BE Civil 4rth year 2nd Semester Examination (Old), 2017
CONSTRUCTION MANAGEMENT

Time: 3 hours   Full Marks: 100

(50 Marks for each half)

Use separate answer-scripts for each part

Part I

Answer Question 1 and any one from the rest

1. Using Big-M method minimize $Z = 3x + 2y$, subject to: $x + y \geq 1$, $x + y \leq 7$, $x + 2y \geq 10$, and $y \leq 3$, where both x and y are non-negative   25

2.
   A. Why control of inventory is essential in an industry? Deduce the EOQ model with shortage commenting on all variables and assumptions clearly.   10

   B. A city plans to enlarge its water supply system. Our proposal calls for construction of a storage dam and treatment plant which would cost Rs 2,40,00,000 and would satisfy estimated demand for the next 12 years. The expected annual operating cost would be Rs 15,00,000. After 12 years, a second dam and additional treatment facilities would be constructed for Rs 2,80,00,000, with an additional annual operating cost of Rs 12,50,000.

   The alternative plan is to build a single large dam now, which, together with a new treatment plant, would cost Rs 3,10,00,000. The annual operating cost would be Rs 13,00,000 for the first 12 years. After 12 years, additional treatment facilities would be added for Rs. 25,00,000 and annual operating costs would be expected to increase to Rs 26,00,000. Compare the alternative plans using present worth method with an interest rate of 9%.   7+8=15

3. A construction company has three fabrication yards that require bolts. 3 suppliers have been invited to bid on supplying bolts. Their bids are as follows:

Supplier	Price per pack	Annual capacity in packs
A	90	28000
B	100	76000
C	110	135000

The cost of transport and profit in rupees per pack varies from each supplier to each yard and is given as follows:

From Manufacturer	Sites number		
	1	2	3
A	20	40	10
B	50	30	60
C	30	20	70

The annual requirements of packs for 3 sites are 30000, 60000, and 122000, respectively. Use VAM and MODI to determine how many packs should each yard purchase from each manufacturer so as to *minimize expenditure*?   25

B. E. CIVIL ENGINEERING FOURTH YEAR SECOND SEM. EXAM. -2017(Old))

Sub: CONSTRUCTION MANAGEMEN **Time: Three Hours**   **Full Marks 100**

PART-II
(50 marks for each

Use a separate Answer-Script for each part

No. of questions	Answer question No.1 and any two from question No. 2 to 4	Mark (10+20x
1.	Write short note	5x2=10
a)	Difference between PERT and CPM Network.	
b)	Slack and Critical path	
2. a)	What do you know about Project Planning, Scheduling and Controlling?	10+10=
b)	The activity breakdown for a certain project is given below	

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Activity No.	Duration (weeks)
1	1
2	2
3	4
4	3
5	1
6	2
7	4

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Activity 2 and activity 3 can be done concurrently and both must follow the activity 1.Activity 2 must precede activity 4. Activity 5 cannot begin until both activities 2 and 3 are completed. Activity 6 can be started only after activities 4 and 5 are complete. Activity 7 is the last activity which can be started only after completion of activity 5. Prepare the bar chart for the project.

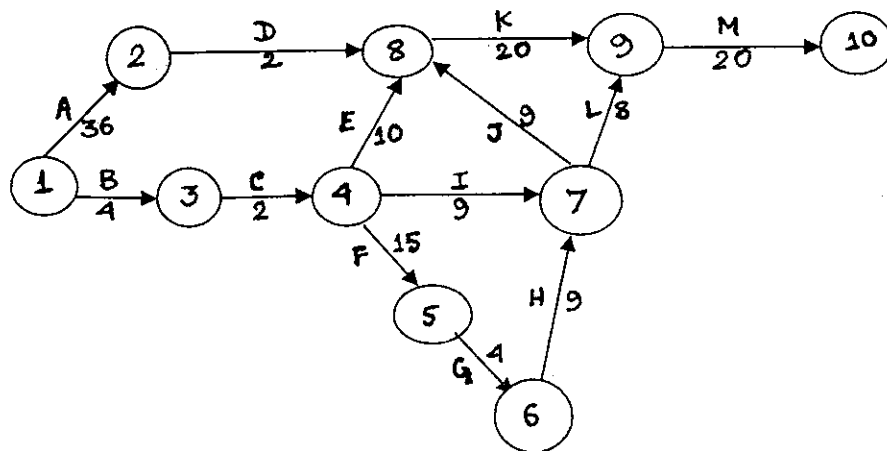|		
3.	The network for a certain project is shown in figure below, along with the estimated time of completion of each activity marked. Compute the event times, activity times and total float for each activity. Locate the critical path on the network.	20

Fig 1

4.

a) Define Total float, Free float, Independent float and Interfering float.   10+10=20

b) Following data gives sequence of activities and restraints for a small project:

Activity	Restraint
A	Starting activity
B	Follows A
C	Follows A
D	Follows A
E	Follows B, C and D
F	Follows E
G	Follows E
H	Follows both F and G
I	Follows G

H and I are the last activities. Prepare the network diagram for the project