



RM-7663

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

May / June - 2010

Construction Project Management

Time : 3 Hours]

[Total Marks : 100

Instructions :

(1)

नीचे दृष्टावेव निशानीवाणी विगतो उत्तरवडी पर अवश्य लपवी. Fillup strictly the details of signs on your answer book.	Seat No. :
Name of the Examination :	<input type="text"/>
<input type="text" value="B. E. - 4 (Sem. 8) (Civil)"/>	<input type="text"/>
Name of the Subject :	<input type="text"/>
<input type="text" value="Construction Project Management"/>	<input type="text"/>
Subject Code No. : <input type="text" value="7"/> <input type="text" value="6"/> <input type="text" value="6"/> <input type="text" value="3"/>	Section No. (1, 2,...): <input type="text" value="1&2"/>
Student's Signature	

- (2) Assume suitable data if necessary.
- (3) Use separate answer book for two sections.
- (4) Draw neat sketch whenever necessary.

SECTION - I

- 1 (a) A Project consisting of eight 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	H
Work days	8	4	7	9	3	3	14	17

The inter-relationships below the activities are as recognised below:

- Activities A & B can occur concurrently.
- Activity C can take place after activity B is completed.
- Activity C, D & F can occur concurrently.

- Activity H can start 4 days after the commencement of activity F.
- Activity G should follow activity E.
- Activity E can begin concurrently with activity H.

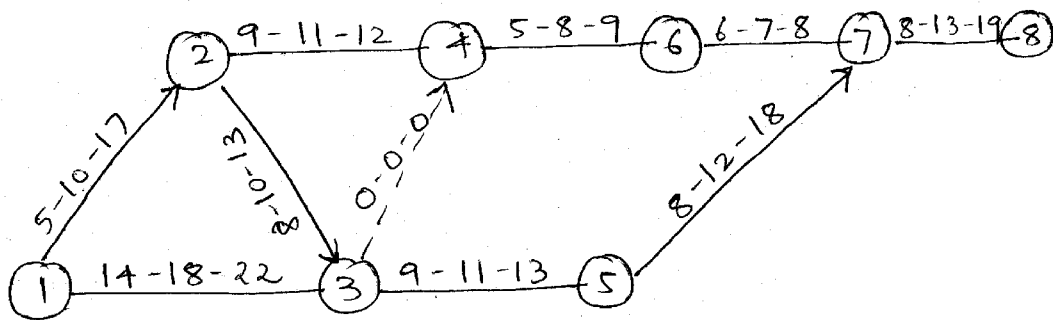
Draw the bar-chart with 6 works day in a week. Project commences on the February Monday.

- (b) A construction project consist of 12 activities. The predecessor relationships are identified by their node numbers as indicated below :

Activity	Identification	Activity	Identification
A	(1, 2)	G	(4, 6)
B	(2, 4)	H	(5, 6)
C	(2, 3)	I	(5, 7)
D	(2, 7)	J	(7, 8)
E	(3, 4)	K	(6, 8)
F	(3, 5)	L	(8, 9)

Draw the network diagram.

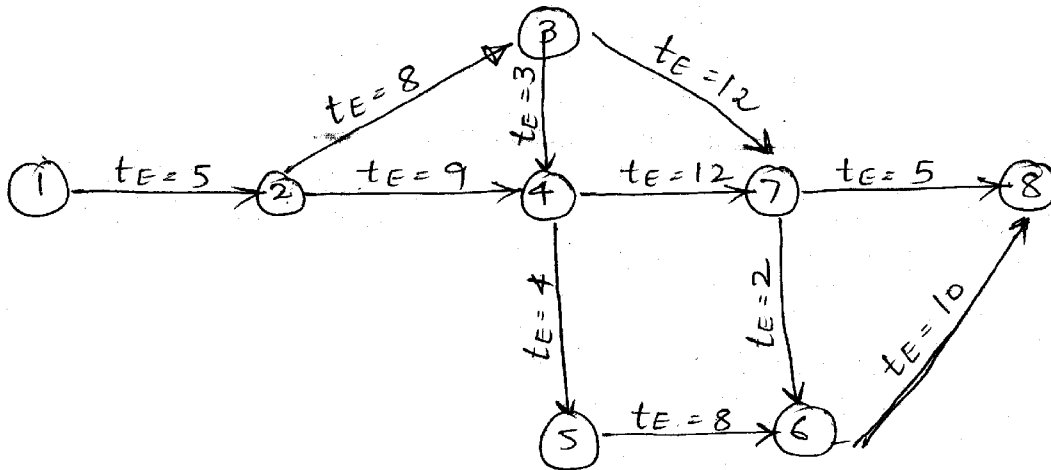
- 2 (a) Calculate the expected time and variance for each activity in the network shown below. 7



