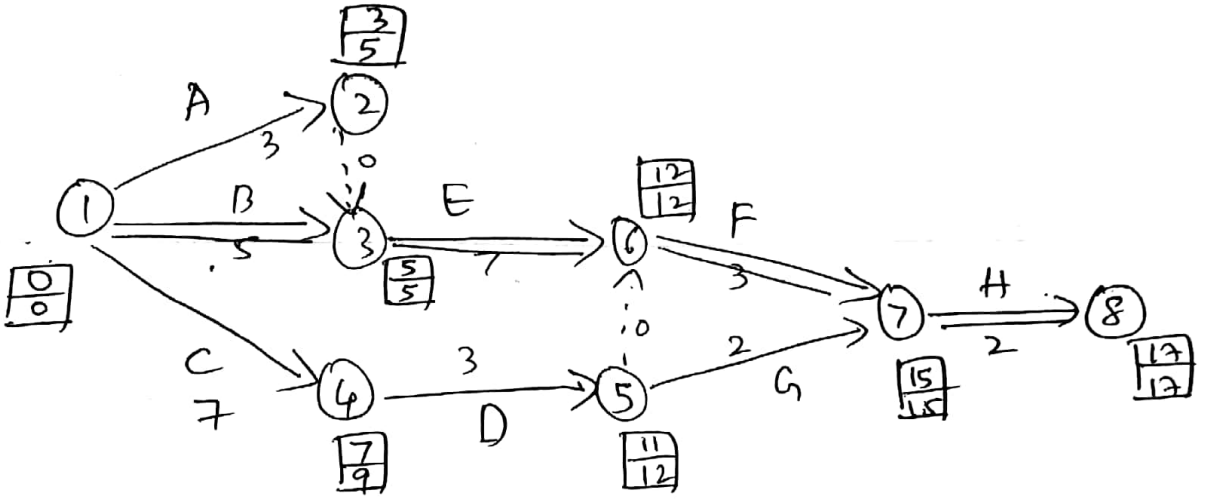
9 December 2017.

(7) b) Draw the Network diagram and find the critical path.

Activity	A	B	C	D	E	F	G	H.
Predecessor.	–	–	–	C	A,B	E,D	D	F,G.
Duration	3	5	7	3	7	3	2	2



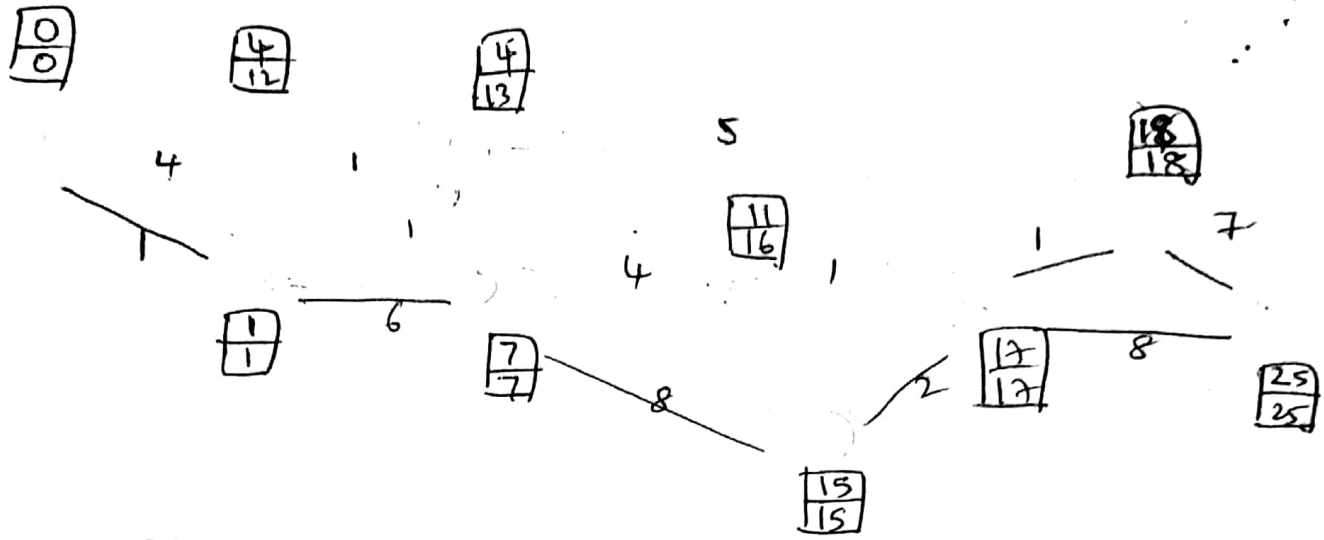
The critical path is 1 → 3 → 6 → 7 → 8.

