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Paper

Construction  
Management

SEC

A

Exam

MID TERM

Submitted

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to

Ahad

Date

18-APR-2020

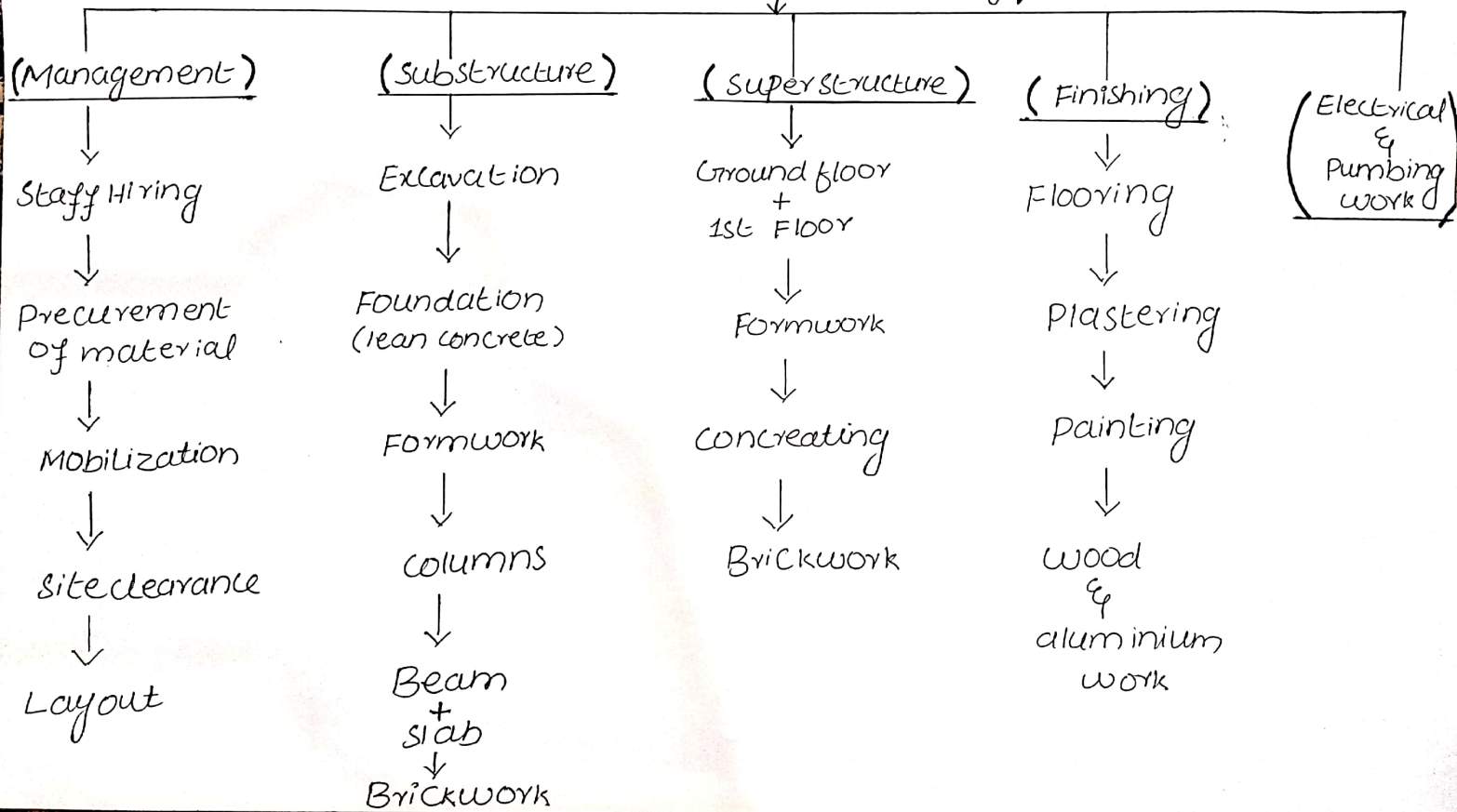
Part (a): Activity List & work  
breakdown structure

