

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

Question No.		Max. Marks
1	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.	10
	It is famously called "Missing Link". Maharashtra Government is building the missing link now.	
	Below is the infographics about missing link.	
	Please prepare Project charter with following paragraphs	
	Project Purpose or Justification	
	High-level Project description and boundaries	
	High-level Requirements	
	Assumptions and constraints	
	High-level risks	
	Summary milestone Schedule	
	Summary Budget	
	Stakeholders List	

## MILESTONES









₹6.600 cr project cost

Deadline workers 2023 / early 2024 120 kmph speed limit

- Viaduct

Valvan lake

Khopoli

Tunnel 2

1.75 km

19 KM Current distance

Lonavala 🗕

Lonavala lake

650 m -

cable-stayed bridge (34% complete)

13 km

Total length of missing link

Sinhgad Institute

Tunnel 1

8.9 km

(partly passes at 170 ft below Lonavala lake)

840 m

viaduct (70% complete)

10.65 KM total length of tunnels (90% ready)

5.7 LAKH trucktrips made to remove tunnel debris

'MISSING LINK' BENEFITS

minutes less traveltime

- ■6 km by which it will cut travel distance
- Motorists can bypass ghat section & steep slopes

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

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

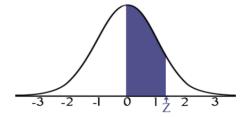
- Draw project network diagram
- Calculate Project Duration
- 3. Identify critical path
- What is project variance and standard deviation?

10

3	Activity and Precedence list along with Normal Time, Crash Time, Normal Cost and Crash Cost are as given below									
	Activity	Predecessor	Normal Time	Crash Time	Normal Cost \$	Crash Cost \$				
	A	-	(Days) 6	( <b>Days</b> ) 5	900	1000				
	В	-	8	6	300 500	400				
	С	-	4	3		600				
	D	A	5	3	900	1200				
	E	C	8	5	1000	1600				
	<ol> <li>Please draw project network diagram</li> <li>Calculate project duration</li> <li>Identify critical path</li> <li>Determine the least cost to crash project by 4 days</li> <li>Can we crash the project beyond 4 days? If yes, how much and at what cost?</li> </ol>									
4	<ol> <li>Can we crash the project beyond 4 days? If yes, how much and at what cost?</li> <li>Write short notes on any two</li> <li>What is triple constraint in a project. Please explain with an example</li> <li>What is Free Float and what is total float? Please explain with an example</li> </ol>									

5		A project wit	h duration of 20 weeks wa	as reviewed at the e	nd of 10 wee	cs with sta	itus as fo	llows			1
		Week	Cumulative Planned	Cumulative Actua		y Planned c		Weekly Actu	ıal cost		
			Completion	Completion		Budget		incurre	ed		
		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					
		<ol> <li>Cost v.</li> <li>Schedu</li> <li>Cost P.</li> <li>Expect</li> <li>Expect</li> </ol>	ariance ariance ule Performance Index (SI erformance Index (CPI) ed time to complete (ETC ed cost at complete (EAC of cumulative AC, PV and	() ()	· provided						
6	A.	Please explai	n differences between P &	L statement and c	sh flow state	ment					
	В.	What is the d	ifference between cash flo	ow and free cash flo	w?						
	C.	What is the s	ignificance of Interest Co	verage Ratio and D	bt Service C	overage Ra	atio?				
	D.		owing data, calculate Inte					e firm for eac	ch year.		
		Year	,	1			3	4	5	]	
		PAT		100			1200	1300	1400	1	
		Depreciation	on	30			250	225	200	1	
		Tax		250			270	280	300	1	
			Term Loan	30			200	225	200	1	
	1									1	1

								1		
7	North Start Pvt. I	td. Is evaluating	two mutually exc	lusive investmen	t proposals for its	diversification.		10		
	Project A require	s an initial invest	ment of Rs. 750,0	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/-									
	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/-									
	Depreciation is on straight line method  Revenue from both projects is Rs. 500,000 per year									
	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/-									
	·									
	PV of future cash	flow of 1 rupee a	at 15% WACC is	as below			1			
	Year	1	2	3	4	5				
	PV	0.87	0.76	0.66	0.57	0.50				

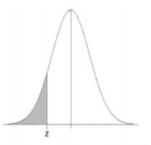


## STANDARD NORMAL TABLE (Z)

Entries in the table give the area under the curve between the mean and z standard deviations above the mean. For example, for z = 1.25 the area under the curve between the mean (0) and z is 0.3944.

