



- Notes :
1. All question carry equal marks.
 2. Answer **four** questions.
 3. Question No. **three** is compulsory.
 4. Due credit will be given to neatness and adequate dimensions.
 5. Assume suitable data wherever necessary.
 6. Illustrate your answer necessary with the help of neat sketches.
 7. Use of pen Blue/Black ink/refill only for writing the answer book.

1. a) What is WBS? How this is helpful in planning monitoring and controlling the progress of projects? 10
- b) Write short note on computerization of project planning techniques. 10
2. a) Give the list of project planning techniques used in construction project planning, monitoring and controlling. 10
- b) What are the elements of CPM network? What is their importance in the network? 10
3. a) Rewrite the following sentences in full with the correct choice from the alternatives. 10
(Writing only the answers without the complete sentence with no quality for any marks)
 - i) The effect of additional resources on critical path -----
 - a) Is likely to reduce the project end date by creating parallel task.
 - b) Is likely to require that a revised network diagram be created.
 - c) Is negligible
 - d) Has the same effect as crashing this path
 - ii) A project management plan is a -----
 - a) Network diagram
 - b) Bar chart
 - c) Definition of what the project is and how it will be managed
 - d) Network diagram, bar chart and histogram.
 - iii) A network diagram that uses nodes to represent activities and arrows to show the activity dependencies and allows no loops is called.
 - a) AOA b) AON
 - c) ADM d) GERT
 - iv) The three abbreviations CPM, PERT and PDM, respectively, stand for -----
 - a) Critical path means, program evaluation and repetitive Technology, probabilistic Decision method.
 - b) Critical path method, program evaluation and Review timing, probability design method.
 - c) Critical path method, program evaluation and review technique, program detailed method.
 - d) Critical path method, program evaluation and review technique, precedence diagramming method

- v) For a briefing requirement for senior management about the project with 500 activities, the best method of displaying the progress (schedule vs calendar) is by using a -----
- Barchart of summery activities in schedule
 - Network of all activities in the schedule
 - Narrative description of the active tasks and their progress.
 - Combination of the full (detail) network and the summery network.

b) State whether True or False.

10

- Float in an activity indicates the duration by which total estimation duration of activity can be reduced.
- Line of balance technique is useful for planning the construction of a number of similar structures.
- Work Breakdown structure is breakdown of project activity schedule from weekly to daily, from daily to hourly schedules for minute control.
- Critical path is the longest path in project network.
- There can be only one critical path in a project.
- In precedence diagramming network method the activities are represented by arrows and events are represented by node.
- Gantt charts are useful in working out the period to period requirements of resources on a project.
- PERT method is used for scheduling product development project.
- CPM is an acronym for cost and progress monitoring.
- During resource leveling exercise the critical activities are given priority for resource allocation.

4. Following table lists various details of project activities.

20

ACTIVITY	PREDECESSORS	Duration in weeks		
		Optimistic t_o	Most likely t_m	Pessimistic t_p
A	-	1	1	7
B	-	1	4	7
C	-	2	2	8
D	A	1	1	1
E	B	2	5	14
F	C	2	5	8
G	D, E	3	6	15

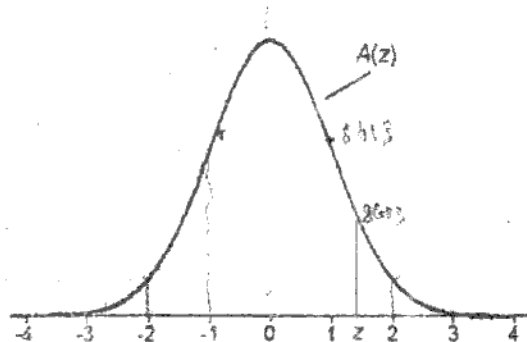
- Draw the project network using 'Activity on Arrow' convention and identify all paths through it.
- Find expected (average) duration and variance for each activity.
- What is the expected duration of project with 50% chance of completion?
- What would be your level of confidence to accept the project deadline of 19 weeks?

5. Referring to the list of activities below, find out the following on the basis of Tabular calculation (i. e. without drawing a network diagram) 20
- Total time for project completion
 - Critical path
 - Early and Late starting & Finishing times for activities.
 - Total floats and free floats for activities.

ACTIVITY	DURATION WEEKS	IMMEDIATE PREDECESSORS
A	3	-
B	5	A
C	7	A
D	4	B
E	6	C
F	4	C
G	5	D, E
H	8	G, F
K	2	G
L	4	H, K

6. a) Write short note on: 10
- Earliest finish time
 - Independent float and free float
- b) Explain Network Logic in terms of relationship of activities and what is the role of technical and resource restraint in preparing logic table. 10
7. a) Discuss about the quality control aspects of concreting (covering the materials, during production, during concreting and after concreting is done. 10
- b) What are the techniques of Risk management? 10