(b) Attempt any two :

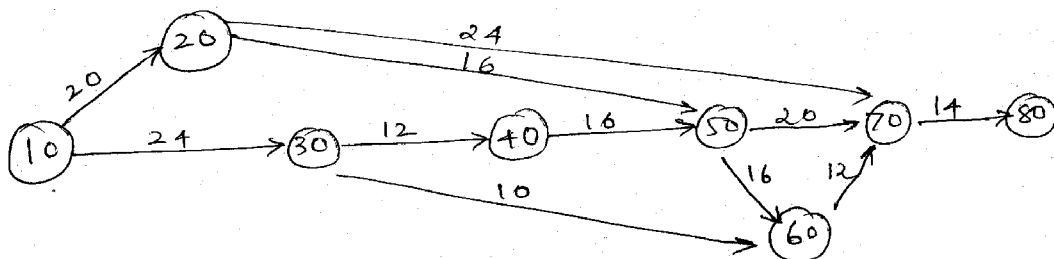
20

- (i) For network shown below, determine the slack for various events, if the schedule date of completion of the project is 36 days. Present the computations in tabular form.

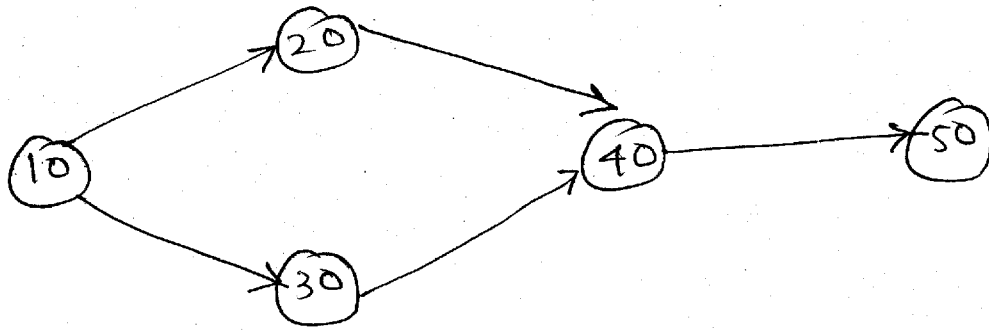


Determine critical path.

- (ii) For the network shown below calculate the earliest and latest start and finish times for all activities and determine the total, free and independent float for all activities.



- (iii) For the given network determine optimum time and optimum cost.



Activity	Normal		Crash	
	Time	Cost	Time	Cost
10 – 20	3	12,000	2	16,000
10 – 30	6	18,000	3	24,000
20 – 40	2	20,000	1	23,000
30 – 40	4	16,000	2	21,000
40 – 50	5	30,000	4	35,000

Indirect cost is Rs. 3000 per day.

3 Write short note (any two)

8

- (i) Steps for planning a project
- (ii) Shortcomings of bar chart
- (iii) Use of dummies
- (iv) Role of Project Manager

SECTION - II

- 4 (a) Solve the following linear programming problem 10
by using simplex method.

$$\text{Minimize } Z = x_1 - 3x_2 + 3x_3$$

Subject to

$$3x_1 - x_2 + 2x_3 \leq 7$$

$$2x_1 + 4x_2 \geq -12$$

$$-4x_1 + 3x_2 + 8x_3 \leq 10$$

$$x_1, x_2, x_3 \geq 0$$

- (b) What are the purposes of control charts? Enlist 6
various control charts. Explain statistical control
chart X.

OR

- (b) What is labour productivity? What are the non 6
productive activities?

- 5 (a) Solve the following transportation model using 8
Vogel's approximation method.

Origin	Destination					Supply
	1	2	3	4	5	
A	2	11	10	3	7	4
B	1	4	7	2	1	8
C	3	9	4	8	12	9
Demand	3	3	4	5	6	

- (b) The sample ranges of a statistical sampling is as **6**
below :

Sample No.	1	2	3	4	5	6	7
Ranges	23	27	24	21	25	26	29

Find :

- (i) Upper control limit
(ii) Lower control limit

Sample of 5 is taken each time to find the range. If the process is within control then what can be the range of sample no. 8

OR

- (b) The cash flow for a construction project is as **6**
follow :

Year	Cash flow (Rs. in crore)
0	-120
1	-20
2	30
3	40
4	55

If the desired rate of discount is 18% per annum,
is project worth investing in?

- (c) What is project control process? What are the areas **4**
of control in construction project ?

6 Attempt any **four** :

16

- (i) Bid analysis
 - (ii) Resource levelling
 - (iii) Safety measures on construction site
 - (iv) Equipment management
 - (v) Causes of accident on construction project site
 - (vi) Simulation
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