

<b>Semester: Jan-Mar 2024</b>		
<b>Maximum Marks: 50    Examination: ESE Exam    Date: 28-03-24    Duration: 3 Hours</b>		
<b>Program code: 01</b> <b>Program: MBA Minor Operations</b>	<b>Class: SY</b>	<b>Semester/Trimester: VI</b>
<b>College: K. J. Somaiya Institute of Management</b>	<b>Name of the department/Section/Center: Operations and Supply Change Management</b>	
<b>Course Code: 217P01M619</b>	<b>Name of the Course: Project Management (Minor)</b>	
<b>Instructions: Question 1 is compulsory. Answer any two from Q2 to Q4 and any two from Q5 to Q7</b>		

Question No.		Max. Marks
1	<p>There is a section in "Bor Ghat" on Mumbai Pune Expressway where old highway and Expressway merge. In other words, Expressway is not a truly expressway in this section. It has been a bottleneck for last 25 years since expressway was inaugurated.</p> <p>It is famously called "Missing Link". Maharashtra Government is building the missing link now.</p> <p>Below is the infographics about missing link.</p> <p>Please prepare Project charter with following paragraphs</p> <ul style="list-style-type: none"> <li>• Project Purpose or Justification</li> <li>• High-level Project description and boundaries</li> <li>• High-level Requirements</li> <li>• Assumptions and constraints</li> <li>• High-level risks</li> <li>• Summary milestone Schedule</li> <li>• Summary Budget</li> <li>• Stakeholders List</li> </ul>	10

# MILESTONES



**₹6,600 cr**  
project cost



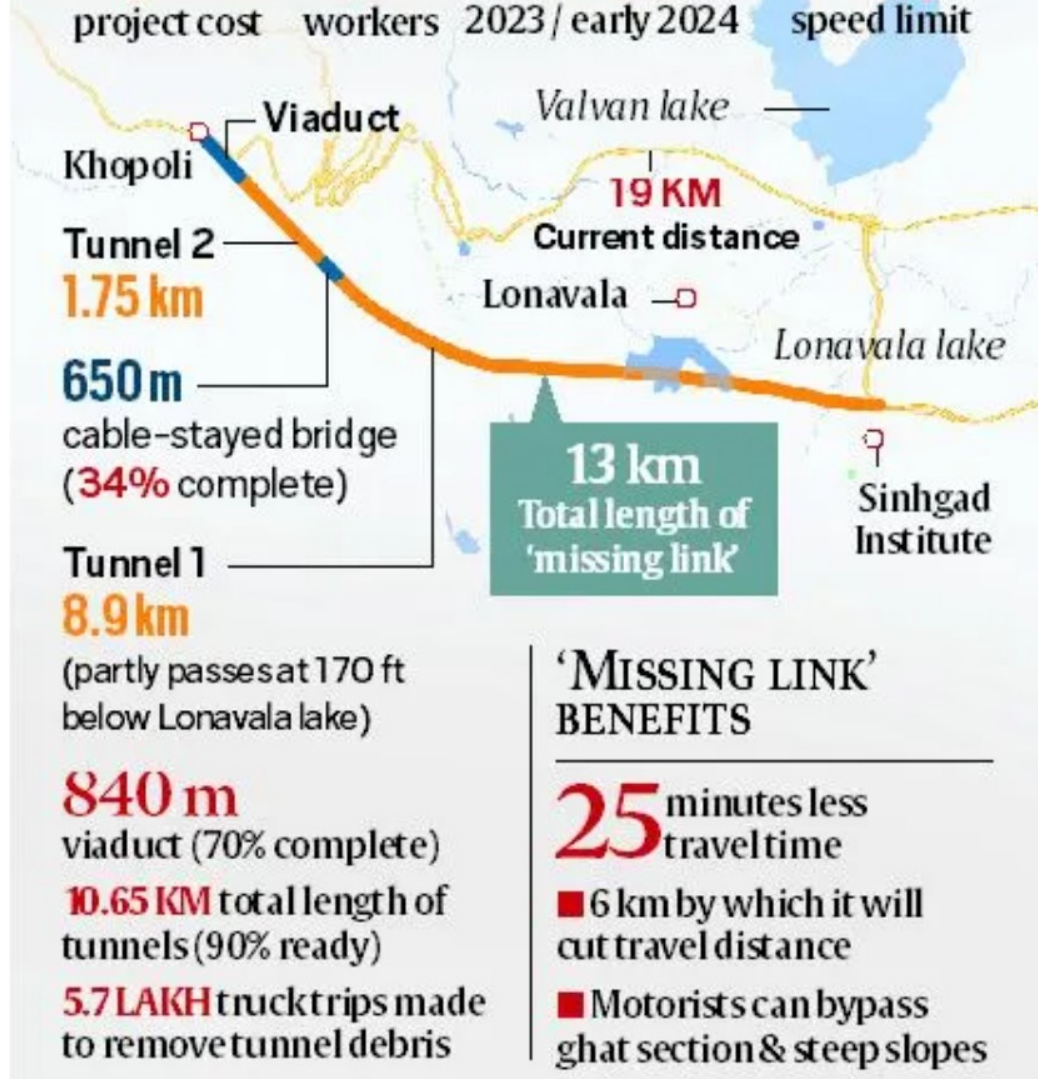
**2,500**  
workers



**Deadline**  
2023 / early 2024



**120 kmph**  
speed limit



## 'MISSING LINK' BENEFITS

**25** minutes less travel time

■ 6 km by which it will cut travel distance

■ Motorists can bypass ghat section & steep slopes

2

Somaiya Institute of Technology is building an experimental aircraft model. They have laid out following milestone activities along with their expected time of completion and precedence. They have asked your help to find out what is expected time of completion

