01. The net ultimate bearing capacity of a purely cohesive soil

a. Depends on width of footing and is independent of depth of footing
b. Depends on depth of footing and is independent of width of footing
c. Depends on both depth and width of footing
d. Is independent of both depth and width of footing

02. The rise of water table below the foundation influences the bearing capacity of soil mainly by reducing

a. Cohesion and effective angle of shearing resistance
b. Cohesion and effective unit weight of soil
c. Effective unit weight of soil and effective angle of shearing resistance
d. Effective angle of shearing resistance

03. terzaghi's general bearing capacity formula for a strip footing($C N_c + y D N_q + 0.5 y n_y B$) gives

a. Safe bearing capacity
b. Net safe bearing capacity
c. Ultimate bearing capacity
d. Net ultimate bearing capacity

where C = unit cohesion
y = unit weight of soil
D = depth of foundation
B = width of foundation
N_c N_q N_r = bearing capacity factors

04. terzaghi's bearing capacity factors N_c N_q and N_y are functions of

a. Cohesion only
b. Angle of internal friction only
c. Both cohesion and angle of internal friction
d. None of the above

05. In the plate loading test for determining the bearing capacity of soil the size of square bearing plate should be

a. Less than 300 mm
b. Between 300 mm and 750 mm
c. Between 750 mm and 1 m
d. Greater than 1 m

06. Select the incorrect statements.

a. Bearing capacity of a soil depends upon the amount and direction of load.
b. Bearing capacity of a soil depends on the type of soil
c. Bearing capacity of a soil depends upon shape and size of footing
d. Bearing capacity of a soil is independent of rate of loading.

07. A 600 mm square bearing plate settles by 15 mm in plate load test on a cohesionless soil under an intensity of loading of 0.2 N/mm . The settlement of a prototype shallow footing 1 m square under the same intensity of loading is

a. 15 mm
b. Between 15 mm and 25 mm
c. 25 mm
d. Greater than 25 mm

08. A 300 mm square bearing plate settles by 15 mm in a plate load test on a cohesive soil when the intensity of loading is 0.2 N/mm^2. The settlement of a prototype shallow footing 1 m square under the same intensity of loading is

a. 15 mm
b. 30 mm
c. 50 mm
d. 167 mm

09. Rise of water table in cohesionless soils upto ground surface reduces the net ultimate bearing capacity approximately by

a. 25% b. 50%
c. 75% d. 90%

10. Contact pressure beneath a rigid footing resting on cohesive soil is

a. Less at edges compared to middle
b. More at edges compared to middle
c. Uniform throughout
d. None of the above

11. According to IS specifications, the minimum depths of foundation in sand and clay should be respectively

a. 600 mm and 700 mm
b. 800 mm and 900 mm
c. 1 m and 800 mm
d. 1 m and 1.2 m

12. The maximum differential settlement in isolated footing on clayey soils should be limited to

a. 25 mm
b. 40 mm
c. 65 mm
d. 100 mm

13. A combined footing is generally used when

a. Number of columns is more than two and they are spaced far apart
b. Number of columns is two and they are spaced close to each other
c. Number of columns is two and they are spaced far apart
d. There is only one column

14. Negative skin friction on a pile

a. Acts downward and increases the load carrying capacity of the pile
b. Acts upward and increases the load carrying capacity of the pile
c. Acts downward and reduces the load carrying capacity of the pile
d. Acts upward and reduces the load carrying capacity of the pile

15. A single acting steam hammer weighing 22.5 kN and falling through a height of 1.2 m drive a pile. If the final set is 12.5 mm, then according to engineering news formula

a. Allowable load for the pile is 300 kN
b. Ultimate bearing capacity of the pile is 300 kN
c. Allowable load for the pile is 120 kN
d. Ultimate bearing capacity of the pile is 120 kN

16. Generally the bearing capacity of a pile group is

a. Equal to the sum of Bering capacities of individual piles in case of friction piles
b. Equal to the sum of bearing capacities of individual piles in case of end bearing piles
c. Less than the sum of bearing capacities of individual piles in case of end bearing piles
d. Greater than the sum of bearing capacities of individual piles in case of friction or end bearing piles.

17. The settlement of a group of friction piles as compared to that of a single pile is

a. Same
b. Less
c. more
d. None of the above

18. Select the correct statements.

a. Both negative skin friction and skin frictional resistance are caused by relative settlement of soil.
b. Both negative skin friction and skin frictional resistance are caused by relative settlement of pile.
c. Negative skin friction is caused by relative settlement of soil and skin frictional resistance is caused by relative settlement of pile.
d. Negative skin friction is caused by relative settlement of pile and skin frictional resistance is caused by relative settlement of soil.

19. Select the incorrect statement.

a. Static formulae are suitable for friction piles driven through cohesive soils
b. Dynamic formulae are most suitable for friction piles driven through cohesive soils
c. Dynamic formulae are suitable for friction piles driven through cohesionless soils
d. Dynamic formulae do not take into account the reduced bearing capacity of a pile in a group

20. Mechanical stabilization of soils is done with the help of

a. Cement
b. Lime
c. Bitumen
d. Proper grading