1**	**90**
(D,E)	**70**	**2**	**140**	**1**	**70**
total			**790**		**570**

Question No: 03 (10)

Analyse capacity needs and utilization with the help of below given data and fill the given table using respective formulas;

Activity	Processing Time (Min)	Resource Requirements	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 Jobs/min	Available Resources	Pool Capacity Jobs/min
R1			2	
R2			2	
R3			1	

Ans :

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

Question No 04: (10)

steps the List for TOC Methodology.

Ans *:*

- *step One – Identify the Constraint. In this step, the manufacturing process is reviewed to identify the constraint. ...*
- *Step Two – Exploit the Constraint. ...*
- *Step Three – Subordinate and Synchronize to the Constraint. ...*
- *Step Four – Elevate Performance of the Constraint. ...*
- *Step Five – Repeat the Process*.

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" in this sense means "doing everything possible to use the constraint to its fullest capacity."

Step 3: Subordinate the non-constraints

The job of all non-constraints is to subordinate their decisions to the constraint's needs. They should optimize for constraint (and thus system) performance, not their own individual performance, the results of which we witnessed in.

Step 4: Elevate the constraint

Only once we've completed the previous steps does it make sense to add more constraint capacity, and thereby increase system performance. Because adding capacity is tremendously expensive in terms of time and money, we do it as a last resort, not a first resort.

Step 5: Return to step 1

The inevitable result of the first four steps, and the reason this is a "continuous" improvement method, is that the constraint moves somewhere else. This step insists that you start back at the beginning, and don't let inertia become the constraint.

Question No: 02 (5+10)

a. The observation periods for 3, 6, 5, and 2 jobs are 10, 20, 20, and 10 min, respectively. In other words, 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, calculate the average WIP?

Ans :

The average wip which is the fellowing

The

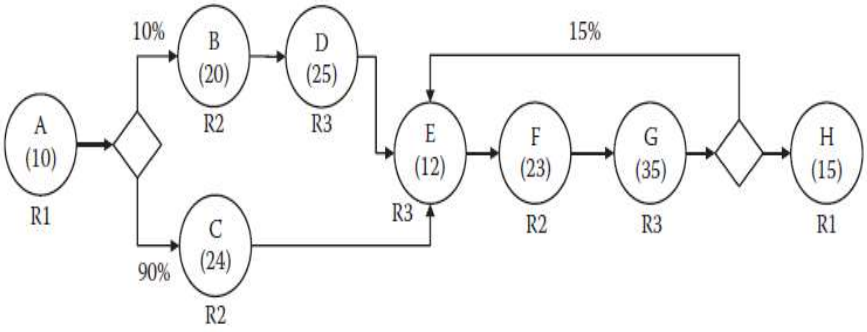
WIP =3*10+6*20+5*20+2*10/10+20+20+10=4.5 jobs

b. A process management team has studied a process and has developed the flowchart in Figure 3. The team also has determined that the expected waiting and processing times (in minutes) corresponding to each activity in the process are as shown in Table 1.

i. Calculate the average CT for this process.

ii. Calculate the CT efficiency.

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



Ans :

1 :

Process time = 12+(0.1+18)+(0.9*30)+17+1.5(12+25+7)+10

⇨ =12+1.8+27+17+66+10

⇨ =133.8

Calculate the average of ct for this process

10+(0.9*24)+(0.1*20)+25+1.5(12+23+35)+15

=10+21.6+2+25+105+15

=178.6 min

Ct efficiency =133.8/178.6

=0.749