Activity List: of two story building:

- 1) survey
- 2) mobilization
- 3) clearance of site
- 4) Layout
- 5) Excavation
- 6) Foundation
- 7) Formwork
- 8) column
- 9) Beams and slab
- 10) Brickwork
- 11) curing
- 12) Flooring
- 13) Plumbing & sanitary work
- 14) Electrification work
- 15) wooden work
- 16) Finishing

Work breakdown structure:

(Construction of building)





## Part (b)

Time line For Completion of each activity:

Y#	ACTIVITY	DURAT ION	Start date	End date
2-Kanal HOUSE E814 From 2-May-20 TO 21-June-22				
1	Initial survey	2	2-May-20	3-May-20
2	Mobilization	3	4-May-20	6-May-20
3	Clearance of site	2	7-May	8-May-20
4	Detail survey	2	9-May-20	10-May-20
5	Layout	2	11-May-20	12-May-20
6	Excavation	3	13-May-20	15-May-20
7	Leveling and <sup>dressing</sup>	1	16-May-20	16-May-20
8	Anti termite	1	17-May-20	17-May-20
<b>Foundation + Basement</b>				
9	Lean concrete	1	18-May	18-May
10	Steel rebar for <sup>Foundation</sup> column	2	19-May	20-May
11	Formwork	3	21-May	23-May
12	concrete 1:2:4 <sup>Foundation</sup> column	3	24-May	26-May
13	Steel rebar for column	7	27-May	2-June
14	Column Formwork <sup>Basem<sup>ent</sup></sup>	7	3-June	9-June
15	column concreting <sup>Basement</sup>	<del>10</del> 7	10-June	16-June
16	Formwork for Beam + slab	15	17-June	26-June
17	Steel cutting and placing	25	27-June	1-July
18	Electric pipes placing	2	2-July	3-July
19	concrete 1:2:4 slab + Beam	4	4-July	4-July
20	Formwork removal	4	5-July	8-July
21	Brick masonry	30	9-July	7-Aug
22	Electric + Plumbing pipes	10	8-Aug	17-Aug
23	Plastering	20	18-Aug	6-Sep
24	Curing	60	7-Sep	5-Nov
25	Ceiling	10	6-NOV	15-NOV



26	Painting	20	18-NOV	5-Dec
27	Sanitation work	5	6-Dec	10-Dec
28	Floor concreting	7	11-Dec	16-Dec
29	Tiles + Marbles	15	17-Dec	31-Dec
30	WOOD work	30	1-Jan-21	30-Jan-21
31	Electric wires Pking	5	31-Jan-21	4-Feb-21
32	Sanitary Fixtures	3	5-Feb-21	7-Feb-21
<b>Ground Floor</b>				
33	Lay out	1	8-Feb-21	8-Feb-21
34	Steel cutting + Placing <sup>column</sup>	2	9-Feb-21	10-Feb-21
35	Formwork	5	11-Feb-21	15-Feb-21
36	column concreting	6	16-Feb-21	21-Feb-21
37	Beam + slab Form	10	22-Feb	3-March
38	Steel cutting + Place	7	4-May-21	10-March
39	Electric pipes distr.	2	11-March	12-March
40	Slab + Beam 1:2:4 concr	1	13-March	13-March-21
41	Form Removal	2	14-March-21	15-March-21
42	Brick Masonry	15	16-March-21	30-March-21
43	Elect + Plumb pipes distr	5	31-March	4-APR-21
44	Plastering	15	5-APR-21	19-APR-21
45	Curing	60	20-APR	18-June-21
46	Ceiling	5	19-June	23-June
47	Painting	15	24-June	8-July-21
48	Sanitation	3	9-July-21	11-July-21
49	Floor concrete	3	12-July	14-July-21
50	Marbles	15	15-July	29-July-21
51	WOOD works	20	30-July	17-Aug-21
52	Elect wire distr	5	18-Aug-21	22-Aug-21
53	Sanitary Fixture	5	23-Aug-21	27-Aug-21