Critical path duration is 5 + 7 + 3 + 2 = 17

17) Draw the Network diagram and find out the critical path method and also find out the ES, EF, CS, LF and float.

Event	1-2	1-3	2-4	3-4	3-5	4-9	5-6	5-7	6-8
Duration	4	1	1	1	6	5	4	8	1

Event	7-8	8-9	8-10	9-10
Duration	2	1	8	7



Activity	Duration (D)	EST	LST (LFT-D)	EFT (EST+D)	LFT	TF (LFT-EFT) or (LST-EST)
1-2	4	0	8	4	12	8
1-3	1	0	0	1	1	0
2-4	1	4	12	5	13	8
3-4	1	1	12	2	13	11
3-5	6	1	1	7	7	0
4-9	5	4	13	9	18	9
5-6	4	7	12	11	16	5
5-7	8	7	7	15	15	0
6-8	1	11	16	12	17	5
7-8	2	15	15	17	17	0
8-9	1	17	17	18	18	0
8-10	8	17	17	25	25	0
9-10	7	18	18	25	25	0

Critical Path → (1) → (3) → (5) → (7) → (8) → (10)

1 + 6 + 8 + 2 + 8 = 25

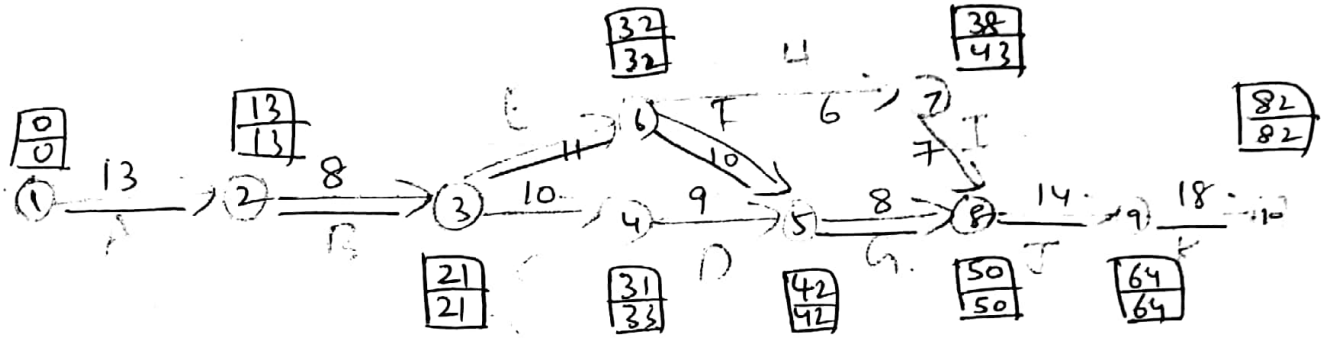
(or)

(1) → (3) → (5) → (7) → (8) → (9) → (10)

1 + 6 + 8 + 2 + 1 + 7 = 25

(14) Construct the network and find the critical path of the network and find total slack activities.

Activity	A	B	C	D	E	F	G	H	I	J	K
Duration	13	8	10	9	11	10	8	6	7	14	18
Predecessor	–	A	B	C	B	E	D,F	E	H	G,I	J



