Registration No : | | | | | | | | | | |

Total Number of Pages : 02

B.Tech
PECI5412

8th Semester Back Examination 2018-19
ADVANCED FOUNDATION ENGINEERING
BRANCH : CIVIL
Time : 3 Hours
Max Marks : 70
Q.CODE : F073

Answer Question No.1 which is compulsory and any FIVE from the rest.
The figures in the right hand margin indicate marks.

Q1 **Answer the following questions :** **(2 x 10)**

a) What do you mean by radial damping?
b) List the types of cofferdams with diagram.
c) Define logarithmic decrement.
d) What are the different types of waves that propagate through soil?
e) The coefficient of elastic uniform compression of a soil is found to be 20,000 kN/m^3 using a block having a base area of 4 m^2. What will be the percentage change in its value, if the base area of the block is halved?
f) A long 4 m wide and 7 m deep excavation is to be made in a clay with γ=18 kN/m^3 and c=30kN/m^2. Check the safety against bottom heave for $\varphi=0^0$ condition.
g) Write down the different methods of isolation for machine foundation.
h) Define swelling potential.
i) What are different types of foundations used for expansive soil?
j) What do you mean by tuning of a foundation?

Q2 a) Differentiate between the free earth support and the fixed earth support of design approaches of anchored bulkhead. **(5)**
b) Explain the earth pressure on braced cuts in sand with diagram. **(5)**

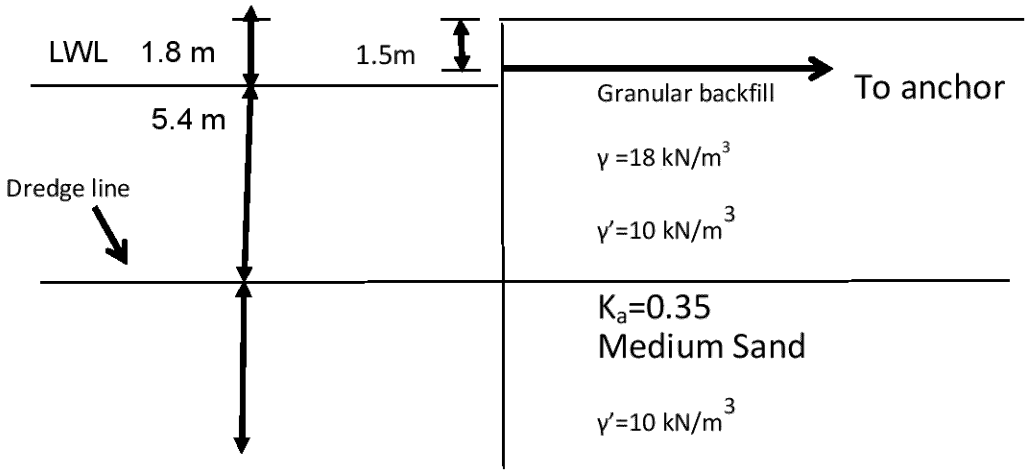
Q3 a) Briefly explain the pressure meter test. How do you correlate various dynamic soil properties from this test? **(5)**
b) The following data were obtained for a silty clay with more than 50 % fine: LL=52%, water content is 15 % and dry density is 16 kN/m^3 estimate the swell pressure, free swell and the possible heave if it is to be loaded by a mat for four storeyed building at 15 kN/m^2 per storey **(5)**

Q4 a) Write down the general criteria for design of machine foundation. **(5)**
b) In a block vibration test, resonant frequency of 15 Hz was observed in the vertical direction. The size of the concrete test block was 1.5m X 0.75m. Assume the unit weight of the concrete as 24 kN/m^3. Determine the coefficient of elastic uniform compression. If a machine weighing 100 kN is to be supported on a rigid block of 6 m X 6m X 2.5 m, what is the natural frequency in vertical vibrations? **(5)**

Q5 a) Explain Barken's empirical approach for design of foundation for an impact machine. **(5)**
b) Explain the functions of wales and tie rods in an anchored bulkhead. **(5)**

Q6 What are various principles design of foundation in expansive soils deposits? Discuss in detail various environmental and structural solutions **(10)**

Q7 Design an anchored bulkhead in granular soil using free earth supported for the following condition. **(10)**



Q8 **Write short answer on any TWO :** **(5 x 2)**

a) Differentiate between partial floating and full floating foundation.

b) Active zone in an expansive soil

c) Stone column