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SE-7663

B. E. - IV (Sem. - VIII) (Civil) Examination

May / June – 2011

Construction Project Management

(Old Course)

Time : Hours] [Total Marks : **100**

Instructions :

(1)

નીચે દર્શાવેલ ☛ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fillup strictly the details of ☛ signs on your answer book.

Name of the Examination :

☛ **B. E. - 4 (SEM. - 8) (CIVIL)**

Name of the Subject :

☛ **CONSTRUCTION PROJECT MANAGEMENT (OLD)**

☛Subject Code No. : **7 6 6 3** ☛Section No. (1, 2,.....) : **Nil**

Seat No. :

Student's Signature

(2) Assuming missing data suitably if necessary.
(3) Draw sketch whenever necessary.
(4) Figures to the **right** indicate full marks for the question.

1 (a) A project consist of seven activities is to be represented by bar chart. The actual work days for each activity are as mentioned below : **8**

Activity	*A*	*B*	*C*	*D*	*E*	*F*	*G*
Days	9	5	7	8	4	4	12

The inter-relationship between the activities are mentioned below :

(i) Activity A and B can occur concurrently.

(ii) Activity C can take place after activity B is completed.

(iii) Activity C and D can occur concurrently.

(iv) Activity E can occur only after D is completed.

(v) F and G can occur concurrently but after completion of activity C.

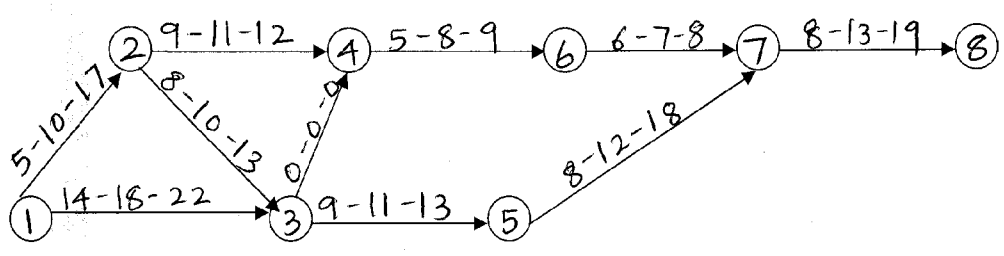
Draw a bar chart and find the completion time for the project.

(b) For the event shown in table given below. Draw a network diagram and identify the activity by i-j convention : **7**

EVENT	IMMEDIATE PREDECESSOR
1	– – – –
2	1
3	2
4	2
5	2
6	3, 5
7	3, 4
8	3, 7
9	7
10	3, 6, 8, 9

2 Attempt any **two** from the following : **20**

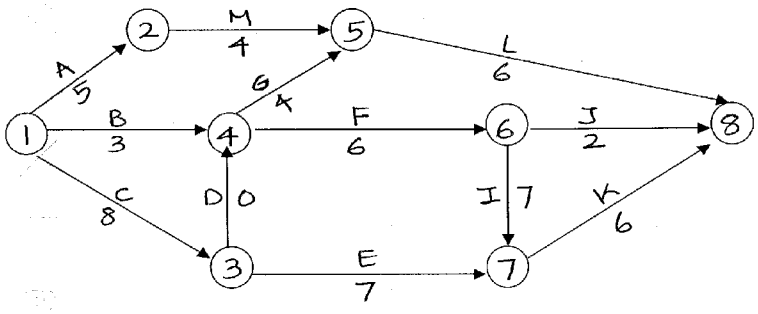
(a) Using PERT method calculates the expected time, variance and critical path following network diagram.



(b) The network for certain project is shown in figure with the estimated duration of various activities. Determine :

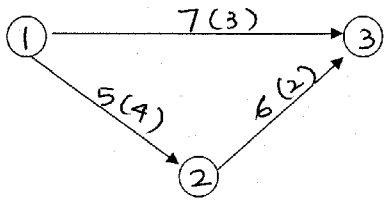
(i) Total and free float for each activity

(ii) Critical path for the network



(c) Calculate the optimum cost and optimum time for the job shown in network. Data concerning normal durations and cost and crash duration and costs of various activities is given in table below. Indirect cost is Rs. 1000 per day.

activity	Normal time	Normal duration	Crash time	Crash duration
1-2	5	4000	4	5000
1-3	7	8000	3	10000
2-3	6	6000	2	8400



3 Attempt any **three** from the following : **15**

(i) What are the shortcomings for Bar chart ? How can these removed ?

(ii) Differentiate between PERT and CPM network.

(iii) Define terms : Most likely time, Slack, Head event

(iv) Discuss various network rules.

(v) Define terms : direct cost, indirect cost, outage loss.

4 (a) Solve the following Linear Programming problem using simplex method : **10**

Maximize $Z = 60\ x_1 + 90\ x_2$

subject to

$x_1 + 2x_2 \leq 40$

$2x_1 + 3x_2 \leq 90$

$x_1 - x_2 \geq 10$

$x_1, x_2 \geq 0$

(b) What are the types of control charts ? Explain the statistical chart used to control the number of defects per unit. **5**

OR

(b) What is site productivity ? Discuss the factors affecting the site productivity. **5**

5 (a) Find the initial basic feasible solution to the following transportation problem by : **10**

(i) Northwest corner cell method and

(ii) Least cost cell method

From \ *To*	1	2	3	*Supply*
1	2	7	4	5
2	3	3	1	8
3	5	4	7	7
4	1	6	2	14
Demand	2	9	18	

State which of the methods is better.

(b) Explain inventory control with optimum inventory cost derivation. **5**

OR

(b) Explain quality assurance techniques. **5**

(c) Discuss about safety measures on construction sites. **5**

6 (a) What is Linear Programming ? List applications of LPP. Write assumptions in L.P. **5**

OR

(a) Explain measuring of safety. **5**

(b) Discuss various elements of quality. **5**

OR

(b) Explain cost-volume relationship. **5**

(c) The cash flow for a construction project is as follows : **5**

Year	Cash flow
0	-300 crore
1	50 crore
2	50 crore
3	50 crore
4	50 crore

Find IRR. Comment on viability of the project.