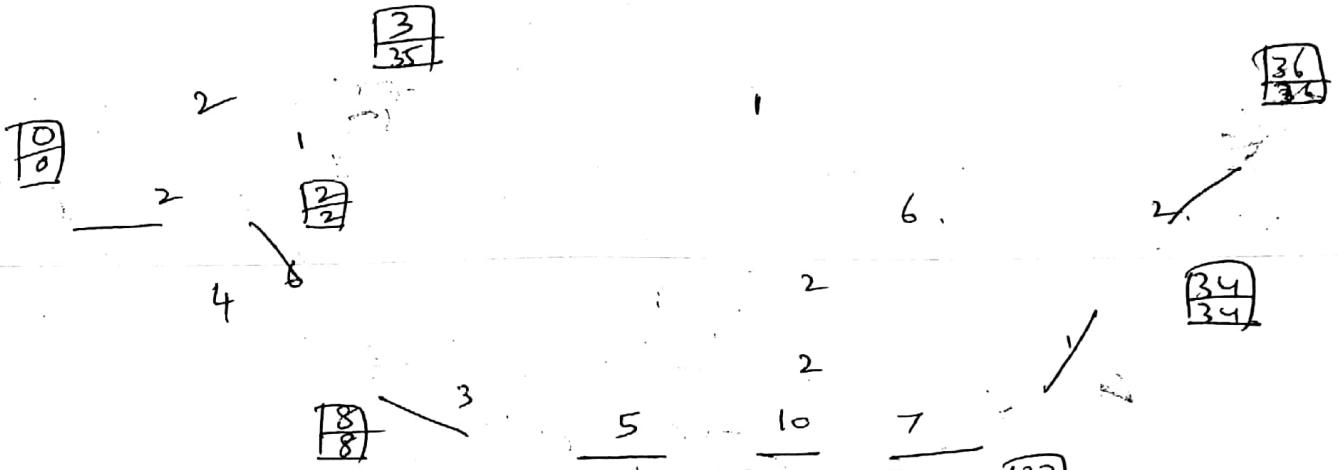
Activity	Duration (D)	EST	LST (LFT-D)	EFT (EST+D)	LFT	Total Slack (LFT-EFT or LST-EST)
A	13	0	0	13	13	0
B	8	13	13	21	21	0
C	10	21	23	31	33	2
D	9	31	33	40	42	2
E	11	21	21	32	32	0
F	10	32	32	42	42	0
G	8	42	42	50	50	0
H	6	32	37	38	43	5
I	7	38	43	45	50	5
J	14	50	50	64	64	0
K	18	64	64	82	82	0

Critical path: (1) 13 (2) 8 (3) 11 (6) 10 (5) 8 (8) 14 (9) 18 (10)

duration: $13 + 8 + 11 + 10 + 8 + 14 + 18 = 82$

6(a) Find the critical path of the network and find total slack.

Activity	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
Duration	2	2	4	6	1	1	3	5	10	7	6	2	2	1	2
immediate predecessor	-	-	-	B	B	A,E	C,D	G	H	I	C,D	C,D	C,D	J	M



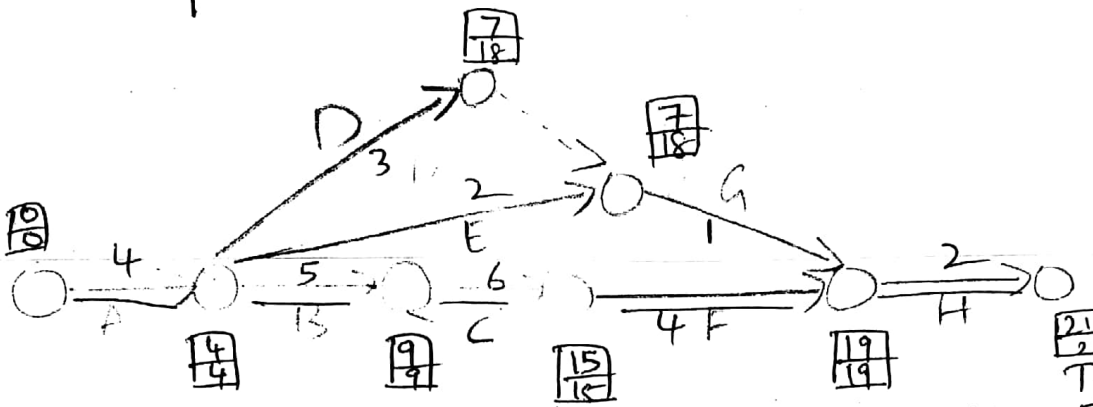
Activity	Duration	EST	LST (LFT-D)	EFT (EST+D)	LFT	T.F/T.S (LFT-EFT)
A	2	0	33	2	35	33
B	2	0	0	2	2	0 -
C	4	0	4	4	8	4
D	6	2	2	8	8	0 -
E	1	2	34	3	35	32
F	1	3	35	4	36	32
G	3	8	8	11	11	0
H	5	11	11	16	16	0
I	10	16	16	26	26	0
J	7	26	26	33	33	0
K	6	8	30	14	36	22
L	2	8	31	10	33	23
M	2	8	32	10	34	24
N	1	33	33	34	34	0
O	2	34	34	36	36	0

Critical Path → B + D + G + H + I + J + N + O.

