SLBS ENGINEERING COLLEGE JODHPUR

B. Tech. (Sem. VIII) , April-2020

8CE7A : Professional Practice and Estimating Lab

Branch : Civil Engineering

Faculty : Asst. Prof.Sanjay Bishnoi

1. For the network shown in fig. calculate the earliest start time, earliest finish time, latest start time, latest finish time and total floats in respect of all the activities of the network.

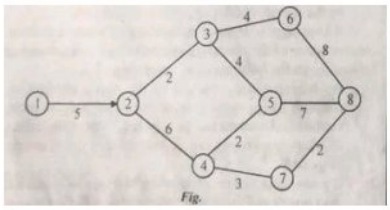


Fig.

1. From the help of given network in fig., determine total float, free float associated with each activity.

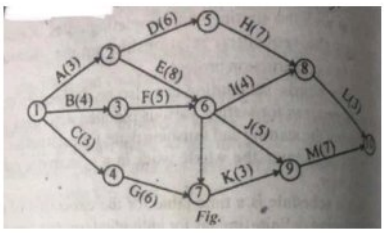


Fig.

2. The three time estimates optimistic time (t_0), most likely time (t_L),pessimistic time (t_p) are shown on the network of a project in following network (fig.).Find out the following :
(a) Standard deviation of network.
(b) Probability of completion of project 10 days prior to total completion period of project.

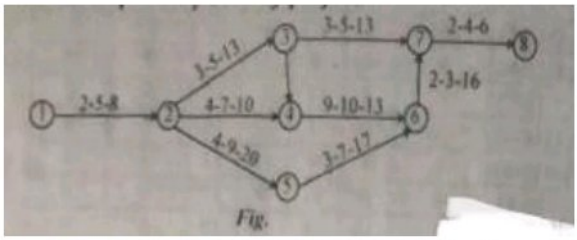
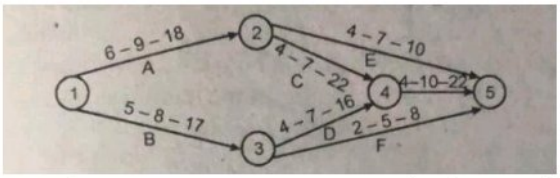


Fig.

3. A PERT project consists of the following activities and their time estimates in days (optimistic, most likely and pessimistic) are given in the table. Draw the project network and find the expected completion time of project. Also find the probability that project will be completed.
   (i) At least 4 days earlier than expected time.
   (ii) Not more than 4 days later than expected time.

Activity	1-2	1-3	1-4	2-5	3-5	4-6	5-6
t_o	1	1	2	1	2	2	3
t_m	1	4	2	1	5	5	6
t_p	7	7	8	1	14	8	15

4. For a PERT network shown in figure, determine the expected duration of project, variance and standard deviation of project. The optimistic, most likely and pessimistic time estimates for various activities are shown above the arrows, which are respectively given in weeks.



5. A small project consisting of 7 activities A,B,C,D,E,F and G has its duration and cost data for normal and crash is given below. Draw the network crash to achieve optimum duration and optimum cost if the indirect cost is estimated to Rs. 180 per day of the project duration.

Activity	Normal time (Days)	Cost (Rs.)	Crash time (Days)	Cost (Rs.)
A (1-2)	3	350	2	400
B (2-3)	6	1440	4	1620
C (2-4)	9	2160	8	2220
D (2-5)	7	1300	5	1600
E (3-5)	8	500	7	600
F (4-5)	5	1600	3	1770
G (5-6)	8	450	7	750

6. With the help of given table, find the optimum duration and the cost associated with it. The project overhead costs are Rs. 2000 per week.

ctivity	Normal duration (week)	Normal cost (Rs.)	Crash duration (week)	Crash cost (Rs.)
1-2	4	4000	2	12000
2-3	5	3000	2	7500
2-4	7	3600	5	6000
3-4	4	5000	2	10000

7. The following table gives normal & crash times as well crash costs for the activities of a project. Draw the network diagram and find the critical path. In case the project duration is required to be crashed by 2 days, which activities will get priority in crashing?

Activity	Estimated Duration		Activity Cost	
	Normal	Crash	Normal	Crash
1-2	5	2	600	950
2-4	6	3	700	1250
1-3	4	2	100	300
3-4	7	4	400	850
4-7	9	5	600	920
3-5	12	3	1600	2149
4-6	10	6	1500	1850
6-7	7	4	400	590
7-8	6	4	300	420
5-8	12	7	400	850

8. Difference between PERT and CPM.

SLBS ENGINEERING COLLEGE JODHPUR

B. Tech. (Sem. VIII) , April-2020

8CE5A : Design Of Water Resources Engineering Lab - 2

Branch : Civil Engineering

Faculty : Asst. Prof. Manish Bishnoi

Q1. Design a sarda type fall for a canal for the following data:

(1.)discharge= (U/S)/(D/S) = (15cumecs)/(15cumecs)

(2.)Full supply level = (U/S)/(D/S) = (201.5)/(200.00)

(3.)Drop = 1.5m

(4.)Bed level =(U/S)/(D/S) = (200.00)/(198.50)

(5.)Bed Width =(U/S)/(D/S=(10.0m)/(10.0m)

(6.)Full supply depth=(U/S)/(D/S) =(1.50m)/(1.50m)

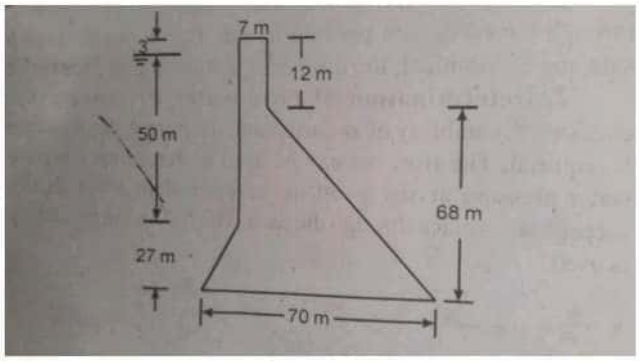
(7.) blighs creep coefficient = 9

Q2. Describe the procedure of design of an aqueduct.

