

# Question 1

## NETWORK DIAGRAM USING PDM TECHNIQUE

Forward & Backward Pass

Project Duration = 24

ES	Act	EF
LS	Dur	LF

ES		EF
0	start	0
0	0	0
LS		LF

ES		EF
0	A	2
0	2	2
LS		LF

ES		EF
2	B	7
2	5	7
LS		LF

ES		EF
7	C	9
8	2	10
LS		LF

ES		EF
7	D	10
7	3	10
LS		LF

ES		EF
10	E	16
10	6	16
LS		LF

ES		EF
10	F	17
14	7	21
LS		LF

ES		EF
16	G	21
16	5	21
LS		LF

ES		EF
17	J	20
21	3	24
LS		LF

ES		EF
21	H	24
21	3	24
LS		LF

ES		EF
21	I	23
22	2	24
LS		LF

ES		EF
24	End	24
24		24
LS		LF

Slack Time:-

$$ST = LS - ES.$$

1)  $A = 0 - 0 = 0$

2)  $B = 2 - 2 = 0$

3)  $C = 8 - 7 = 1$

4)  $D = 7 - 7 = 0$

5)  $E = 10 - 10 = 0$

6)  $F = 14 - 10 = 4$

7)  $G = 16 - 16 = 0$

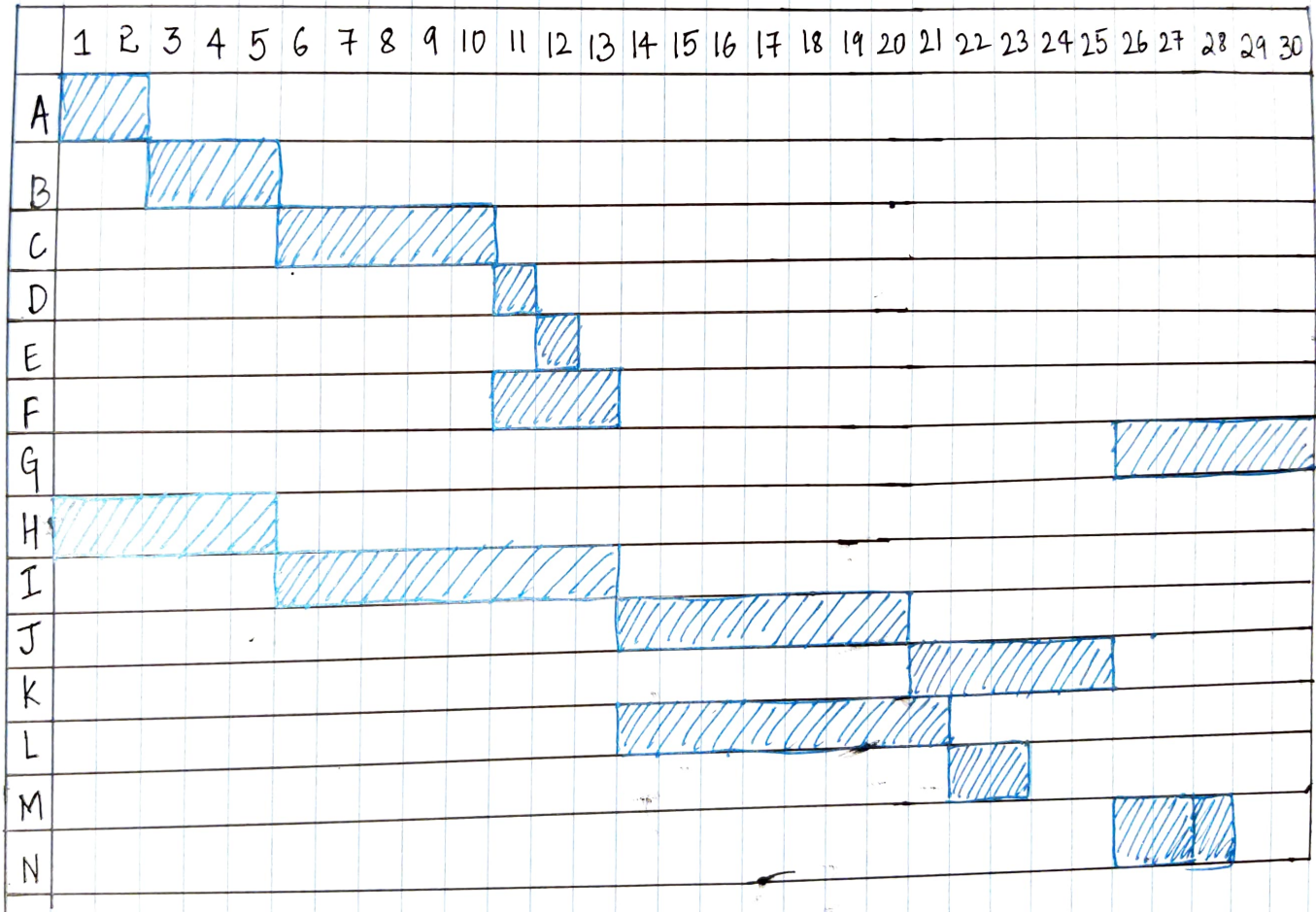
8)  $H = 21 - 21 = 0$

9)  $I = 22 - 21 = 1$

10)  $J = 21 - 17 = 4$

⇒ The earliest completion of the project would be  $A \rightarrow B \rightarrow D \rightarrow E \rightarrow G \rightarrow H$  for having a project Duration of 24.

⇒ The critical path in the project would be  
 $A \rightarrow B \rightarrow D \rightarrow E \rightarrow G \rightarrow H$ .

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# Question 2:- 2] FORWARD & BACKWARD PASS :-

Project Duration = 30

ES	Act	EF
LS	Dur	LF

ES		EF
0	Start	0
0		12
LS		LF

ES		EF
0	2	2
	A	
12		14
LS		LF

ES		EF
0	5	5
	H	
0		5
LS		LF

ES		EF
2	3	5
	B	
14		17
LS		LF

ES		EF
5	8	13
	I	
5		13
LS		LF

ES		EF
5	5	10
	C	
17		22
LS		LF

ES		EF
13	7	20
	J	
13		20
LS		LF

ES		EF
13	8	21
	L	
17		25
LS		LF

ES		EF
10	1	11
	D	
28		29
LS		LF

ES		EF
10	3	13
	F	
22		25
LS		LF

ES		EF
20	5	25
	K	
20		25
LS		LF

ES		EF
21	2	23
	M	
25		27
LS		LF