2 + 6 + 3 + 5 + 10 + 7 + 1 + 2 = 36.

16) (a) Find the critical path of the network and find total slack.

Activity	A	B	C	D	E	F	G	H
Duration	4	5	6	3	2	4	1	2
Predecessor	–	–	–	A	B	C	D, E	F, G.



Activity	Duration	EST	LST (LFT−D)	EFT (EST+D)	LFT	Total Float/Slack (LFT−EFT)
A	4	0	0	4	4	0
B	5	4	4	9	9	0
C	6	9	9	15	15	0
D	3	4	15	7	18	11
E	2	4	16	6	18	12
F	4	15	15	19	19	0
G	1	7	18	8	19	11
H	2	19	19	21	21	0

Critical path method - A + B + C + F + H

4 + 5 + 6 + 4 + 2 = 21.

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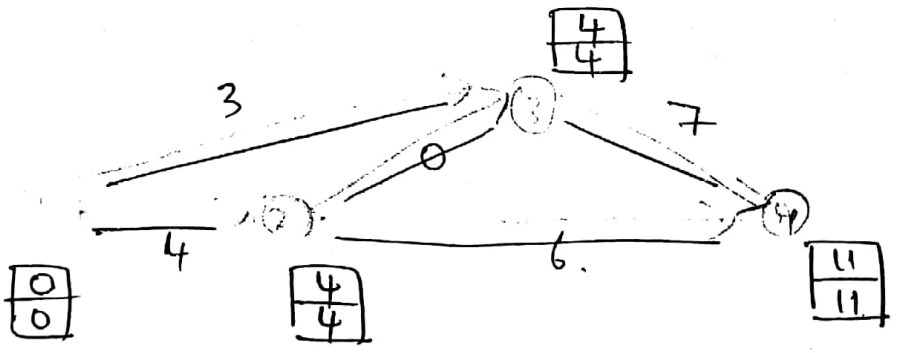
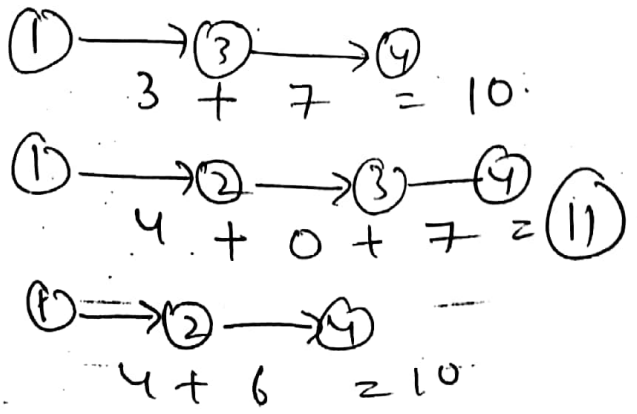
16) Draw the network diagram. Determine critical path & Calculate ES, EF, LS, LF & float.

Event	1-2	2-3	3-4	1-3	2-4
Duration	4	0	7	3	6.

Activity	Duration	ES	~~LS~~	EF	LF	Slack/float
1-2	4	0	0	4	4	0
2-3	0	4	4	4	4	0
3-4	7	4	4	11	11	0
1-3	3	0	1	3	4	1
2-4	6	4	5	10	11	1

