K. J. SOMAIYA INSTITUTE OF MANAGEMENT STUDIES AND RESEARCH

PGDM(O), MMS(O), PG(Fin), MMS(Fin), PG(Mkt), MMS(Mkt),PG (HR), MMS(HR),
6th Trimester (Batch 2017 – 2019)

Subject: Project Management (Operations)
(End Term examination)

Maximum Marks: 25
Duration: 1.5 hour   **Date : 8th April, 2019**

Notes: Question No1 is compulsory; attempt any 2 questions from questions 2 to 4
Please make necessary assumptions if required, and clearly state them.

1   a) Define Work Breakdown Structure (WBS) and how it is linked to project scope? How does the WBS differ from the project network?   (5)

OR

b) Define the terms   "Project" and "Project Management". Explain the different phases of a Project Life Cycle in detail?   (5)

2   a) Explain the terms "Resource Smoothing" and "Resource Constrained Scheduling". How does Resource scheduling reduce flexibility in managing projects?   (3)

b) You are one of three carpenters assigned to complete a short construction project. Right before the start of the project, one of your fellow carpenters was hospitalized and will not be available to work on the project.
Draw the project network and develop a resource-constrained schedule in the loading chart taught to you to see how long the project will take with only 2 carpenters.   Activities A, B, C, D, E, G, and H require 2 carpenters to complete. Activity F requires only 1 carpenter. No splitting of activities is possible.
You will receive a bonus if the project is completed within 15 days. Should you start planning how you will spend your bonus?   (7)

Activity	Duration	Predecessor
A	2	-
B	1	A
C	3	A
D	1	B, C
E	2	D
F	3	D
G	2	E
H	2	F, G

3 a) The following table provides normal and crash times as well as normal and crash costs for the activities of a project: -   (5)

Activity	Normal Time (weeks)	Normal Cost (Rs. Lacs)	Crash Time (weeks)	Crash Cost (Rs. Lacs)
1-2	3	5	1	9
2-3	4	8	3	14
2-4	3	4	2	6
2-5	8	5	7	6
3-6	4	3	2	5
4-6	6	2	4	3
5-7	5	10	4	14
6-7	3	7	1	10

i)   Using the above information, crash or shorten the activities step by step until the shortest duration is reached.

ii) What will be the normal project cost and normal time? What is the crash point, and associated project direct cost (at the crash point)?

3 b) A project consisting of 8 activities has the following details   (5)

Activity	Immediate Predecessor	Duration (Days)		
		Optimistic	Pessimistic	Most Likely
A	-	4	8	6
B	-	16	16	16
C	-	6	30	12
D	A	4	28	10
E	B	4	16	4
F	C	2	10	6
G	D, E	2	6	4
H	F, G	12	28	20

i. Draw the Network and compute the Expected completion time of the Project
ii. Find the probability that the project will be completed in 44 days
iii. Find the probability that the project will be completed between 46 and 49 days

4   a)   Explain how the concept of S curves and the concept of "Earned Value" are useful to top Management in assessment, monitoring and control of project schedules and costs.   (3)

b) A project consisting of eight activities was reviewed on the completion of 12 days after its start.

Activity	Duration (in	Budgeted cost of	The actual cost of	Actual % Completion

	days)	Activity(Rs.' 000)	Activity(Rs.' 000)	at the end of day 12
A 1-2	5	60	62	100
B 2-3	7	70	70	100
C 2-4	5	75	73	100
D 2-5	7	82	70	90
E 3-6	6	69	0	0
F 4-6	8	54	10	20
G 5-7	6	50	0	0
H 6-7	5	40	0	0

Draw the network in AON or AOA method, find out the critical path and total slacks for each activity (3)
Using the concept of earned value, find out   the following at the end of 12 days   (4)

i.   Schedule variance
ii.   Cost variance
iii.   Schedule performance index (SPI)
iv.   Cost performance index (CPI)
v.   Expected time to complete (ETC)
vi.   Expected cost at completion (EAC)

What is your subjective analysis of the project performance based on SPI and CPI.

