

Dr. Saurav Rawat

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST - 1 EXAMINATION - September 2018

B.Tech VII Semester

COURSE CODE: 10B13CE736

MAX. MARKS: 15

COURSE NAME: Underground Technology

COURSE CREDITS: 03

MAX. TIME: 1 Hr

*Note: All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means. Assume data wherever necessary.*

(1) A 30 m wide, 40 m long, 8 m deep construction excavation needs to be made in silty clay (CL). The groundwater table is at a depth of 2 m. The sides of the excavation will be sloped at an angle of about 1 horizontal to 1 vertical, and no sensitive structures or other improvements are nearby. Suggest an appropriate method of construction dewatering for this site and explain the reason for your choice. Include statements of any assumptions, if any.

[5]

(2) A zone of buried trash has been found at a proposed construction site. The total volume of this trash appears to be about  $100 \text{ m}^3$ , and all of it appears to be within 3 m of the ground surface. This trash is weak and compressible, and thus would not provide adequate support for the proposed construction. The remainder of the site is underlain by ML and SM soils and the ground water table is at a depth of 15 m. Recommend a method of solving this problem.

[6]

(3) In which type of soil does one encounter the following problems during drilling for bored cast – in – situ piles:

[4]

- a) Closure of hole due to squeezing
- b) Overcutting of hole due to caving of sides

Select one soil type for each of the above from the following and state your reasons for so selecting:

- |                         |   |
|-------------------------|---|
| (i) Soft saturated clay | (iii) Silty sand                        |
| (ii) Stiff clay         | (iv) Loose saturated sand without fines |