

College of Engineering, Pune

T. Y. B. Tech – Civil

CE 312 Construction Management

End semester Examination April 2012-13

Duration: 90 Minutes

Marks – 50

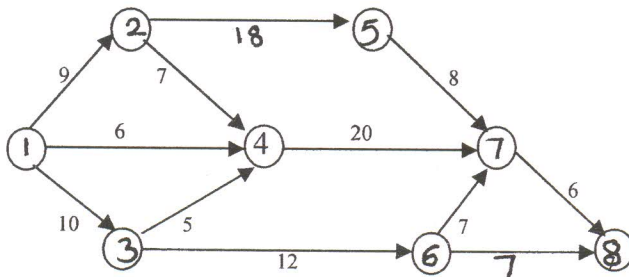
1. ALL QUESTIONS ARE COMPULSORY
2. USE OF NON PROGRAMMABLE CALCULATOR IS ALLOWED.
3. MOBILE PHONES ARE STRICTLY PROHIBITED IN THE HALL
4. ASSUME SUITABLE DATA WHEREVER NECESSARY AND MENTION IT CLEARLY

Q.1A Draw site layout (minimum 2 layouts as per different stages of construction) for a gravity dam. (Height 100m Span 20m length 1500m) (05)

Q.1B) What is safety? How do ensure safety at construction site? (05)

Q.2. A) For the network shown in Figure 2 assume that, after working 15 days on the project, the following conditions exist:

- i. Activity 1-2, 1-3 and 1-4 are complete as originally planned.
- ii. Activity 2-4 is in process and will be completed in 3 more days.
- iii. Activity 3-6 is in process and will need 18 more days for completion.
- iv. Activity 6-7 appears to present some problem and its new estimated time of completion is 12 days.
- v. Activity 6-8 can be completed in 5 days instead of the originally planned 7 days



- (i) Formulate a new project based on the assessment at the end of 15 days. Include all activities in the new project. (1)
- (ii) Draw the bar chart for the original project and show on it the progress as on 15th day. Indicate also modification based on the reassessment. (2)
- (iii) Make the evaluation as on 15th day in tabular form. (1)
- (iv) Draw a new network omitting the activities that are complete on the 15th day using the information based on the new estimation. (2)
- (v) Compare the critical paths for the old network and the new network. (1)

Q.2B Solve the problem using annual worth method, for the given cash flow data. The MARR is 10% (03)

End of year	0	1	2	3	4
Project X	-50,000	5,000	17,500	30,000	42,500
Project Y	-50,000	40,000	15,000	15,000	15,000

Q.3 A Define the role and responsibilities of safety officer deputed on a tunneling site in a remote location. What measures can be taken by the safety officer to ensure safety at site? Explain with examples. (05)

Q.3 B Using the following data, (a) calculate the fund required by the contractor for the project on a monthly basis assuming that cost is incurred continuously and payment is received at discrete intervals. (05)

Activity	Months						BOQ amount (Rs. Lakhs)
	1	2	3	4	5	6	
A	■	■	■				60
B		■	■	■	■	■	100
C					■	■	150
D					■	■	200
E			■	■			90

Assume uniform progress of works during the stipulated duration of the activity. Contractor submits monthly bill. Assume 90% of bill value as the cost. Delay of one month by owner in paying the bill. Contractor also delays payment to labour, subcontractor, material supplier and plant & equipment supplier by one month. The retention amount is 10%. The entire retention amount is paid back to the contractor at the end of month 7. There is no mobilization advance.

Q.4 A Draw Organisation structure of major construction company. (02)

Q.4 B What is WBS? How is this helpful in planning, monitoring and controlling the programme of projects? Explain with suitable example. (03)

Q.4C Fill in the blanks

- If EOQ = 1,000 units, order costs are \$200 per order, and sales total 5,000 units, then carrying cost per unit is _____
- Full form of OSHA is _____
- A good layout requires determining _____
 - material handling requirements
 - capacity and space requirements
 - environment and aesthetics
 - cost of moving between various work areas
 - all of the above

4. Receiving a required inventory item at the exact time needed is known as _____.
5. In AON diagram the minimum number of dummy arrows required for conversion into AOA diagram is _____?