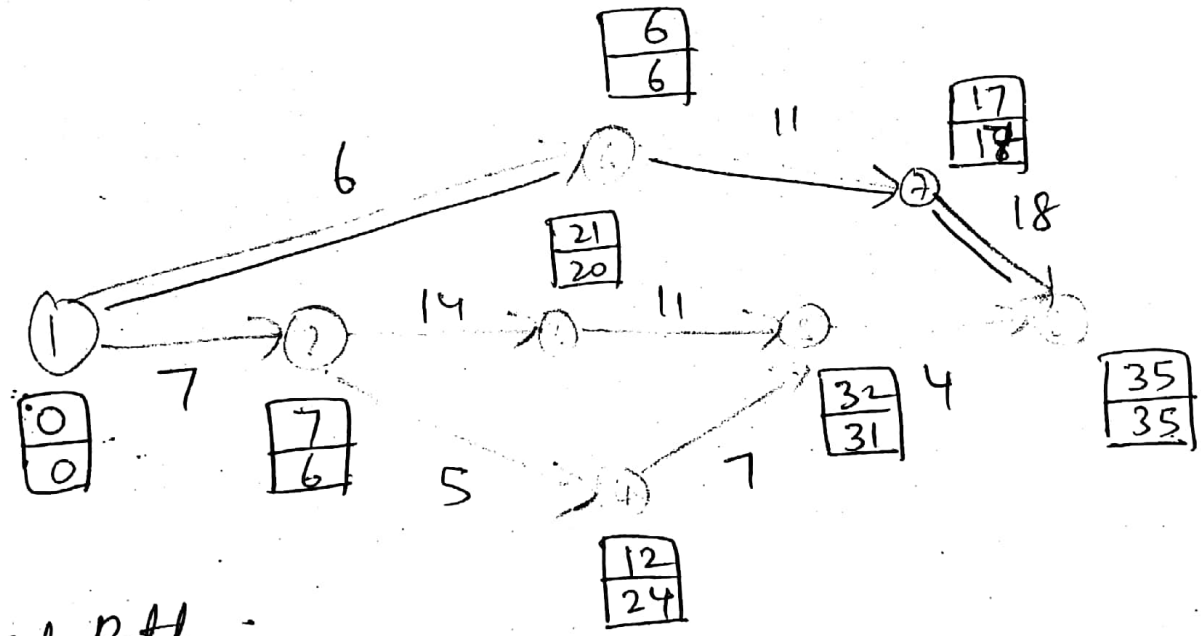


Critical Path.

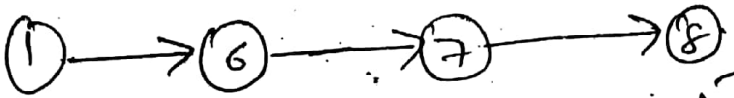


16) The following table shows time estimates. Draw the network diagram & locate the critical path & determine its length?

Activity	to	tm	tp.	te $\left(\frac{to+4tm+tp}{6}\right)$
1-2	3	6	15	7
1-6	2	5	14	6
2-3	6	12	30	14
2-4	2	5	8	5
3-5	5	11	17	11
4-5	3	6	15	7
6-7	3	9	27	11
5-8	1	4	7	4
7-8	4	19	28	18



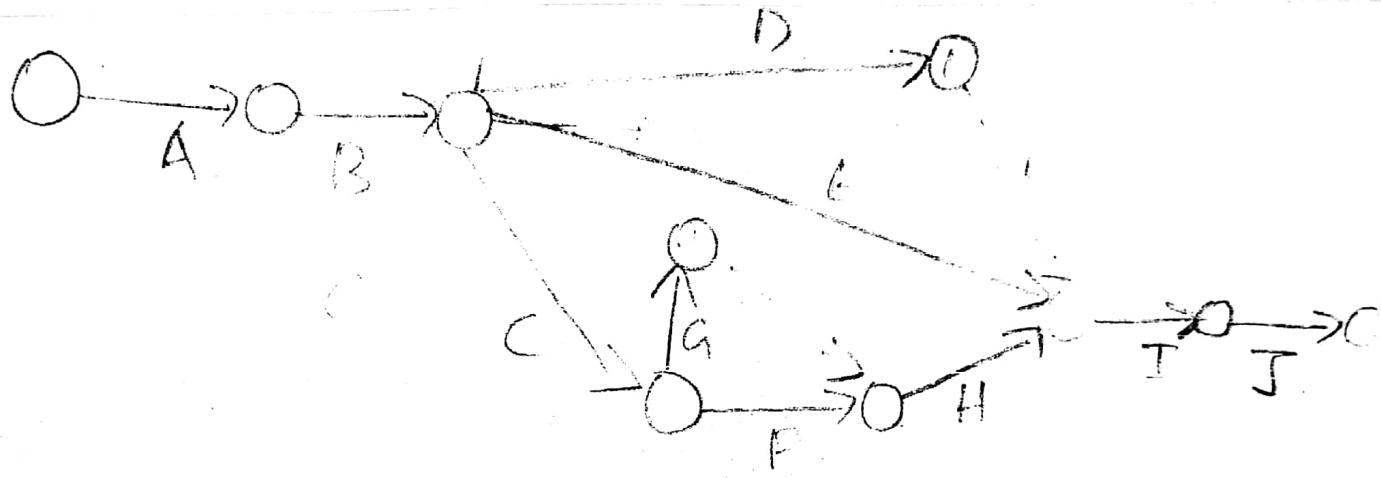
Critical Path.