10

Activity	Predecessor	a	m	b
A	-	1	2	3
B	-	2	3	4
C	A	4	5	6
D	B	8	9	10
E	C, D	2	5	8
F	D	4	5	6
G	E	1	2	3

1. Draw project network diagram
2. Calculate Project Duration
3. Identify critical path
4. What is project variance and standard deviation?

	<p>5. What is the probability that project will be completed in 17 weeks?          6. Z value table is given in annexure I</p>																																					
3	<p>Activity and Precedence list along with Normal Time, Crash Time, Normal Cost and Crash Cost are as given below</p> <table border="1"> <thead> <tr> <th>Activity</th> <th>Predecessor</th> <th>Normal Time (Days)</th> <th>Crash Time (Days)</th> <th>Normal Cost \$</th> <th>Crash Cost \$</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>-</td> <td>6</td> <td>5</td> <td>900</td> <td>1000</td> </tr> <tr> <td>B</td> <td>-</td> <td>8</td> <td>6</td> <td>300</td> <td>400</td> </tr> <tr> <td>C</td> <td>-</td> <td>4</td> <td>3</td> <td>500</td> <td>600</td> </tr> <tr> <td>D</td> <td>A</td> <td>5</td> <td>3</td> <td>900</td> <td>1200</td> </tr> <tr> <td>E</td> <td>C</td> <td>8</td> <td>5</td> <td>1000</td> <td>1600</td> </tr> </tbody> </table> <p>1. Please draw project network diagram          2. Calculate project duration          3. Identify critical path          4. Determine the least cost to crash project by 4 days          5. Can we crash the project beyond 4 days? If yes, how much and at what cost?</p>	Activity	Predecessor	Normal Time (Days)	Crash Time (Days)	Normal Cost \$	Crash Cost \$	A	-	6	5	900	1000	B	-	8	6	300	400	C	-	4	3	500	600	D	A	5	3	900	1200	E	C	8	5	1000	1600	10
Activity	Predecessor	Normal Time (Days)	Crash Time (Days)	Normal Cost \$	Crash Cost \$																																	
A	-	6	5	900	1000																																	
B	-	8	6	300	400																																	
C	-	4	3	500	600																																	
D	A	5	3	900	1200																																	
E	C	8	5	1000	1600																																	
4	<p>Write short notes on any two</p> <p>1. What is triple constraint in a project. Please explain with an example          2. What is Free Float and what is total float? Please explain with an example</p>	10																																				

5

A project with duration of 20 weeks was reviewed at the end of 10 weeks with status as follows

Week	Cumulative Planned Completion	Cumulative Actual Completion	Weekly Planned cost Budget	Weekly Actual cost incurred
1	6%	5%	200	220
2	12%	8%	200	250
3	18%	15%	200	200
4	24%	20%	200	210
5	30%	25%	200	230
6	36%	30%	200	240
7	42%	35%	200	200
8	48%	40%	200	270
9	54%	45%	200	280
10	60%	50%	200	290
11	66%		200	
12	72%		200	
13	78%		200	
14	82%		160	
15	86%		160	
16	90%		160	
17	92%		160	
18	94%		160	
19	96%		100	
20	100%		100	

Calculate

1. Schedule Variance
2. Cost variance
3. Schedule Performance Index (SPI)
4. Cost Performance Index (CPI)
5. Expected time to complete (ETC)
6. Expected cost at complete (EAC)

Plot a graph of cumulative AC, PV and EV on graph paper provided

10

6

- A. Please explain differences between P & L statement and cash flow statement
- B. What is the difference between cash flow and free cash flow?
- C. What is the significance of Interest Coverage Ratio and Debt Service Coverage Ratio?
- D. From the following data, calculate Interest Coverage Ratio and Debt Coverage ratio for the firm for each year.

Year	1	2	3	4	5
PAT	1000	1100	1200	1300	1400
Depreciation	300	275	250	225	200
Tax	250	260	270	280	300
Interest on Term Loan	300	250	200	225	200
Repayment of Term Loan	350	350	350	350	350

10

7

North Start Pvt. Ltd. Is evaluating two mutually exclusive investment proposals for its diversification.