Q.5. Write short notes on: (Any Five)

(10)

1. Management Information System in Construction Industry
2. Working Capital Management
3. Equivalence
4. Payback method
5. Balance sheet
6. Time value of money.
7. MUSIC-3D Technique

10% interest factors for discrete compounding periods

n	F/P, I, n	P/F, I, n	F/A, I, n	A/F, I, n	P/A, I, n	A/P, I, n	A/G, I, n
1	1.100	0.9091	1.000	1.0000	0.9091	1.1000	0.0000
2	1.210	0.8264	2.100	0.4762	1.7355	0.5762	0.4762
3	1.331	0.7513	3.310	0.3021	2.4869	0.4021	0.9366
4	1.464	0.6830	4.641	0.2155	3.1699	0.3155	1.3812
5	1.611	0.6209	6.105	0.1638	3.7908	0.2638	1.8101
6	1.772	0.5645	7.716	0.1296	4.3553	0.2296	2.2236
7	1.949	0.5132	9.487	0.1054	4.8684	0.2054	2.6216
8	2.144	0.4665	11.436	0.0874	5.3349	0.1874	3.0045
9	2.358	0.4241	13.579	0.0736	5.7590	0.1736	3.3724
10	2.594	0.3855	15.937	0.0627	6.1446	0.1627	3.7255
11	2.853	0.3505	18.531	0.0540	6.4951	0.1540	4.0641
12	3.138	0.3186	21.384	0.0468	6.8137	0.1468	4.3884
13	3.452	0.2897	24.523	0.0408	7.1034	0.1408	4.6988
14	3.797	0.2633	27.975	0.0357	7.3667	0.1357	4.9955
15	4.177	0.2394	31.772	0.0315	7.6061	0.1315	5.2789
16	4.595	0.2176	35.950	0.0278	7.8237	0.1278	5.5493
17	5.054	0.1978	40.545	0.0247	8.0216	0.1247	5.8071
18	5.560	0.1799	45.599	0.0219	8.2014	0.1219	6.0526
19	6.116	0.1635	51.159	0.0195	8.3649	0.1195	6.2861
20	6.727	0.1486	57.275	0.0175	8.5136	0.1175	6.5081
21	7.400	0.1351	64.002	0.0156	8.6487	0.1156	6.7189
22	8.140	0.1228	71.403	0.0140	8.7715	0.1140	6.9189
23	8.954	0.1117	79.543	0.0126	8.8832	0.1126	7.1085
24	9.850	0.1015	88.497	0.0113	8.9847	0.1113	7.2881
25	10.835	0.0923	98.347	0.0102	9.0770	0.1102	7.4580
30	17.449	0.0573	164.494	0.0061	9.4269	0.1061	8.1762
35	28.102	0.0356	271.024	0.0037	9.6442	0.1037	8.7086
40	45.259	0.0221	442.593	0.0023	9.7791	0.1023	9.0962
45	72.890	0.0137	718.905	0.0014	9.8628	0.1014	9.3740
50	117.391	0.0085	1163.909	0.0009	9.9148	0.1009	9.5704
55	189.059	0.0053	1880.591	0.0005	9.9471	0.1005	9.7075
60	304.482	0.0033	3034.816	0.0003	9.9672	0.1003	9.8023
65	490.371	0.0020	4893.707	0.0002	9.9796	0.1002	9.8672
70	789.747	0.0013	7887.470	0.0001	9.9873	0.1001	9.9113
75	1271.895	0.0008	12708.954	0.0001	9.9921	0.1001	9.9410
80	2048.400	0.0005	20474.002	0.0000	9.9951	0.1000	9.9609
85	3298.969	0.0003	32979.690	0.0000	9.9970	0.1000	9.9742
90	5313.023	0.0002	53120.226	0.0000	9.9981	0.1000	9.9831
95	8556.676	0.0001	85556.760	0.0000	9.9988	0.1000	9.9889
100	13780.612	0.0001	137796.123	0.0000	9.9993	0.1000	9.9927