Q3. Difference between aqueduct and siphon aqueduct.

Q4. Discuss the procedure for the design of a head regulator.

Q5. Check the stability of the gravity dam shown below under reservoir fall condition.



Q6.What do you understand by reservoir sedimentation.

Q7.Write a short note on "cavitation in turbines".

Q8. Write a short note on "Use of GIS in irrigation project".

Q9.Describe the function of a draft tube.

Q10.A hydro power plant has an installed capacity of 50MW.

The yearly output of the plant is 2.50*10^6KWh. If the peak load is 4000Kw,determine;

(A) PLANT USE FACTOR.

(B) CAPACITY FACTOR.

SLBS ENGINEERING COLLEGE JODHPUR

B. Tech. (Sem. VIII) , April-2020

8CE8A : Design of Foundation Lab

Branch : Civil Engineering

Faculty : Asst. Prof. Manish Bishnoi

1. Determine settlement of a footing of size 2m x 4m applied with a loading intensity of 150 kN/m^2 , resting in granular soil. Use SPT value N = 20, use IS 8009 Part I.

2. Determine net safe bearing capacity of a foundation of size 2m x 4m, resting at a depth of 2.0m on a saturated clay, having C_u = 150kN/m^2, and γ_{sat} = 20 kN/m^3 , using Skempton's analysis.

3. Determine consolidation settlement of a footing pf size 2m x 4m resting at a depth of 1.5m in saturated clay, having C_e = 0.13, e_0 = 0.60, γ_{sat} = 20 kN/m^3. The loading intensity is 150 kN/m^2 acting on foundation. Also fox's depth correction as per IS 8009 Part I.
[Note : Read C_e and C_c]

4. There are 9 piles in a group of square pattern. The spacing between Piles are 500 mm c/c. Piles of 200 mm dia and 8 m long are used for a foundation resting in clayey soil having c_u = 50 kN/m^2, γ = 18 kN/m^3. Calculate safe load carrying capacity of group of piles, with FOS = 2.5 and α = 0.9.

5. What will be the penetration of the square R.C. pile per below which must be obtained in driving the pile with a 5 tonnes drop hammer falling through 1.2 meter. Allowable load is 30 tonnes.

6. A 12 m long concrete pile 400 mm dia has been driven into a granular soil having $\Phi = 32^o$, γ = 18 kN/m^3 and γ_{sat} =20 kN/m^3. Water table is at a depth of 2m below ground surface. Determine safe load carrying capacity of the pile using factor of safety of 3. Take N_q = 42.

7. Determine safe load carrying capacity of double under reamed pile of 400 mm dia and 5 m length in clayey soil having average cohesion of 70 kN/m^2.

8. A raft foundation of size 14m x 20m is resting in clay having c_u = 150 kN/m^2 and γ = 20 kN/m^3. A loading of 150 kN/m^2 is applied at the base of the raft. Determine the depth at which raft be placed so as to get a factor of safety of 2.5 against shear.

9. What do you understand by fully compensating raft (i.e. floating raft) ?

10. Describe engineering New's formulae of dynamic analysis of piles.

Q on 1. Design of gantry girder for an industrial building to carry on E.O.T. crane, from following data,

1. crane capacity =170kN
2. Weight of crane excluding trolley = 120kN
3. Weight of trolley=50kN
4. Span of crane =12m
5. Span of gantry girders =7m
6. Wheel base=3m
7. Minimum approach of hook=1.1m

Q no 2. A plate girder has 21m span and carries
a u.d.l. of 60 kN/m including self weight. Design a suitable web splice at a distance of 7m from each support. The section consists of a web plate 1400mm×8mm and two flange plates each 360mm×40mm provided at top and bottom.

Qno 3: Design a deck type plate girder bridge for single track B.G. Mani line loading, for the following date :

1. Effective span =24m
2. Spacing of plate girder=1.9 m c/c
3. Weight of stock rails=440N/m
4. Weight of guard rails=260n/m
5. Weight of fastenings,etc.=280N/m of track
6. size of sleepers (timber) =2.8m ×250mm×150m @0.4 MC/c
7. Density of timber=7.4kN/M^3

Qno4. Design a stringer beam in a through type truss girder railway bridge for B.G. main line from following data:

1. Effective span=3.0m
2. C/c of stingers=2.0m
3. C/c of cross beams=3.0m
4. C/c of truss (main) girders=5.0m
5. Weight of stock rails=460N/m
6. Weight of guard rails=280n/m
7. Weight of fastenings per track=300N/m
8. Sleepers size 250mm×120mm×2800mm
9. Density of wooden sleepers=10kn/m^3

Qno5. Design an overhead circular steel tank with hemispherical bootom, for capacity 1,80,000 ltrs. It is supported on 8 columns uniformly placed along periphery, for which M =0.00827WR, T=0,00063 WR and F = W/16 may be taken.