

COLLEGE OF ENGINEERING PUNE

Test: End Semester Examination

Subject code: CE - 312

Name of subject: CONSTRUCTION MANAGEMENT

Programme: T.Y. B. Tech. (Civil)

Year: 2011-12

Duration: 3 hrs

Date: 11/05/2012

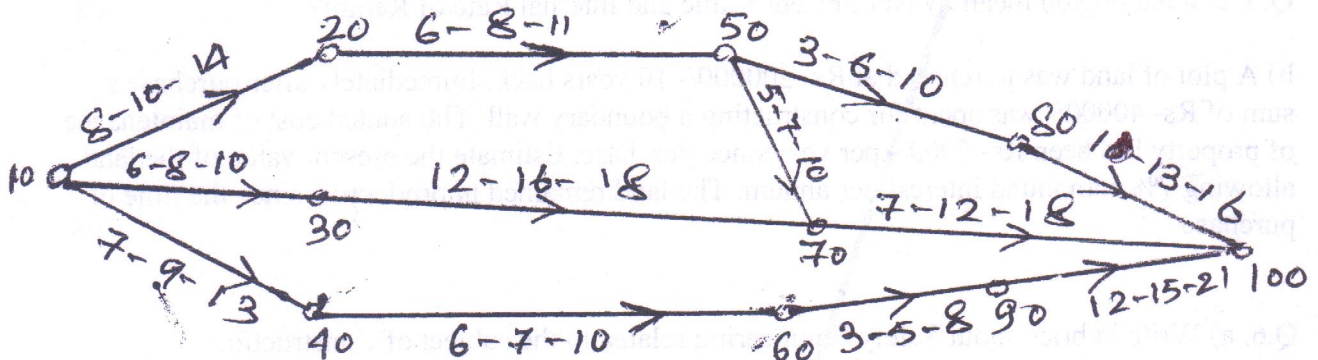
Max. Marks: 50

Instructions:

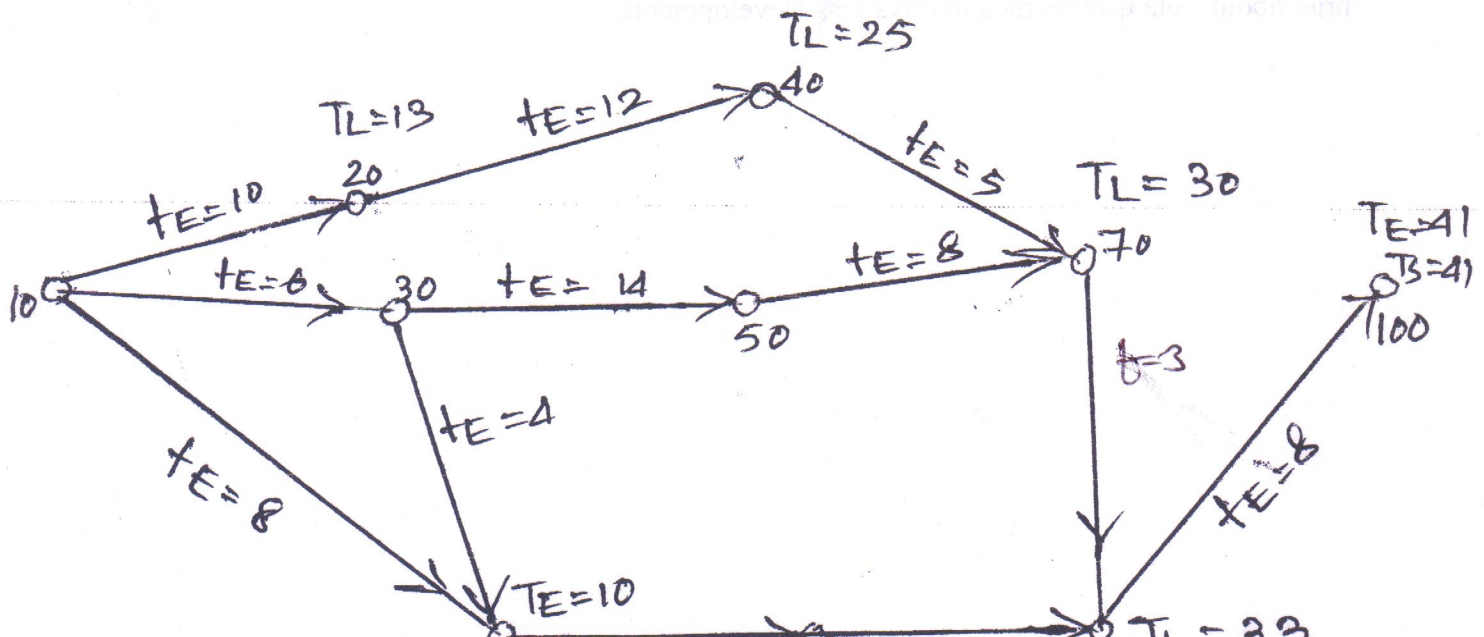
1. All questions are compulsory.
2. Draw neat figures wherever required
3. Assume suitable data if necessary
4. Use of scientific calculator is allowed
5. Figures to the right indicate full marks

