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UNIVERSITY OF PETROLEUM & ENERGY STUDIES

DEHRADUN

End Semester Examination – December 2017

Program/Course: B. Tech. (PSE) | **Semester : VII**
Subject: Project Management | **Max. Marks : 100**
Code : BBCG-108 | **Duration : 3 Hrs.**
No. of page/s: 04

Note: Use of Calculators allowed

SECTION – A: Answer any six questions. Each carries 10 marks. (60 marks)

1. **Discuss the environmental and social impacts of infrastructure & energy sector projects.**
2. **Describe task force organization in context of projects with organizational chart.**
3. **How we can define project network? Differentiate between CPM & PERT.**
4. **What are the two of components of project working systems? Explain in brief.**
5. **Why it is required to estimate project cost? Mention different components of project costs.**
6. **Which is the best project according to NPV criterion?**

Cost of Capital = 15%	Initial	Project Cash Inflows (in INR)				
Project Name	Investment	Year 1	Year 2	Year 3	Year 4	Year 5
ABC	5,000	3,000	2,000	1,500	1,500	1,500
XYZ	5,000	1,500	1,500	3,000	3,000	3,000

7. **Consider the data of a project shown in the following table:**

Activity	*Immediate predecessor(s)*	*Time (weeks)*	*Cost (INR)*
A	-	8	2000
B	-	10	4000
C	A	6	3000
D	A	9	5000
E	B	10	2500
F	B	13	5000
G	E	5	1000

If the project indirect cost per week is Rs. 300, calculate the total project cost.

8. **Estimate the installation cost of a plant to be constructed in 2017 of annual capacity 2000 tons per annum at new location (location index = 325); given that the installation cost of an existing plant at a location (with location index = 200) of annual capacity 4000 tons per**

annum was Rs. 100 Crores, which was constructed in 2000. [Cost index (2017) = 3500, Cost index (2000) = 1400]. Using

(a) Investment per Annual ton Capacity Method

(b) Six-tenth Factor Method

SECTION –B: Answer any two of the following questions. Each carries 20 marks. (40 Marks)

9. **Explain the various phases of project life cycle with the help of a neat and labelled project life cycle curve.**
10. **A project consists of 12 activities whose precedence relationships and their time estimates are shown as follows:**

ACTIVITY	Immediate Predecessor(s)	Time Estimates		
		Optimistic (a)	Most Likely (m)	Pessimistic (b)
A	-	4	6	8
B	-	2	3	4
C	-	5	5	5
D	A	8	10	12
E	A	4	5	6
F	B,E	5	6	7
G	C	5	8	11
H	C	6	8	10
I	D	7	7	13
J	F,G	8	10	12
K	H	2	3	4
L	K	4	5	6

a) **Find the duration and variance of each activity.**

b) **Draw the project network**

c) **Find the critical path and corresponding expected project completion time.**

d) **What is the probability that the project will complete in 28 weeks?**

11. The following table gives the data on a project.

ACTIVITY	DESCRIPTION	IMMEDIATE PREDECESSORS	DURATION (WEEKS)	TOTAL COST RS. '000
H	Basic design	-	10	100
I	Hardware design for A	H	8	64
J	Hardware design for B	H	6	96
K	Drawings for B	J	4	16
L	Software specifications	J	2	36
M	Parts purchase for B	J	4	84
N	Parts purchase for A	I	4	80
O	Drawings for A	I	5	50
P	Installation drawings	I,J	5	60
Q	Software purchases	L	5	80
R	Delivery of parts for B	M	5	0
S	Delivery of parts for A	N	3	0
T	Software delivery	Q	3	0
U	Assembly of A	O,S	1	14
V	Assembly of B	K,R	5	80
W	Test A	U	2	24
X	Test B	V	3	36
Y	Final Installation	P,W,X	8	104
Z	Final system test	Y,T	6	66

(i) Draw the network for this project (5 Marks)

(ii) Plan the project with the help of a Gantt Chart (10 Marks)