$6 + 11 + 18 = 35$

6. Given the project activities – construct the network.

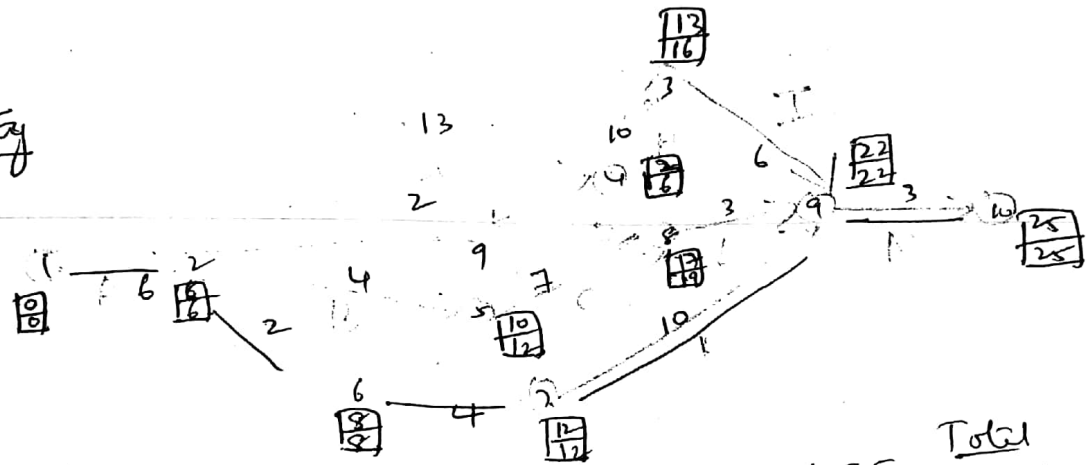
Activity	A	B	C	D	E	F	G	H	I	J
Predecessor	–	A	B	B	B	C	C	F,G	D,E,H	I



Q. Construct the project network and find out the Critical Path, float (free & total)

Activity	A	B	C	D	E	F	G	H	I	J	K	L	M
Predecessor	–	A	B	A	D	E	–	G	J, H	–	A	C, K	I, L
Duration	6	4	7	2	4	10	2	10	6	13	9	3	3

Activity



Activity	Duration	EST	LST (LFT-D)	EFT (EST+D)	LFT	Total Float	Free Float
A	6	0	0	6	6	0	0-0=0
B	4	6	8	10	12	2	2+2=4
C	7	10	12	17	19	2	2+2=4
D	2	6	6	8	8	0	0-0=0
E	4	8	8	12	12	0	0-0=0
F	10	12	12	22	22	0	0-0=0
G	2	0	14	2	16.	14	14-4=12
H	10	2	6	12	16.	4	4-3=1
I	6	13	16	19	22	3	3-0=3
J	13	0	3	13	16	3	3-3=0
K	9	6	10	15	19	4	4-2=2
L	3	17	19	20	22	2	2-0=2
M	3	22	22	25	25.	0	0-0=0

