KATHMANDUUNIVERSITY
End-Semester Examination
March/April 2017

Marks Scored:

Level : B. E.
Year : III

Course : CIEG 303
Semester: I

Exam Roll No. :

Time: 30 mins.

F.M. : 10

Registration No.:

Date APR 10 2017

SECTION "A"
[20 Q. × 0.5=10 marks]

Mark "✓" in the appropriate answer.

1. Which of the following is the aeolian soil?
   a. Bentonite b. Loess c. Boulder clay d. Varved clay

2. Relative density of a compacted dense sand is approximately equal to
   a. 0.4 b. 0.6 c. 0.95 d. 1.2

3. If the water content of a fully saturated soil mass is 100% then the void ratio of the soil is
   a. Less than specific gravity of soil
   b. Equal to specific gravity of soil
   c. Greater than specific gravity of soil
   d. Independent of specific gravity of soil

4. If the volume of voids is equal to the volume of solids in a soil, then the values of porosity and void ratio respectively are
   a. 1 *and* 0 b. 0 *and* 1 c. 0.5 *and* 1 d. 1 *and* 0.5

5. In a hydrometer analysis of fine grained soils,
   a. both meniscus and dispersing agent correction are additive
   b. both meniscus and dispersing agent correction are subtractive
   c. meniscus correction is additive and dispersing agent correction is subtractive
   d. meniscus correction is subtractive and dispersing agent correction is additive

6. In a specific gravity test if some air is entrapped in pycnometer + soil + water then the computed value of specific gravity G
   a. decreases due to increase in weight
   b. decreases due to decrease in weight
   c. increases due to increase in weight
   d. increases due to decrease in weight

7. When the Plastic Limit of soil is greater than Liquid Limit (like in sand) then Plasticity Index is reported as
   a. negative b. zero c. infinite d. 1

8. If sand is mixed to clay, then for clay
   a. LL decreases and I_P increases
   b. LL decreases and I_P does not change
   c. both LL and I_P decreases
   d. both LL and I_P increases

9. Ratio of energy applied in Modified Proctor Test to that applied in Standard Proctor Test is
   a. 4 b. 3 c. 4.5 d. 5

10. In a Standard Proctor Test, it was determined that $(\gamma_d)_{max} = 18.4\ kN/m^3$ and $w_{opt} = 11.5\%$. If $G = 2.7$ then degree of saturation at the maximum dry unit weight is equal to
a. 65% b. 67% c. 71% d. 83%

11. Viscosity and unit weight of the percolating fluid are reduced to 60% *and* 90% respectively. Coefficient of permeability
a. increases by 25% b. increases by 50% c. increases by 33.3% d. decreases by 33.3%

12. Which of the following is true for a flow net
a. Finer the flow net higher is the seepage discharge
b. Impermeable boundary acts as an equipotential line
c. Permeable boundary acts as a flowline
d. Infinite number of flow channel is possible for a given flow problem

13. In case of point load acting on the surface of soil mass, for a constant radial distance ($r \neq 0$), and varying depth z, $(\sigma_z)_{max}$ will occur at
a. $r/z = 2/3$ b. $r/z = \sqrt{2/3}$ c. $r/z = \sqrt{2}/3$ d. $r/z = 2/\sqrt{3}$

14. Maximum value of Stress influence factor in case of point load acting on surface of a soil mass is
a. 0.334 b. 0.4775 c. 0.4577 d. 0.4757

15. Value of compression index for undisturbed clay with $LL = 50\%$ is
a. 0.028 b.0.28 c. 0.36 d. 0.036

16. A clay deposit suffers a consolidation settlement of $5cm$ with one way drainage. With two-way drainage, it suffers a settlement of
a. 10 cm b. 2.5 cm c. 20 cm d. 5 cm

17. Unconfined compressive strength test is
a. undrained test
b. drained test
c. consolidated undrained test
d. consolidated drained test

18. Flow value $N_\emptyset$ is given by
a. $\tan^2\left(45° + \emptyset/2\right)$ b. $\tan\left(45° + \emptyset/2\right)$ c. $\tan^2\left(45° - \emptyset/2\right)$ d. $tan\left(45° - \emptyset/2\right)$

19. A direct shear test was performed on a soil sample having $c = 20\ kN/m^2$ and area of cross section 60 $mm \times 60mm$. When 0.8 kN axial load was applied, sample failed at a shear load of 0.6 kN. Angle of internal friction for the soil would be
a. 30° b. 35° c. 38° d. 33°

20. Taylor's stability number N is given by
a. $N = \gamma.H/c_m$ b. $N = c_m/\gamma.H$ c. $N = c_m.H/\gamma$ d. $N = c_m.\gamma/H$