JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

MAKE UP EXAMINATION APRIL -2018

B.Tech VI Semester

COURSE CODE: 10B11CE612   MAX. MARKS: 25

COURSE NAME: FOUNDATION ENGINEERING

COURSE CREDITS: 04   MAX. TIME: 1.5 HR

Note: All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means. Assume suitable data if required. Answer in sequence.

1. A normally consolidated clay layer settled by 20 mm when the effective stress was increased from 25 to 50 kN/mm^2. Compute the settlement when the effective stress is increased from 50 to 100 kN/mm^2. [3]

2. Derive the expression for active earth pressure for cohesive soils and formulate the critical depth of excavation with subsequent explanation of the pressure diagrams. [5]

3. The following sizes of sampling tubes are available in the market:

Outside diameter (mm)	70	120	55
Inside diameter (mm)	67	117	47
Length (mm)	600	600	600

Out of these which one would you select for obtaining undisturbed soil samples from a borehole and why? [3]

4. A footing, 2mx2m, rests on a soft clay soil with its base at a depth of 1.5 m from the ground surface. The clay stratum is 3.5 m thick and is underlain by a firm sand stratum. The clay soil is normally consolidated and has the following properties:
   w_l=30%, w_n=40%, G_s=2.7, ϕ_u=0 and c_u=0.5 kg/cm2.
   (a) Determine the net safe bearing capacity using Skempton's equation taking FOS=3.
   (b) Compute the settlement that would result if this load intensity were allowed to act on the footing.
   Take ground water table near the ground surface. [6]

5. Write short notes on the following:
   (a)Rotary boring [3]
   (b)Electrical Resistivity method [3]
   (c)Flat dilatometer test [2]