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FIRST FLOOR				
54	LAYOUT	1	28-AUG-21	28-AUG-21
55	column steel Placing	5	29-AUG-21	2-SEP-21
56	Form work	7	3-SEP-21	9-SEP-21
57	Column concreting	7	10-SEP-21	16-SEP-21
58	Beam + slab Form	10	17-SEP-21	26-SEP-21
59	Steel cut + Placing	7	27-SEP-21	3-OCT-21
60	Electric Pipe distr.	2	4-OCT-21	5-OCT-21
61	concrete for slab+Beam	1	6-OCT-21	6-OCT- <del>21</del> <sup>21</sup>
62	Form removal	2	7-OCT-21	8-OCT-21
63	Brick masonry	10	9-OCT-21	19-OCT-21
64	Elect + Plumbing Pipe	5	20-OCT-21	24-OCT-21
65	Plastering	15	25-OCT-21	8-NOV-21
66	Curing	80	9-NOV-21	JAN - Jan 22
67	ceiling	7	8-Jan-22	14-Jan-22
68	Painting	15	15-Jan-22	29-Jan-22
69	Sanitation work	5	30-Jan-22	3-Feb-22
70	FLOOR concreting	5	4-Feb-22	8-Feb-22
71	Marbles	20	9-Feb-22	28-Feb-22
72	WOOD work	5	1-Mar-22	5-Mar-22
73	Electric wire dist	81	6-Mar-22	6-Mar-22
74	Sanitary Fixture	0	6-Mar	6-Mar



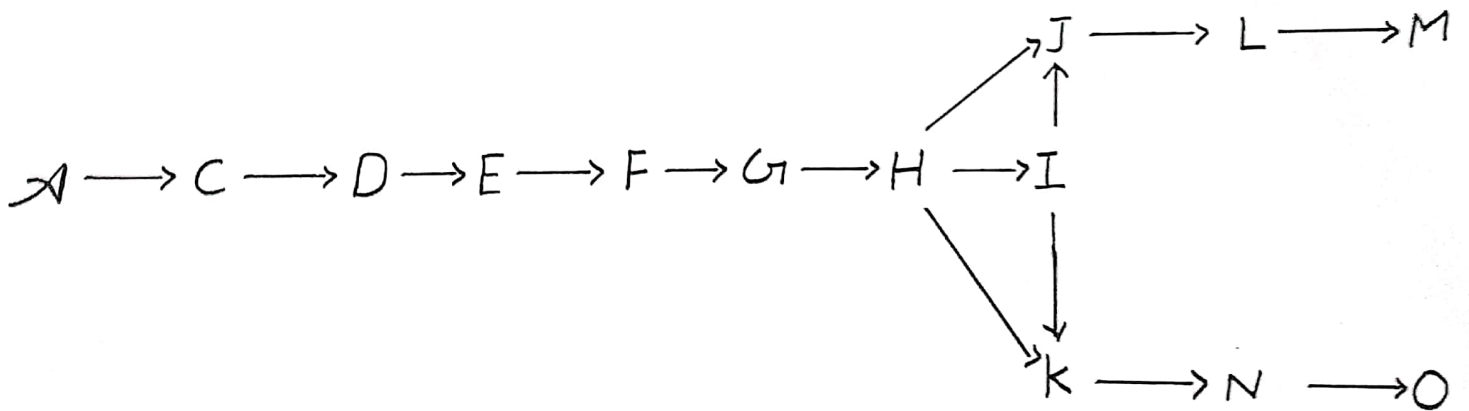
Mummy + Terrace				
75	LAYOUT	1	7-MAR-22	7-MAR-22
76	Steel for Column	1	8-MAR-22	8-MAR-22
77	Formwork	1	9-MAR-22	9-MAR-22
78	Concreting for Column	1	10-MAR-22	10-MAR-22
79	Slab + Beam Form	1	11-MAR-22	11-MAR-22
80	Electric Pipe distr	1	12-MAR-22	12-MAR-22
81	Steel cutting + Place	1	13-MAR-22	13-MAR-22
82	Slab + Beam concrete	1	14-MAR-22	14-MAR-22
83	Form removal	1	15-MAR-22	15-MAR-22
84	Brick masonry	3	16-MAR-22	18-MAR-22
85	Elect + Plum Pipe	1	19-MAR-22	19-MAR-22
86	Plastering	3	20-MAR-22	22-MAR-22
87	Curing	27	23-MAR-22	17-MAR-22
88	Painting	3	18-MAR-22	20-MAR-22
89	Paper wall	10	21-MAR-22	30-MAR-22
90	Bitumen	1	31-MAR-22	31-MAR-22
91	Mud on roof	3	1-APR-22	3-APR-22
92	Chowka Paving	5	4-APR-22	8-APR-22
Exterior work + wait				
93	LAYOUT	2	9-APR-22	10-APR-22
94	Excavation	7	11-APR-22	17-APR-22
95	Leveling	2	18-APR-22	19-APR-22
96	Anti termite	1	20-APR-22	20-APR-22
97	lean concrete	3	21-APR-22	23-APR-22
98	Brick masonry	14	24-APR-22	7-MAY-22
99	DPC	2	8-MAY-22	9-MAY-22
100	Brick masonry	21	10-MAY-22	30-MAY-22
101	Plastering	7	31-MAY-22	6-JUNE-22
102	Painting	15	7-JUNE-22	31-JUNE-22