Q.1.a) What is the role of Construction Management in Civil Engineering? What are the uses of Bar Chart and Mile Stone Charts? 02

b) Solve the following network and calculate the average expected time for all the paths. 06



Q.2.a) What do you mean by Latest Allowable Occurrence time. Solve the following network and make all the entries in a tabular form. 07



b) Write in brief about 'The Normal Distribution' and 'The Beta Distribution' along with required sketches.

03

Q.3. a) What are the essential qualities of a Material Manager? Write in brief about ABC Analysis.

04

b) What do you mean by SLACK and FLOAT. Can you classify FLOAT? If yes then write about each of them.

04

Q.4.a) What is the role of Economics in Construction Management? Write about extension and contraction of demand. What do you mean by Elasticity of Demand? What is the value of 'e' for perfectly elastic demand?

04

b) Write about Analysis of Demand. What is Indifference Curve? Discuss about all the three properties of Indifference curve along with neat sketches.

04

Q.5. a) What do you mean by Net Present Value and Internal Rate of Return?

02

b) A plot of land was purchased at Rs- 200000/- 10 years back. Immediately after purchase a sum of Rs- 40000/- was spent for constructing a boundary wall. The annual cost of maintenance of property has been Rs- 6000/- per year since purchase. Estimate the present value of the land allowing 7% compound interest per annum. The land remained unproductive since the time of purchase.

06

Q.6. a) Write in brief about Safety Engineering related to the subject of Construction Management. What do you mean by IFR, ISR and II? Describe them in detail.

03

b) Write in brief about application of MIS in the field of Construction Management. Write in brief about Data Communication Systems Developments.

05

COLLEGE OF ENGINEERING PUNE

Subject code : CE -301

Name of subject: Environmental Engineering -I

Programme: T.Y. B. Tech. (Civil)

Year: 2010-11

Duration: 03 hours

Date: 08/ 05/ 2012

Max. Marks: 50

Instructions:

1 Attempt any five question**2 Use of scientific calculator is allowed****3 Assume data only if it is necessary****4 Attempt the whole question at a time and solve the questions in a sequence.**

1- A	Explain the effects of various air pollutants on materials(With examples)	05
B	Enlist various air pollution control equipments and explain working principle of any one	05
2- A	Explain land use planning as a control technique of air pollution.	05
B	Explain the terms 1 Unstable atmosphere 2 Stable atmosphere 3 Inversion 4 Mixing height 5 Plume dispersion	05
3- A	Explain the theory of sedimentation and hence the concept of tube settler or plate settler.	05
B	A settling tank is designed for surface overflow rate of 6000 lit/ sq. mts / hr. What percent of particles having diameter 0.04 mm and 0.02 mm having specific gravity 2.65 will be removed in this tank kinematic viscosity $1.3101 \times 10^{-2} \text{ cm}^2/\text{sec}$?	05
4- A	What is coagulation? Enlist different chemical coagulants & their chemical reactions in the water	04
B	A treatment plant serves a town of population 50000 with max. Demand of 150 lit/ cap /day. Assume rate of filtration $5000 \text{ lit}/\text{m}^2/\text{hr}$, β is 0.5×10^{-4} , Quantity of backwash 3% of total filtered water, frequency of cleaning once in two days for 30 minutes. Work out 1 Dimensions of filter and Number 2) thickness of sand layer 3) Design of underdrainage system	06
5- A	Explain in brief various methods of disinfection. What are the merits and demerits of chlorination?	05
B	What is chlorine demand? Explain the factors on which chlorine demand	05

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6- A	Explain with sketches various layouts of water distribution system	05																																																								
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1/2

COLLEGE OF ENGINEERING PUNE

Test: End Semester Examination

Subject code: CE - 313

Name of subject: WATER RESOURCE ENGINEERING-I

Programme: T.Y. B. Tech. (Civil)

Year: 2011-12

Duration: 3 hrs

Date:13/05/2012

Max. Marks: 50

Instructions:

1. All questions are compulsory.
2. Draw neat figures wherever required
3. Assume suitable data if necessary
4. Use of scientific calculator is allowed
5. Figures to the right indicate full marks

Q.1. a) The infiltration capacity of an area at different intervals of time is given below. Find Horton's Equation for the infiltration capacity curve in the exponential form. **05**

Time (hr)	00	0.25	0.5	0.75	1.0	1.25	1.5	1.75	2.0
Infiltration Capacity (cm/hr)	10.3	5.4	3.1	2.3	1.7	1.4	1.2	1.1	1.0

b) A one day rainfall in Pune city was found to have a return period of 100 years. Calculate the probability that a one day rainfall of this magnitude or larger
 i) Will not occur at Pune during the next 90 years.
 ii) Will occur in the fifth year. **05**

Q.2 a) What is the basic concept of unit Hydrograph? Can the unit Hydrograph be triangular in shape? What are the main components of a Unit Hydrograph? **04**

b) What are the principles to govern the Unit Hydrograph Theory? How it is applied to predict the runoff from small catchment area? **04**

Q.3. a) Compute the rainfall at the station 'X' from the following data. **04**

Station	X	A	B	C
Storm Rainfall (cm)	?	12.5	14.8	17.2
Annual Rainfall (cm)	117	128	150	136

b) Discuss about depth measurement by Suspension rod and Sounding rod. **04**

Q.4. a) A well penetrates fully confined aquifer of 10 metres thickness (saturated thickness) having coefficient of permeability 0.0004 m/sec. The radius of the well is 100 mm. There is a drawdown of 4m at the well face and its radius of **04**

influence is 400m. Calculate the steady state discharge which can be withdrawn from this well. What will be the percentage increase in the discharge if the radius of the well is doubled?

- b) Calculate the discharge of fully penetrated tube well (in confined aquifer) if the tube diameter is 30 cm, aquifer thickness is 20 metres and the coefficient of permeability of the aquifer is 5.787×10^{-1} mm/sec. Consider the radius of influence as 150 metres. 04

- Q.5. a)** The yield of water from a catchment area during each successive month is given below. Determine the capacity of a reservoir required to allow the above volume of water to be drawn off at a uniform rate assuming that there is no loss of water over the hydraulic structure. Data is given below in tabular form. All the given figures in the second row are the discharges for the corresponding month in million metre cube. 04

Jan	Feb	March	April	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1.4	2.1	2.8	8.4	11.9	11.9	7.7	2.8	2.52	2.24	1.96	1.68

- b) Discuss in detail about the design capacity of a reservoir. Give special emphasis on 'Mass Curve Method.' Draw the required figures which shows the relation between the discharge and the time in months. 04

- Q.6. a)** Derive the equation along with sketch from which we know the required spacing between the tile drains. 04

- b) Determine the spacing of the tile drain from the data given below. 04
 - i) Annual rainfall = 100cm
 - ii) Drainage coefficient = 1% to be drained in 24 hours
 - iii) Depth of impervious layer from the surface = 10m
 - iv) Depth of highest position of the water table below the land surface = 1.5m
 - v) Depth of drain below land surface = 2.0m
 - vi) Permeability of the soil = 6×10^{-6} m/s

T.Y. B. Tech (Civil)
Structural Design-II
(CE 304)
(END Semester Examination)

Duration: 3 Hrs. Date : 06/05/2012 time : 2 pm to 5 pm [Sunday]

Max. Marks: 50

Instructions to candidate:

- 1) All questions are compulsory.
- 2) Assume suitable data, if necessary.
- 3) Use of non-programmable electronic calculators is allowed.
- 4) Use of IS 456 -2000 is permitted. Use of other reference/ document is restricted.

Q.1

A Rectangular RC beam of concrete is fixed at one end and simply supported at other end has following details .

Span = 7.5 m

Material M25 & Fe 500,

Size : 300 mm wide and 750 mm deep. (Clear cover 30 mm at top and bottom)

Top steel 10 # 25 mm tor

Bottom steel 5 # 16 mm tor.

Find the superimposed safe load on beam and subsequently design the beam for shear as per IS provisions.

Q.2 A fixed beam [inverted 'T' shape] has following details.

(10)

Effective span = 10 m, Effective flange width 2500 mm and thickness 150 mm.

Dead load = 50 kN/m

Live load = 25 kN/m

Design the beam for flexure action as per IS provisions. Redistribution of moment is appreciated.

Use M 30 and Fe500. Show the details of reinforcement.

Q.3 A RC slab has following details.

(10)

Panel size = 8 m x 8 m

Live load = 20 kN/sq.m

Floor Finish = 2 kN/sq.m

Imposed dead load 5 kN/sq.m

Material , M30 and Fe 500.

