

Full Marks: 20

Mahfuz 1700097
Cycle: 7 Day: 9 Date: 12.06.22
Time: 20 mins.

- Q. 1. What are the characteristics of road transport in comparison with other systems?
Q. 2. Explain with sketches the various factors controlling the alignment of roads.

08
12

1st Class Test on CE 3221 (2017 Series)

1	How will you differentiate between interception loss and infiltration loss?	3
2	Define the following terms: (i) Evapotranspiration, (ii) Base Flow, (iii) Detention storage, (iv) Bank storage	4
3	What is concentration time? A basin has an area of 25250 km ² , perimeter 850 km and length of the thalweg 220 km. Determine: (i) form factor (ii) compactness coefficient (iii) elongation ratio, and (iv) circularity ratio.	10
4	A storm having its recurrence interval 20-year, is given. Now calculate: (i) its frequency (ii) the probability that storm will not occur in next 10 years and, (iii) the probability that storm will occur in next 10 years.	3

0.52
1.50
0.815
50.42

Mahfuz 1700097
Cycle: 5 Day: 3 Date: 28.5.22
Class Test on CE 3205

Full Marks = 20

Time = 30 minutes

N.B:- Assume reasonable value for any data missing.

- Q.1 Calculate the TPF, when AADT = 350 vehicle/^{day} annual increase = 5% and construction period = 2 yrs. 629
Q.2 Calculate the Traffic density, when traffic volume = 400 vehicle/hr and traffic speed = 50 km/hr. 8
Q.3 Five spot speeds 18, 20, 22, 24 and 26m/s respectively recorded within section of 100 m. Calculate the SMS. 21.83
Q.4 Calculate the Theoretical maximum capacity for a traffic lane at design speed of 80 km/hr. 642
Q.5 Calculate the running speed, when travel distance = 80 km, travel time = 95 mins. and delay = 10 mins. 15.67

Full Marks:20

Time: 30 min

Q.1 Design an interior flat slab to carry life load 130psf of the column to column center distance 15 ft square, using 3000-psi concrete and yield strength of steel 60,000-psi.

Class Test-01

CE 3233

Time:20 min

- Q. 1 Passive earth pressure is greater than active earth pressure-why? 5
Q. 2 For a clayey backfill with surcharge, prove that tension crack is not possible when $q/\gamma = 2c/\gamma\sqrt{k_a}$ 5
Q. 3 Prove that $P_p = K_p \gamma H + 2c\sqrt{K_p}$ where the symbols have their usual meanings. 10

Rajshahi University of Engineering & Technology
Department of Civil Engineering
CE 3221(Hydrology), Class Test-02 (2017 Series)

Time: 20 Minutes

- Q.1 Write down Dupuit-Forchheimer assumptions for ground water movement. State the relationship among Q, T, R, r, H & h for a water table aquifer. Where the symbols bear usual meaning. 2+8
Q.2 In an artesian aquifer of 12m thick, a 10cm dia. well is pumped at a constant rate of (100+ last 3 digits of your roll no.) litres/min. The steady state drawdown observed in two observation wells located at 15m and 65m distances from the side of the well are 3.5m and 0.06m respectively. Compute the transmissibility and the hydraulic conductivity of the aquifer. 10

Full Marks = 20

Class Test on CE 3205

Mahfuz 1700097
Cycle: Day Date: 27.2.22
Time: 30 minutes

- Q.1 Define Road accident. Briefly discuss the impact of road accidents in family life and social life. (08)
Q.2 Write the meaning of symbols used in collision diagram. (02)
Q.2 Discuss the major five causes of road accidents in Bangladesh. (10)

1. Design an interior column (spiral column) using the following information:

Thickness of slab= 5", Beam Size= 24"X15", Partition Wall= 5", Floor finish= 25 psf, Live load= 50 psf, $f_c' = 4000$ psi, $f_y = 60000$ psi & Loaded area for the column= 8'X8'

Use USD method.

CT 31217(1) 28.05.2022

Design the footing for Service dead load is 350 kips, service live load is 275 kips. Soil density 130 lb/ft³. Allowable soil pressure is 4500 psf at 5 ft below the basement floor. Column is 18-inch square. $f_c' = 3500$ psi and $f_y = 60,000$ psi. Place the bottom of footing at 5 ft below floor level.