Part (c) : Critical Path (CPM) of the Project

ACTIVITY		PREDECESSOR	DURATION IN WEEKS
Survey	A		1
Mobilization	B		1
clearance + Layout	C	A	1
Excavation	D	C	2
Foundation	E	D	4
Formwork	F	E	1
column	G	F	2
Beam + slab	H	G	3
Brick work	I	H	3
Plumbing & sanitary	J	HI	2
Electrification	k	HI	2
Flooring	L	J	2
wooden work	M	<b>L</b>	3
Finishing	N	<del>A</del> K	3
Miscellaneous	O	N	1

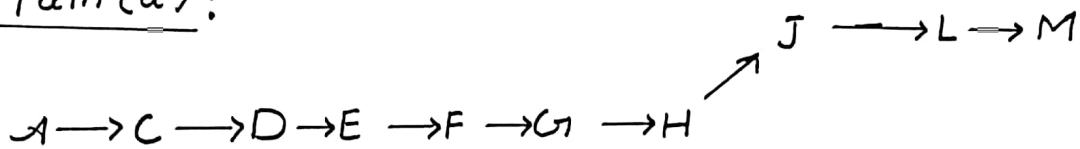


Precedence Diagram:

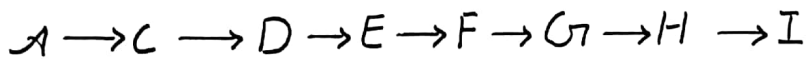


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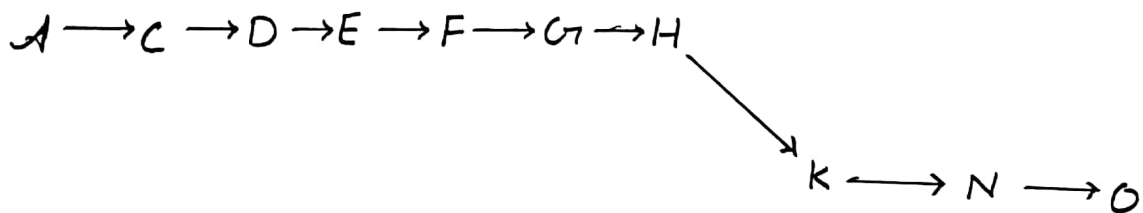
Path (a) :



Path (b) :