TF-(L-E) of next

Critical Path = ① →(A) ② →(D) ⑥ →(E) ⑦ →(F) ⑨ →(M) ⑩ ⇒ 6+2+4+10+3 = 25

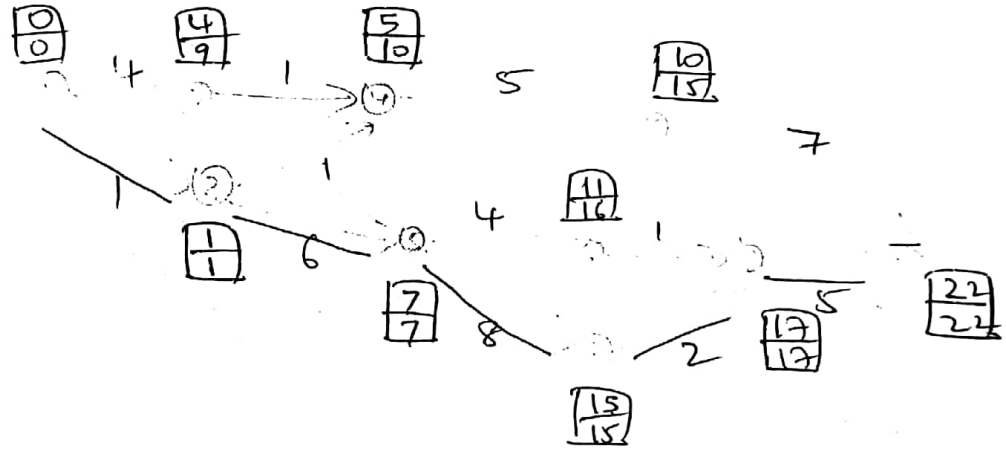
Q.

16) Construct the network and find the critical path of the project.

Activity	1-2	1-3	2-4	3-4	3-5	4-9	5-6	5-7	6-8	7-8
Duration	4	1	1	1	6	5	4	8	1	2

Activity	8-10	9-10
Duration	5	7

Activity	Duration
1-2	4
1-3	1
2-4	1
3-4	1
3-5	6
4-9	5
5-6	4
5-7	8
6-8	1
7-8	2
8-10	5
9-10	7

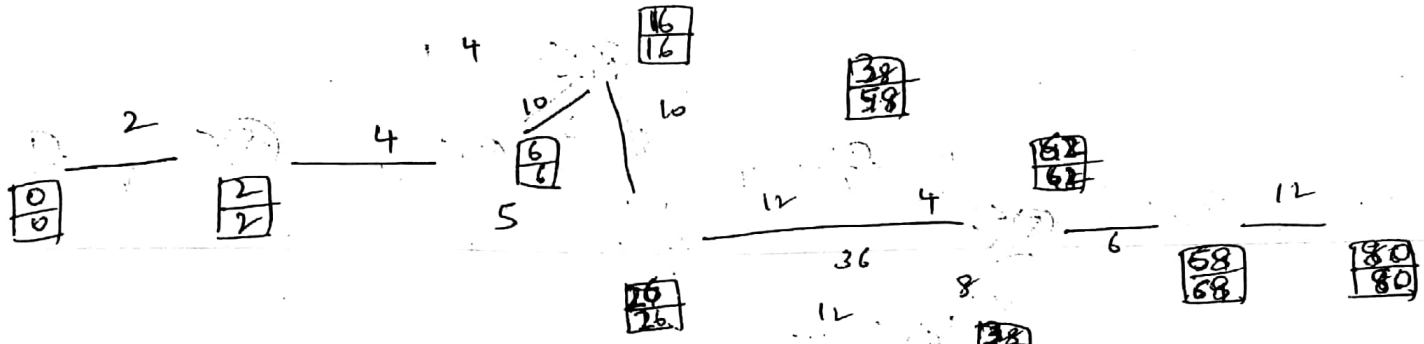


Critical path } (1) → (3) → (5) → (7) → (8) → (10)

2 + 1 + 6 + 8 + 2 + 5 = 22

17)(b) Construct the project critical Path and calculate the EST, LFT and calculate floats (Free & total) for non-critical Activities

Activity	1-2	2-3	3-4	2-4	4-5	2-5	5-8	5-6	6-8	5-7	7-8	8-9	9-10
Name	A	B	C	D	E	F	G	H	I	J	K	L	M
Duration	2	4	10	4	10	5	36	12	4	12	8	6	12



Activity	Duration	EST	LST	EFT	LFT	Total Float	Free Float (TF − [illegible])
A	2	0	0	2	2	0	
B	4	2	2	6	6	0	
C	10	6	6	16	16	0	
D	4	2	12	6	16	10	10 − (0) = 10
E	10	16	16	26	26	0	
F	5	2	21	7	26	19	19 − (0) = 19
G	36	26	26	62	62	0	
H	12	26	46	38	58	20	20 − 20 = 0
I	4	38	58	42	62	20	20 − 0 = 20
J	12	26	42	38	54	16	16 − 16 = 0
K	8	38	54	46	62	16	16 − 0 = 16
L	6	62	62	68	68	0	0
M	12	68	68	80	80	0	0

Critical Path = A → B → C → E → G → L → M

2 + 4 + 10 + 10 + 36 + 6 + 12 = 80.