CT 3221(1)

1. What is the mechanism of ground water flow. What are the factors that effect ground water flow
2. define Artesian aquifer, relation betn porosity and specific yield and specific retention, cone of depression, importance of storage of coefficient
3. Class lecture math $Q = kA(dy/dx)$

CT 3233(1)

Calculate the corrected SPT number by using Skempton (1986) relationship. The GWT is located at a depth of 5 m. Given that the dry unit weight of sand from 0 to 5.5 m depth is 18 kN/m³, and the saturated unit weight of sand from 5.5 m to 10.5 m depth is 19.5 kN/m³. The soil is normally consolidated coarse sand. Depth(m)

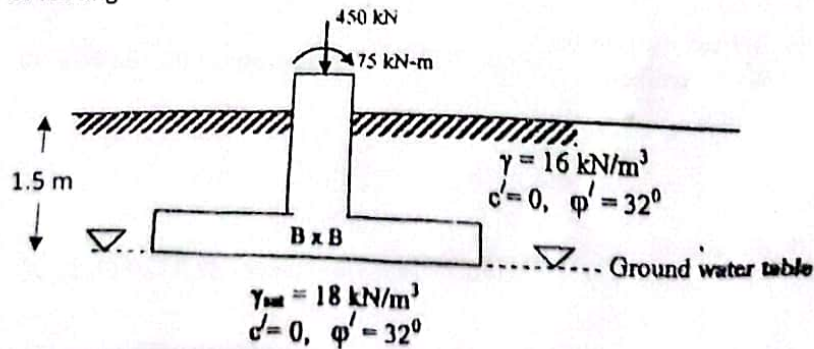
Depth (m)	1.5	3.0	4.5	6.0	7.5	9.0	10.5
N_{60}	5	7	9	8	13	12	14

3233 CT(2)

Time 20 min

Determine size of footing

Using a factor of safety of 3, determine the size of the footing



Department of Civil Engineering
Class Test on CE 3205

Full Marks: 20

Time: 20 mins.

- Q. 1. Write short notes on: (i) PIEV theory (ii) OSD (iii) ISD (iv) Reaction time.
- Q. 2. Calculate the safe overtaking sight distance for design speed of 90 kmph for two-way traffic. Given, acceleration of overtaking vehicle = 2.5 kmph/sec, and reaction time of driver = 2.5 secs. Mention the minimum length of overtaking zone, and draw neat sketch of the overtaking zone and show the position of the sign post.

2nd Class Test on CE 3221 (2017 Series)

Time: 25 min

1. How do you explain 4-hour unit hydrograph? Describe three well known base flow separation procedure with neat sketch from a flood hydrograph?
2. The ordinates of a 4-hour unit hydrograph for a particular basin are given below. Derive the ordinates of (i) the S-curve hydrograph, and (ii) the 8-hour unit hydrograph and plot them. Area of the basin is 630 km².

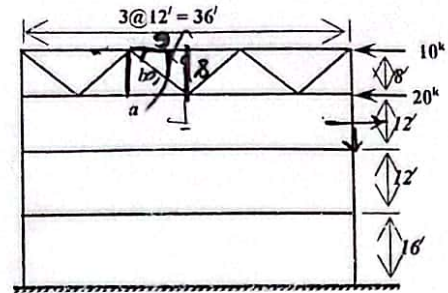
Time (hr)	0	2	4	6	8	10	12	14	16	18	20	22	24
4-hr UGO (cumec)	0	30	105	165	195	175	115	75	35	25	8	2.5	0

Department of Civil Engineering
Class Test on CE 3213

Full Marks 20

Time: 30 min.

Q.1. Determine the stresses in the members *a*, *b*, and *c* of the portal frame as shown in figure below.

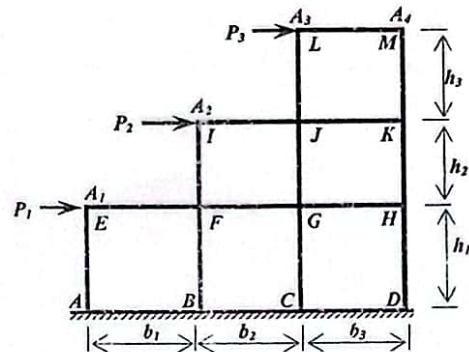


Mahfuz 1700097

Cycle 4 Day 1 Date: 23.7.22

Q.2. Draw SF and BM diagram of member *MI*.