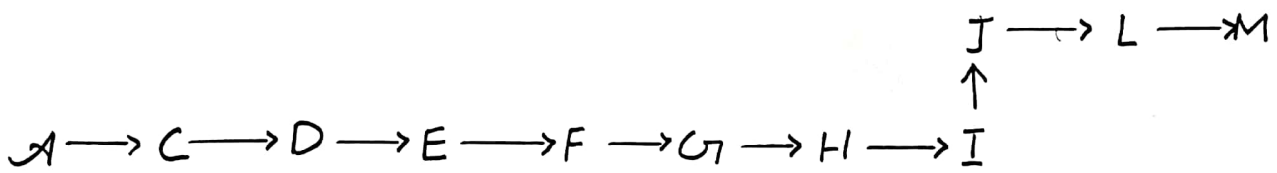


Path (c) :

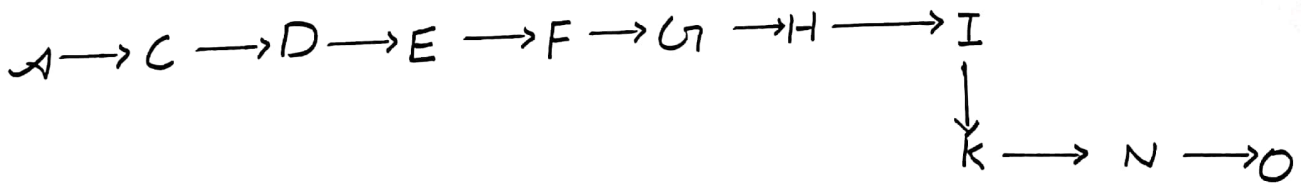




Path (d):



path (e):



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\* There are Five paths of our project

- i) path (a)  $\Rightarrow$  (ACDEFGHJLM) having 21 weeks
- ii) path (b)  $\Rightarrow$  (ACDEFGHI) having 17 weeks
- iii) path (c)  $\Rightarrow$  (ACDEFGHKNO) having 20 weeks.
- iv) path (d)  $\Rightarrow$  (ACDEFGHIJLM) having 24 weeks
- v) path (e)  $\Rightarrow$  (ACDEFGHIKNO) having 23 weeks

The critical path of our project is path (d) which has more time.



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part(d) Maximum time taken by our project:

0	A	1
0	1	1

1	C	2
1	1	2

2	D	4
2	2	4

4	E	8
4	4	8

8	F	9
8	1	9

9	G	11
9	2	11

11	H	14
11	3	14

17	J	19
17	2	19

19	L	21
19	2	21

21	M	24
21	3	24

14	I	17
14	3	17

17	K	19
17	2	19

19	N	22
19	3	22

22	O	23
22	1	23

\* So according to forward pass and backward pass maximum time for our project is 24 weeks.

Part (e) : slack time for activities:  
if any

Slack = late finish - early finish

$$A = 1 - 1 = 0$$

$$C = 2 - 2 = 0$$

$$D = 4 - 4 = 0$$

$$E = 8 - 8 = 0$$

$$F = 9 - 9 = 0$$

$$G = 11 - 11 = 0$$

$$H = 14 - 14 = 0$$

$$I = 17 - 17 = 0$$

$$J = 19 - 19 = 0$$

$$K = 19 - 19 = 0$$

$$L = 21 - 21 = 0$$

$$M = 24 - 24 = 0$$

$$N = 22 - 22 = 0$$

$$O = 23 - 23 = 0$$

\* so all the values comes zero, so there is no slack.



Slack = late start - early start

$$A = 0 - 0 = 0$$

~~B~~

$$C = 1 - 1 = 0$$

$$D = 2 - 2 = 0$$

$$E = 4 - 4 = 0$$

$$F = 8 - 8 = 0$$

$$G = 9 - 9 = 0$$

$$H = 11 - 11 = 0$$

$$I = 14 - 14 = 0$$

$$J = 17 - 17 = 0$$

$$K = 17 - 17 = 0$$

$$L = 19 - 19 = 0$$

$$M = 21 - 21 = 0$$

$$N = 19 - 19 = 0$$

$$O = 22 - 22 = 0$$

\* All the values comes zero, so there is no slack