Z	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0.0	0.0000	0.0040	0.0080	0.0120	0.0160	0.0190	0.0239	0.0279	0.0319	0.0359
0.1	0.0398	0.0438	0.0478	0.0517	0.0557	0.0596	0.0636	0.0675	0.0714	0.0753
0.2	0.0793	0.0832	0.0871	0.0910	0.0948	0.0987	0.1026	0.1064	0.1103	0.1141
0.3	0.1179	0.1217	0.1255	0.1293	0.1331	0.1368	0.1406	0.1443	0.1480	0.1517
0.4	0.1554	0.1591	0.1628	0.1664	0.1700	0.1736	0.1772	0.1808	0.1844	0.1879
0.5	0.1915	0.1950	0.1985	0.2019	0.2054	0.2088	0.2123	0.2157	0.2190	0.2224
0.6	0.2257	0.2291	0.2324	0.2357	0.2389	0.2422	0.2454	0.2486	0.2517	0.2549
0.7	0.2580	0.2611	0.2642	0.2673	0.2704	0.2734	0.2764	0.2794	0.2823	0.2852
0.8	0.2881	0.2910	0.2939	0.2969	0.2995	0.3023	0.3051	0.3078	0.3106	0.3133
0.9	0.3159	0.3186	0.3212	0.3238	0.3264	0.3289	0.3315	0.3340	0.3365	0.3389
1.0	0.3413	0.3438	0.3461	0.3485	0.3508	0.3513	0.3554	0.3577	0.3529	0.3621
1.1	0.3643	0.3665	0.3686	0.3708	0.3729	0.3749	0.3770	0.3790	0.3810	0.3830
1.2	0.3849	0.3869	0.3888	0.3907	0.3925	0.3944	0.3962	0.3980	0.3997	0.4015
1.3	0.4032	0.4049	0.4066	0.4082	0.4099	0.4115	0.4131	0.4147	0.4162	0.4177
1.4	0.4192	0.4207	0.4222	0.4236	0.4251	0.4265	0.4279	0.4292	0.4306	0.4319
1.5	0.4332	0.4345	0.4357	0.4370	0.4382	0.4394	0.4406	0.4418	0.4429	0.4441
1.6	0.4452	0.4463	0.4474	0.4484	0.4495	0.4505	0.4515	0.4525	0.4535	0.4545
1.7	0.4554	0.4564	0.4573	0.4582	0.4591	0.4599	0.4608	0.4616	0.4625	0.4633
1.8	0.4641	0.4649	0.4656	0.4664	0.4671	0.4678	0.4686	0.4693	0.4699	0.4706
1.9	0.4713	0.4719	0.4726	0.4732	0.4738	0.4744	0.4750	0.4756	0.4761	0.4767
2.0	0.4772	0.4778	0.4783	0.4788	0.4793	0.4798	0.4803	0.4808	0.4812	0.4817
2.1	0.4821	0.4826	0.4830	0.4834	0.4838	0.4842	0.4846	0.4850	0.4854	0.4857
2.2	0.4861	0.4864	0.4868	0.4871	0.4875	0.4878	0.4881	0.4884	0.4887	0.4890
2.3	0.4893	0.4896	0.4898	0.4901	0.4904	0.4906	0.4909	0.4911	0.4913	0.4916
2.4	0.4918	0.4920	0.4922	0.4925	0.4927	0.4929	0.4931	0.4932	0.4934	0.4936
2.5	0.4938	0.4940	0.4941	0.4943	0.4945	0.4946	0.4948	0.4949	0.4951	0.4952
2.6	0.4953	0.4955	0.4956	0.4957	0.4959	0.4960	0.4961	0.4962	0.4963	0.4964
2.7	0.4965	0.4966	0.4967	0.4968	0.4969	0.4970	0.4971	0.4972	0.4973	0.4974
2.8	0.4974	0.4975	0.4976	0.4977	0.4977	0.4978	0.4979	0.4979	0.4980	0.4981
2.9	0.4981	0.4982	0.4982	0.4983	0.4984	0.4984	0.4985	0.4985	0.4986	0.4986
3.0	0.4987	0.4987	0.4987	0.4988	0.4988	0.4989	0.4989	0.4989	0.4990	0.4990
3.1	0.4990	0.4991	0.4991	0.4991	0.4992	0.4992	0.4992	0.4992	0.4993	0.4993
3.2	0.4993	0.4993	0.4994	0.4994	0.4994	0.4994	0.4994	0.4995	0.4995	0.4995
3.3	0.4995	0.4995	0.4995	0.4996	0.4996	0.4996	0.4996	0.4996	0.4996	0.4997
3.4	0.4997	0.4997	0.4997	0.4997	0.4997	0.4997	0.4997	0.4997	0.4997	0.4998

## 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	0.068
-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	0.161
-0.8	0.2119	0.2090	0.2061	0.2033	0.2005	0.1977	0.1949	0.1922	0.1894	0.186
-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	0.245
-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	0.312
-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	0.424
0.0	0.5000	0.4960	0.4920	0.4880	0.4840	0.4801	0.4761	0.4721	0.4681	0.464