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SUBJECT: BPE

SUBMITTED TO: MAM AASMA KHAN

SUMMERS 2020 FINAL-TERM EXAMINATION

Question No: 01

(4+3+8)

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

General process chart:

- Summarizes the current process the redesigned process and the expected improvements
- Characterizes the process by
  - The number of activities per category
  - The 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
    - These problems measured are in terms of the time and the percentage of time spent on value and non-value adding activities

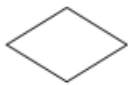## COMMONLY USED SYMBOLS IN DETAILED FLOWCHARTS

One step in the process. The step is written inside the box. Usually, only one arrow goes out of the box.

→ Direction of flow from one step or decision to another.

Decision based on a question. The question is written in the diamond. More than one arrow

goes out of the diamond, each one showing the direction the process takes for a given answer to the question. (Often the answers are "yes" and "no.")

Delay or wait

Link to another page or another flowchart. The same symbol on the other page indicates that the flow continues there.

Input or output

Document

Alternate symbols for start and end points.

b) List disadvantages of Process Activity Chart.

Disadvantages of process activity chart:

- 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
-

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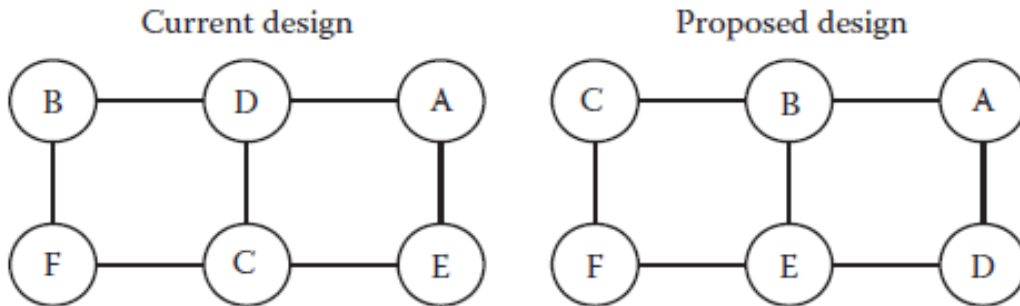
Current design   Proposed design

Figure 1 Two Designs

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

Figure 2 Load Matrix

Ans: Centers	Load	Distance	LD	Distance	LD
(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

Proposed design is better...

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:
Average 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.

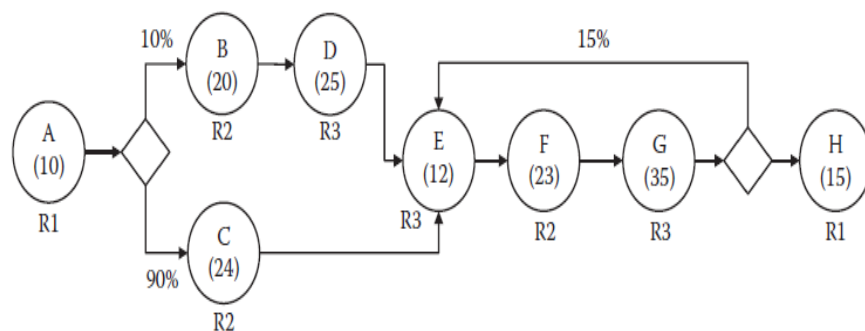| Activity	Waiting Time (Min)	Processing Time (Min)
A	20	12
B	15	18
C	5	30
D	12	17
E	3	12
F	5	25
G	8	7
H	5	10
I	15	25
J	5	20
K	4	10

Figure 3Process Flow Chart

Ans: CT=10+0.1*20+25+0.9*24+1.15*(12+23+35)+15=140.1
Process time =12+0.1+18+30+17+0.9+1.15*(12+25+7)+10 =161.5
CT Efficiency=161.5/140.1 =1.152

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+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)

List the steps for TOC Methodology.

- ## TOC Methodology

  1. **Identify the system's constraints**
  2. **Determine how to exploit the constraints**
     - Choose decision/ranking rules for processing jobs in bottleneck
  3. **Subordinate everything to the decisions in step 2**
  4. **Elevate the constraints to improve performance**
     - For example, increasing bottleneck capacity through investments in new equipment or labor
  5. **If the current constraints are eliminated return to step 1**
  6. Don't lose inertia, continuous improvement is necessary!

Good Luck ☺