(iii) Draw the cost baseline for this project (5 Marks)

Standard Normal Probabilities

z	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
0.0	.5000	.5040	.5080	.5120	.5160	.5199	.5239	.5279	.5319	.5359
0.1	.5398	.5438	.5478	.5517	.5557	.5596	.5636	.5675	.5714	.5753
0.2	.5793	.5832	.5871	.5910	.5948	.5987	.6026	.6064	.6103	.6141
0.3	.6179	.6217	.6255	.6293	.6331	.6368	.6406	.6443	.6480	.6517
0.4	.6554	.6591	.6628	.6664	.6700	.6736	.6772	.6808	.6844	.6879
0.5	.6915	.6950	.6985	.7019	.7054	.7088	.7123	.7157	.7190	.7224
0.6	.7257	.7291	.7324	.7357	.7389	.7422	.7454	.7486	.7517	.7549
0.7	.7580	.7611	.7642	.7673	.7704	.7734	.7764	.7794	.7823	.7852
0.8	.7881	.7910	.7939	.7967	.7995	.8023	.8051	.8078	.8106	.8133
0.9	.8159	.8186	.8212	.8238	.8264	.8289	.8315	.8340	.8365	.8389
1.0	.8413	.8438	.8461	.8485	.8508	.8531	.8554	.8577	.8599	.8621
1.1	.8643	.8665	.8686	.8708	.8729	.8749	.8770	.8790	.8810	.8830
1.2	.8849	.8869	.8888	.8907	.8925	.8944	.8962	.8980	.8997	.9015
1.3	.9032	.9049	.9066	.9082	.9099	.9115	.9131	.9147	.9162	.9177
1.4	.9192	.9207	.9222	.9236	.9251	.9265	.9279	.9292	.9306	.9319
1.5	.9332	.9345	.9357	.9370	.9382	.9394	.9406	.9418	.9429	.9441
1.6	.9452	.9463	.9474	.9484	.9495	.9505	.9515	.9525	.9535	.9545
1.7	.9554	.9564	.9573	.9582	.9591	.9599	.9608	.9616	.9625	.9633
1.8	.9641	.9649	.9656	.9664	.9671	.9678	.9686	.9693	.9699	.9706
1.9	.9713	.9719	.9726	.9732	.9738	.9744	.9750	.9756	.9761	.9767
2.0	.9772	.9778	.9783	.9788	.9793	.9798	.9803	.9808	.9812	.9817
2.1	.9821	.9826	.9830	.9834	.9838	.9842	.9846	.9850	.9854	.9857
2.2	.9861	.9864	.9868	.9871	.9875	.9878	.9881	.9884	.9887	.9890
2.3	.9893	.9896	.9898	.9901	.9904	.9906	.9909	.9911	.9913	.9916
2.4	.9918	.9920	.9922	.9925	.9927	.9929	.9931	.9932	.9934	.9936
2.5	.9938	.9940	.9941	.9943	.9945	.9946	.9948	.9949	.9951	.9952
2.6	.9953	.9955	.9956	.9957	.9959	.9960	.9961	.9962	.9963	.9964
2.7	.9965	.9966	.9967	.9968	.9969	.9970	.9971	.9972	.9973	.9974
2.8	.9974	.9975	.9976	.9977	.9977	.9978	.9979	.9979	.9980	.9981
2.9	.9981	.9982	.9982	.9983	.9984	.9984	.9985	.9985	.9986	.9986
3.0	.9987	.9987	.9987	.9988	.9988	.9989	.9989	.9989	.9990	.9990
3.1	.9990	.9991	.9991	.9991	.9992	.9992	.9992	.9992	.9993	.9993
3.2	.9993	.9993	.9994	.9994	.9994	.9994	.9994	.9995	.9995	.9995
3.3	.9995	.9995	.9995	.9996	.9996	.9996	.9996	.9996	.9996	.9997
3.4	.9997	.9997	.9997	.9997	.9997	.9997	.9997	.9997	.9997	.9998