IQRA NATIONAL UNIVERSITY

Summer 2020 Sessional Examination

- **Attempt all questions.**
- **Marks will be given as per the DEPTH of the answer, not LENGTH.**

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Subject: BPE	**Section: (A)**
BS(SE)	**Date: 20/09/20**

Question No: 01 **(10)**

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

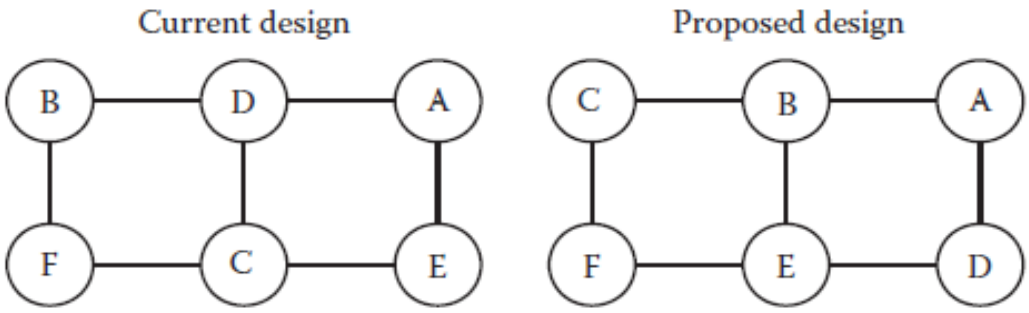

Figure 1 Two Designs

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

Figure 2 Load Matrix

Answer :1#

LD(i,j) = LD score between work centres i and j

LD(i,j) = Load(i,j)*Distance(i,j)

The LD score measures the attraction between two work centres (activities)

The goals are to find a design that minimizes the total LD score (the sum of individual scores between work centres)

The load Matrix summarizes the load (flow rate = of jobs) that needs to be shipped between each pair of work centres

		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**	**Total**	**570**

The proposed design is better than current design.

Question No: 02 **(10**

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

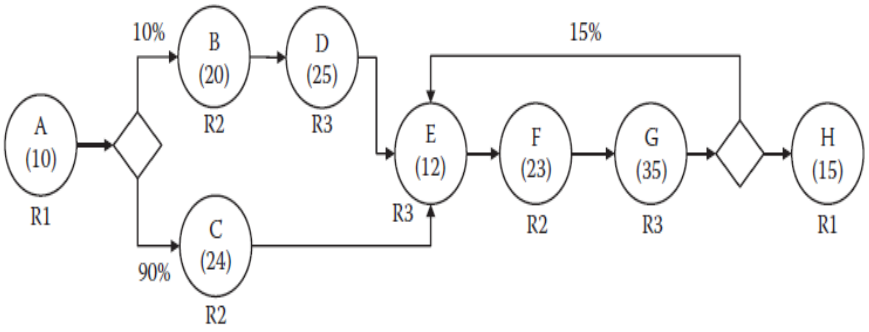

Figure 3 Process Flow Chart

Answer : 2

i) Calculate the average cycle time.

$CT = T_A+(1+0.2)\ (T_B+T_C) +T_D+\max\ \{T_E, T_F, T_G\} +0.9(T_H)+T_I$

The activity time = Processing time + Waiting time

$CT = 10+1.2(13+6) +15+\max\ \{9,3,7\} +0.9(17) +10$

$= 82.1$ minutes

ii) Calculate the cycle time efficiency

The theoretical cycle time (CT*) is obtained by using the processing time instead of the activity time (i.e., by disregarding the waiting time).

$CT^* = 3+1.2(8+2) +5+\max\ \{2,3,5\} +0.9(9) +8$

$= 41.1$ minutes

The cycle time efficiency $= \frac{41.1}{82.1} = 50.1\%$

Good Luck ☺