ES		EF
11	1	12
	E	
29		30
LS		LF

ES		EF
25	5	30
	G	
25		30
LS		LF

ES		EF
25	3	28
	N	
27		30
LS		LF

ES		EF
30		30
	End.	
30		30
LS		LF

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3] Slack Time :-  $ST = LS - ES$

1)  $A = 12 - 0 = 12$

2)  $B = 14 - 2 = 12$

3)  $C = 17 - 5 = 12$

4)  $D = 28 - 11 = 18$

5)  $E = 29 - 11 = 18$

6)  $F = 22 - 10 = 12$

7)  $G = 25 - 25 = 0$

8)  $H = 0 - 0 = 0$

9)  $I = 5 - 5 = 0$

10)  $J = 13 - 13 = 0$

11)  $K = 20 - 20 = 0$

12)  $L = 17 - 13 = 4$

13)  $M = 25 - 21 = 4$

14)  $N = 27 - 25 = 2$

$\Rightarrow$  The critical path  
is ~~H~~  $H \rightarrow I \rightarrow J \rightarrow K \rightarrow G$ .



4) Remove J and link I to K.

Project Duration:- 26

ES	Acc	EF
LS	Dur	LF

ES		EF
0	Start	0
0		8
LS		LF

ES	EF
0	2
	A
8	10
LS	LF

ES	EF
2	3
	B
10	13
LS	LF

ES	EF
5	5
	C
13	18
LS	LF

ES	EF
10	11
	D
24	25
LS	LF

ES	EF
11	12
	E
25	26
LS	LF

ES	EF
10	3
	F
18	21
LS	LF

ES	EF
18	5
	G
21	26
LS	LF

ES	EF
26	26
	End.
26	26
LS	LF

ES	EF
0	5
	H
0	5
LS	LF

ES	EF
5	8
	I
5	13
LS	LF

ES	EF
13	5
	K
16	21
LS	LF

ES	EF
21	2
	M
21	23
LS	LF

ES	EF
23	3
	N
23	26
LS	LF

ES	EF
13	8
	L
13	21
LS	LF

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4] slack Time:-  $ST = LS - ES$ .

1)  $A = 8 - 0 = 8$

2)  $B = 10 - 2 = 8$

3)  $C = 13 - 5 = 8$

4)  $D = 24 - 10 = 14$

5)  $E = 25 - 11 = 14$

6)  $F = 18 - 10 = 8$

7)  $G = 21 - 18 = 3$

8)  $H = 0 - 0 = 0$

9)  $I = 5 - 5 = 0$

10)  $K = 16 - 13 = 3$

11)  $L = 13 - 13 = 0$

12)  $M = 21 - 21 = 0$

13)  $N = 23 - 23 = 0$ .

⇒ The Critical path  $H \rightarrow I \rightarrow L \rightarrow M \rightarrow N$