Project A requires an initial investment of Rs. 750,000/-

Project B requires an initial investment of Rs. 500,000/-

Life of equipment used for both projects is 5 years with no salvage value

Depreciation is on straight line method

Revenue from both projects is Rs. 500,000 per year

Yearly Operating costs for Project, A is Rs. 100,000/-

Yearly Operating costs for Project, B is Rs. 200,000/-

Firm's tax rate is 35% and Cost of capital is 15%

Please recommend which project firm should choose

PV of future cash flow of 1 rupee at 15% WACC is as below

Year	1	2	3	4	5
PV	0.87	0.76	0.66	0.57	0.50

10



# Standard Normal Cumulative Probability Table



Cumulative probabilities for **NEGATIVE** z-values are shown in the following table:

z	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
-3.4	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0002
-3.3	0.0005	0.0005	0.0005	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0003
-3.2	0.0007	0.0007	0.0006	0.0006	0.0006	0.0006	0.0006	0.0005	0.0005	0.0005
-3.1	0.0010	0.0009	0.0009	0.0009	0.0008	0.0008	0.0008	0.0008	0.0007	0.0007
-3.0	0.0013	0.0013	0.0013	0.0012	0.0012	0.0011	0.0011	0.0011	0.0010	0.0010
-2.9	0.0019	0.0018	0.0018	0.0017	0.0016	0.0016	0.0015	0.0015	0.0014	0.0014
-2.8	0.0026	0.0025	0.0024	0.0023	0.0023	0.0022	0.0021	0.0021	0.0020	0.0019
-2.7	0.0035	0.0034	0.0033	0.0032	0.0031	0.0030	0.0029	0.0028	0.0027	0.0026
-2.6	0.0047	0.0045	0.0044	0.0043	0.0041	0.0040	0.0039	0.0038	0.0037	0.0036
-2.5	0.0062	0.0060	0.0059	0.0057	0.0055	0.0054	0.0052	0.0051	0.0049	0.0048
-2.4	0.0082	0.0080	0.0078	0.0075	0.0073	0.0071	0.0069	0.0068	0.0066	0.0064
-2.3	0.0107	0.0104	0.0102	0.0099	0.0096	0.0094	0.0091	0.0089	0.0087	0.0084
-2.2	0.0139	0.0136	0.0132	0.0129	0.0125	0.0122	0.0119	0.0116	0.0113	0.0110
-2.1	0.0179	0.0174	0.0170	0.0166	0.0162	0.0158	0.0154	0.0150	0.0146	0.0143
-2.0	0.0228	0.0222	0.0217	0.0212	0.0207	0.0202	0.0197	0.0192	0.0188	0.0183
-1.9	0.0287	0.0281	0.0274	0.0268	0.0262	0.0256	0.0250	0.0244	0.0239	0.0233
-1.8	0.0359	0.0351	0.0344	0.0336	0.0329	0.0322	0.0314	0.0307	0.0301	0.0294
-1.7	0.0446	0.0436	0.0427	0.0418	0.0409	0.0401	0.0392	0.0384	0.0375	0.0367
-1.6	0.0548	0.0537	0.0526	0.0516	0.0505	0.0495	0.0485	0.0475	0.0465	0.0455
-1.5	0.0668	0.0655	0.0643	0.0630	0.0618	0.0606	0.0594	0.0582	0.0571	0.0559
-1.4	0.0808	0.0793	0.0778	0.0764	0.0749	0.0735	0.0721	0.0708	0.0694	0.0681
-1.3	0.0968	0.0951	0.0934	0.0918	0.0901	0.0885	0.0869	0.0853	0.0838	0.0823
-1.2	0.1151	0.1131	0.1112	0.1093	0.1075	0.1056	0.1038	0.1020	0.1003	0.0985
-1.1	0.1357	0.1335	0.1314	0.1292	0.1271	0.1251	0.1230	0.1210	0.1190	0.1170
-1.0	0.1587	0.1562	0.1539	0.1515	0.1492	0.1469	0.1446	0.1423	0.1401	0.1379
-0.9	0.1841	0.1814	0.1788	0.1762	0.1736	0.1711	0.1685	0.1660	0.1635	0.1611
-0.8	0.2119	0.2090	0.2061	0.2033	0.2005	0.1977	0.1949	0.1922	0.1894	0.1867
-0.7	0.2420	0.2389	0.2358	0.2327	0.2296	0.2266	0.2236	0.2206	0.2177	0.2148
-0.6	0.2743	0.2709	0.2676	0.2643	0.2611	0.2578	0.2546	0.2514	0.2483	0.2451
-0.5	0.3085	0.3050	0.3015	0.2981	0.2946	0.2912	0.2877	0.2843	0.2810	0.2776
-0.4	0.3446	0.3409	0.3372	0.3336	0.3300	0.3264	0.3228	0.3192	0.3156	0.3121
-0.3	0.3821	0.3783	0.3745	0.3707	0.3669	0.3632	0.3594	0.3557	0.3520	0.3483
-0.2	0.4207	0.4168	0.4129	0.4090	0.4052	0.4013	0.3974	0.3936	0.3897	0.3859
-0.1	0.4602	0.4562	0.4522	0.4483	0.4443	0.4404	0.4364	0.4325	0.4286	0.4247
0.0	0.5000	0.4960	0.4920	0.4880	0.4840	0.4801	0.4761	0.4721	0.4681	0.4641