X------------------------X------------------------X----------------------X------------------------X
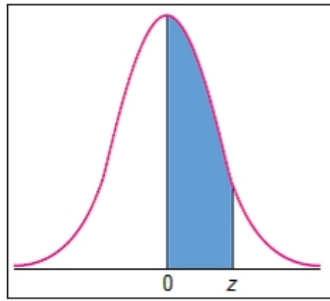
TABLE A Areas of a Standard Normal Distribution (Alternate Version of Appendix I Table 4)

The table entries represent the area under the standard normal curve from 0 to the specified value of z.

z	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
0.0	.0000	.0040	.0080	.0120	.0160	.0199	.0239	.0279	.0319	.0359
0.1	.0398	.0438	.0478	.0517	.0557	.0596	.0636	.0675	.0714	.0753
0.2	.0793	.0832	.0871	.0910	.0948	.0987	.1026	.1064	.1103	.1141
0.3	.1179	.1217	.1255	.1293	.1331	.1368	.1406	.1443	.1480	.1517
0.4	.1554	.1591	.1628	.1664	.1700	.1736	.1772	.1808	.1844	.1879
0.5	.1915	.1950	.1985	.2019	.2054	.2088	.2123	.2157	.2190	.2224
0.6	.2257	.2291	.2324	.2357	.2389	.2422	.2454	.2486	.2517	.2549
0.7	.2580	.2611	.2642	.2673	.2704	.2734	.2764	.2794	.2823	.2852
0.8	.2881	.2910	.2939	.2967	.2995	.3023	.3051	.3078	.3106	.3133
0.9	.3159	.3186	.3212	.3238	.3264	.3289	.3315	.3340	.3365	.3389
1.0	.3413	.3438	.3461	.3485	.3508	.3531	.3554	.3577	.3599	.3621
1.1	.3643	.3665	.3686	.3708	.3729	.3749	.3770	.3790	.3810	.3830
1.2	.3849	.3869	.3888	.3907	.3925	.3944	.3962	.3980	.3997	.4015
1.3	.4032	.4049	.4066	.4082	.4099	.4115	.4131	.4147	.4162	.4177
1.4	.4192	.4207	.4222	.4236	.4251	.4265	.4279	.4292	.4306	.4319
1.5	.4332	.4345	.4357	.4370	.4382	.4394	.4406	.4418	.4429	.4441
1.6	.4452	.4463	.4474	.4484	.4495	.4505	.4515	.4525	.4535	.4545
1.7	.4554	.4564	.4573	.4582	.4591	.4599	.4608	.4616	.4625	.4633
1.8	.4641	.4649	.4656	.4664	.4671	.4678	.4686	.4693	.4699	.4706
1.9	.4713	.4719	.4726	.4732	.4738	.4744	.4750	.4756	.4761	.4767
2.0	.4772	.4778	.4783	.4788	.4793	.4798	.4803	.4808	.4812	.4817
2.1	.4821	.4826	.4830	.4834	.4838	.4842	.4846	.4850	.4854	.4857
2.2	.4861	.4864	.4868	.4871	.4875	.4878	.4881	.4884	.4887	.4890
2.3	.4893	.4896	.4898	.4901	.4904	.4906	.4909	.4911	.4913	.4916
2.4	.4918	.4920	.4922	.4925	.4927	.4929	.4931	.4932	.4934	.4936
2.5	.4938	.4940	.4941	.4943	.4945	.4946	.4948	.4949	.4951	.4952
2.6	.4953	.4955	.4956	.4957	.4959	.4960	.4961	.4962	.4963	.4964
2.7	.4965	.4966	.4967	.4968	.4969	.4970	.4971	.4972	.4973	.4974
2.8	.4974	.4975	.4976	.4977	.4977	.4978	.4979	.4979	.4980	.4981
2.9	.4981	.4982	.4982	.4983	.4984	.4984	.4985	.4985	.4986	.4986
3.0	.4987	.4987	.4987	.4988	.4988	.4989	.4989	.4989	.4990	.4990
3.1	.4990	.4991	.4991	.4991	.4992	.4992	.4992	.4992	.4993	.4993
3.2	.4993	.4993	.4994	.4994	.4994	.4994	.4994	.4995	.4995	.4995
3.3	.4995	.4995	.4995	.4996	.4996	.4996	.4996	.4996	.4996	.4997
3.4	.4997	.4997	.4997	.4997	.4997	.4997	.4997	.4997	.4997	.4998
3.5	.4998	.4998	.4998	.4998	.4998	.4998	.4998	.4998	.4998	.4998
3.6	.4998	.4998	.4998	.4999	.4999	.4999	.4999	.4999	.4999	.4999

For values of z greater than or equal to 3.70, use 0.4999 to approximate the shaded area under the standard normal curve.