

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST-2 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

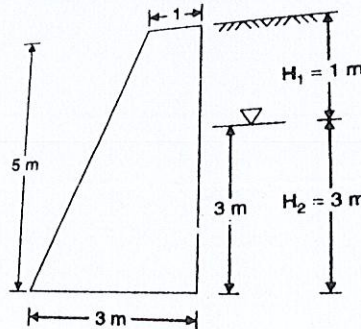
Note: All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means. Assume suitable data if required. Answer in sequence.

Q.1 Answer the following in brief:

(1x5=5)

- Mention the primary requirement for establishment of active or passive pressure condition in soils.
- Determine the critical depth of excavation in a pure clayey soil with cohesion of 10kPa and unit weight of 18kN/m³.
- Mention the IS code recommendations for a newly proposed footing adjacent to a existing footing.
- State various factors through which GSF or LSF condition of soil may be predicted.
- SPT value obtained 5 m below a saturated coarse sand stratum was 32 after overburden correction. Calculate the corrected SPT value. [CO1,CO6]

Q.2 A concrete gravity type retaining wall as shown in the figure retains granular soil having a friction angle of 35° and dry and saturated unit weight of 16 kN/m³ and 20 kN/m³ respectively. The friction coefficient is 0.47. Analyze the wall for its stability. [CO6] (10)



Q.3 State the assumptions behind Terzaghi's bearing capacity theory and derive Terzaghi's bearing capacity equation. [CO3] (5)

Q.4 Compute the safe bearing capacity of a square footing 1.5 m side resting on a sand of average density 20kN/m³ and $\phi=20^\circ$ at a depth of 1 m below the ground level. Also compute the change in the safe bearing capacity if the water table rises up to the ground surface. Take $N_c=17.7, N_q=7.4, N_\gamma=5$. Assume $Y=Y_{sat}$ for saturated soil. [CO3,5] (5)