Make suitable assumption and design the slab as per IS provisions. Show the details of reinforcement.

(10)

Q. 4

- a) Justify the use of under-reinforced section is economical as compared to over-reinforced section.
- b) Describe Moment redistribution concept and relevant provisions in design .
- c) Design a staircase for following data .

Size 6 m x 4 m and height 4 m

Tread = 300 mm

Rise = 150 mm

Material M25 and Fe 415 show the details of reinforcement

(10)

Q.5

Design a continuous RC beam for four spans.

AB = CD = 5 m

BC = DE = 3 m

Dead load on AB and CD = 25 kN/m

Dead load on BC and DE = 15 kN/m

Live load on all span = 15 kN/m

Point load 10 kN at mid of BC span .

M-25, Fe 500.

All relevant clauses of IS provision shall be observed.

Show the details of reinforcements.

OR

(10)

Q.5

Design a RC column and footing for the following data.

Column Axial Load = 2500 kN

B. M. = 250 kN-m

Assume least lateral dimension of column 300 mm

Available space for footing projection to one side is 1 m only.

SBC of soil = 100 kN/sq.m

M-30, Fe 500

Comply all relevant clauses of IS : 456 - 2000

Show the details of reinforcement.

College of Engineering, Pune

T.Y. B.Tech. Civil Engineering

CE (314) Foundation Engg.

End Semester Exam

1) Solve any **Five** questions

Max. Marks-50

2) Draw necessary diagram wherever necessary

Duration – 3hrs.

Q1 a) What are the factors that influence the depth of the foundation? 05

b) Explain Plate load test 05

Q2 a) Explain with sketch “Wash boring” 05

b) Explain the purpose of site investigation. 05

Q3 a) State and Explain Meyerhoff's B.C. analysis? 05

b) Determine the ultimate bearing capacity of the strip footing 1.5 m wide 05

with its base at a depth of 1m resting on dry sand strata using the bearing capacity factors recommended by Meyerhoff and IS code

$\gamma_d=17 \text{ kN/m}^3, \phi'=38^\circ$ and $c'=0$

Use $N_q=48.9, N_\gamma= 64$ (Meyerhof)

$N_q=48.9, N_\gamma = 78$ (IS Code)

Q4. a) Define

1. Compression Index 2. Coefficient of volume change 3. Expansion Index. 05

4. Coefficient of consolidation 5. Time factor.

b) In a consolidometre test on saturated clay specimen the vertical stress was increased from 100 to 200 kN/m^2 and following changes in the thickness were recorded. 05

Time (min)	0.00	0.025	0.50	1.00	2.25	4.00	6.25	9.00	16.00
Change in thickness (mm)	0.00	0.40	0.50	0.60	0.82	1.03	1.20	1.33	1.45

Time (min)	25	36	49	64	81	100	300	1440
Change in thickness (mm)	1.53	1.58	1.61	1.64	1.66	1.67	1.68	1.75

After the last reading (1440min) the thickness of the specimen was 15.30 mm and the water content 23%. Using the square root of time method determine a) the coefficient of consolidation C_v

Q5. a) Explain Dynamic methods of determining B.C. of single pile. 05

b) A group of nine piles, 12 m long and 250mm in diameter is to be arranged in a square form in a clay soil with an average unconfined compressive strength of 60 kN/m^2 . Work out the centre to centre spacing of piles for a group efficiency factor of 1 (i.e. $Q_g = n Q_u$). Neglect bearing at the tip of the piles. $\alpha = 0.9$ 05

Q6. A) What is caisson? Explain different types of caisson? 05

b) A clay soil tested in a consolidometer showed a decrease in void ratio from 1.20 to 1.10 when the pressure was increased from 0.25 to 0.50 kg/cm^2 . Calculate the coefficient of compressibility (a_v) and coefficient of volume compressibility (m_v). If the coefficient of consolidation (c_v) determined in the test for the given stress increment was $3.17 \times 10^{-3} \text{ cm}^2/\text{s}$. Calculate the coefficient of permeability in cm/s.

If the sample tested at the site was taken from a clay layer 3.0 m in thickness determine the consolidation settlement resulting from the given stress increment. 05

COLLEGE OF ENGINEERING PUNE

Subject code : CE -301

Name of subject: Environmental Engineering -I

Programme: T.Y. B. Tech. (Civil)

Year: 2010-11

Duration: 03 hours

Date: 08/ 05/ 2012

Max. Marks: 50

Instructions:

1 Attempt any five question

2 Use of scientific calculator is allowed

3 Assume data only if it is necessary

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