Cumulative Standardized Normal Distribution



$A(z)$ is the integral of the standardized normal distribution from $-\infty$ to z (in other words, the area under the curve to the left of z). It gives: probability of a normal random variable not being more than z standard deviations above its mean. Values of z of particular importance:

z	$A(z)$	
1.645	0.9500	Lower limit of right 5% tail
1.960	0.9750	Lower limit of right 2.5% tail
2.326	0.9900	Lower limit of right 1% tail
2.576	0.9950	Lower limit of right 0.5% tail
3.090	0.9990	Lower limit of right 0.1% tail
3.291	0.9995	Lower limit of right 0.05% tail

z	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0.0	0.5000	0.5040	0.5080	0.5120	0.5160	0.5199	0.5239	0.5279	0.5319	0.5359
0.1	0.5398	0.5438	0.5478	0.5517	0.5557	0.5596	0.5636	0.5675	0.5714	0.5753
0.2	0.5793	0.5832	0.5871	0.5910	0.5948	0.5987	0.6026	0.6064	0.6103	0.6141
0.3	0.6179	0.6217	0.6255	0.6293	0.6331	0.6368	0.6406	0.6443	0.6480	0.6517
0.4	0.6554	0.6591	0.6628	0.6664	0.6700	0.6736	0.6772	0.6808	0.6844	0.6879
0.5	0.6915	0.6950	0.6985	0.7019	0.7054	0.7088	0.7123	0.7157	0.7190	0.7224
0.6	0.7257	0.7291	0.7324	0.7357	0.7389	0.7422	0.7454	0.7486	0.7517	0.7549
0.7	0.7580	0.7611	0.7642	0.7673	0.7704	0.7734	0.7764	0.7794	0.7823	0.7852
0.8	0.7881	0.7910	0.7939	0.7967	0.7995	0.8023	0.8051	0.8078	0.8106	0.8133
0.9	0.8159	0.8186	0.8212	0.8238	0.8264	0.8289	0.8315	0.8340	0.8365	0.8389
1.0	0.8413	0.8438	0.8461	0.8485	0.8508	0.8531	0.8554	0.8577	0.8599	0.8621
1.1	0.8643	0.8665	0.8686	0.8708	0.8729	0.8749	0.8770	0.8790	0.8810	0.8830
1.2	0.8849	0.8869	0.8888	0.8907	0.8925	0.8944	0.8962	0.8980	0.8997	0.9015
1.3	0.9032	0.9049	0.9066	0.9082	0.9099	0.9115	0.9131	0.9147	0.9162	0.9177
1.4	0.9192	0.9207	0.9222	0.9236	0.9251	0.9265	0.9279	0.9292	0.9306	0.9319
1.5	0.9332	0.9345	0.9357	0.9370	0.9382	0.9394	0.9406	0.9418	0.9429	0.9441
1.6	0.9452	0.9463	0.9474	0.9484	0.9495	0.9505	0.9515	0.9525	0.9535	0.9545
1.7	0.9554	0.9564	0.9573	0.9582	0.9591	0.9599	0.9608	0.9616	0.9625	0.9633
1.8	0.9641	0.9649	0.9656	0.9664	0.9671	0.9678	0.9686	0.9693	0.9699	0.9706
1.9	0.9713	0.9719	0.9726	0.9732	0.9738	0.9744	0.9750	0.9756	0.9761	0.9767
2.0	0.9772	0.9778	0.9783	0.9788	0.9793	0.9798	0.9803	0.9808	0.9812	0.9817
2.1	0.9821	0.9826	0.9830	0.9834	0.9838	0.9842	0.9846	0.9850	0.9854	0.9857
2.2	0.9861	0.9864	0.9868	0.9871	0.9875	0.9878	0.9881	0.9884	0.9887	0.9890
2.3	0.9893	0.9896	0.9898	0.9901	0.9904	0.9906	0.9909	0.9911	0.9913	0.9916
2.4	0.9918	0.9920	0.9922	0.9925	0.9927	0.9929	0.9931	0.9932	0.9934	0.9936
2.5	0.9938	0.9940	0.9941	0.9943	0.9945	0.9946	0.9948	0.9949	0.9951	0.9952
2.6	0.9953	0.9955	0.9956	0.9957	0.9959	0.9960	0.9961	0.9962	0.9963	0.9964
2.7	0.9965	0.9966	0.9967	0.9968	0.9969	0.9970	0.9971	0.9972	0.9973	0.9974
2.8	0.9974	0.9975	0.9976	0.9977	0.9977	0.9978	0.9979	0.9979	0.9980	0.9981
2.9	0.9981	0.9982	0.9982	0.9983	0.9984	0.9984	0.9985	0.9985	0.9986	0.9986
3.0	0.9987	0.9987	0.9987	0.9988	0.9988	0.9989	0.9989	0.9989	0.9990	0.9990
3.1	0.9990	0.9991	0.9991	0.9991	0.9992	0.9992	0.9992	0.9992	0.9993	0.9993
3.2	0.9993	0.9993	0.9994	0.9994	0.9994	0.9994	0.9994	0.9995	0.9995	0.9995
3.3	0.9995	0.9995	0.9995	0.9996	0.9996	0.9996	0.9996	0.9996	0.9996	0.9997
3.4	0.9997	0.9997	0.9997	0.9997	0.9997	0.9997	0.9997	0.9997	0.9997	0.9998
3.5	0.9998	0.9998	0.9998	0.9998	0.9998	0.9998	0.9998	0.9998	0.9998	0.9998
3.6	0.9998	0.9998	0.9999							