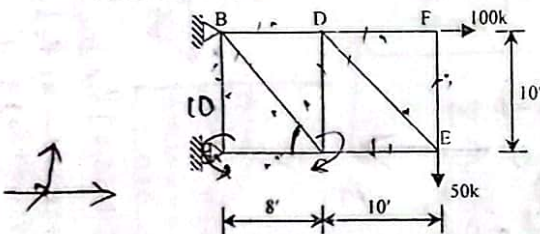
- $h_1 = 11 + (0.04 \cdot \text{Last 3 digits of Roll No.})$ in ft
- $h_2 = h_3 = 10 + (0.04 \cdot \text{Last 3 digits of Roll No.})$ in ft
- $P_1 = 4 + (0.04 \cdot \text{Last 3 digits of Roll No.})$ kips
- $P_2 = 6.0 + (0.04 \cdot \text{Last 3 digits of Roll No.})$ kips
- $P_3 = P_4 = 3 + (0.04 \cdot \text{Last 3 digits of Roll No.})$ kips
- $b_1 = 10 + (0.03 \cdot \text{Last 3 digits of Roll No.})$ in ft
- $b_2 = 12 + (0.03 \cdot \text{Last 3 digits of Roll No.})$ in ft
- $b_3 = 12 + (0.03 \cdot \text{Last 3 digits of Roll No.})$ in ft
- $A_1 = A, A_2 = A_3 = A_4 = 2A$



CE 3213-CT2 [17 Series]

Full Marks: 20

Time: 20 min

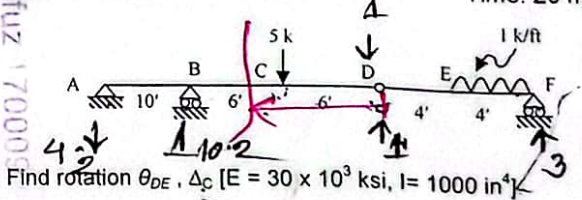


Find out rotational deflection of member *AC*.
[$E = 30 \times 10^3$ ksi, $A = 5$ inch² for all the members].

CE 3213-CT1 [17 Series]

Full Marks: 20

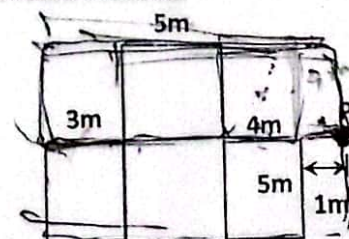
Time: 20 min



Find rotation θ_{DE} , Δ_C [$E = 30 \times 10^3$ ksi, $I = 1000$ in⁴]

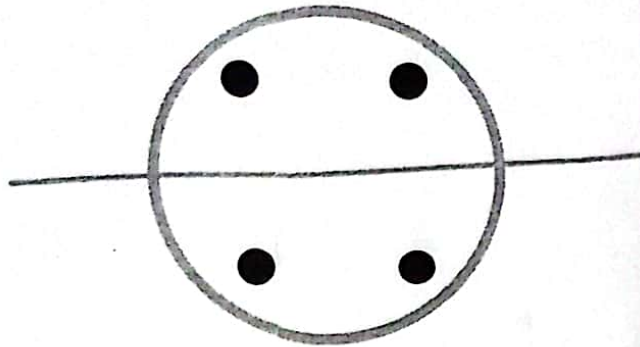
Class Test-2 CE333(11s) FM=20

Q.1 Compute the vertical stress increase at a depth of 5 m below GL at a point P due to the following mat foundation carrying a total load of 1500 kN. Solve using Newmark's solution.



1. Design a circular column (where reinforcement will be at same distance from neutral axis on both side like the following figure) to carry an axial load of 300 kip and simultaneous moment of 200 kip-ft. Assume $f'_c = 4000$ psi and $f_y = 50000$ psi

20



Name:

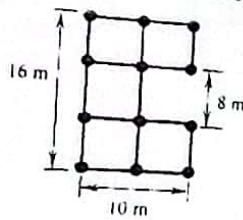
Class Test on CE 3213

Time: 20 min

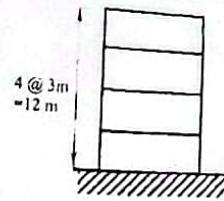
Roll No.:

Q.1: Calculate the earthquake load at each floor level for the following four storied building with the given data (follow BS 36)

Total Marks: 10 (10/20)



Plan



Elevation

Seismic zone coefficient = 0.075; Structure importance coefficient = 1.00; Response modification coefficient = 8.00; Structure type coefficient = 0.049; Site coefficient for soil characteristics = 1.50; seismic dead load = 1400 kN/floor.

Q.2. Compute the ordinates of the influence line for the reaction at B of the proposed simply supported beam. Use intervals of 3 m. EI is constant.

