

Dec.-22-1361

MCE-102 (Foundation Design & Construction)

M.Tech. 1st (CE) (CBCS)

Time : 3 Hours

Max. Marks : 60

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note : Attempt five questions in all by selecting one from each of the section A, B, C and D. Section E is compulsory.

SECTION - A

1. Explain in detail about IS code method for computing the bearing capacity of soil with various types of failure and shape factor. (10)
2. Explain the conventional method of design of raft foundation. (10)

SECTION - B

3. A square pile group of 9 piles of 25 cm diameter is arranged with a pile spacing of 1m. The length of the piles is 9m. Unit cohesion of the clay is 75 kN/m². neglecting bearing at the tip of the piles determine the group capacity. Assume adhesion factor of 0.75. (10)
4. Explain the method of determining the load carrying capacity of a pile. (10)

SECTION - C

5. Explain different shapes of wells and their preference. (10)
6. Describe design principles of machine foundation. (10)

SECTION - D

7. What is grouting? Explain grout injection method. (10)
8. What are the applications of geo-synthetics textiles in the improvement of foundation soil? (10)

SECTION - E

9. Attempt all the following:
 - (a) What is combined footing?
 - (b) How does a pile group behave in cohesionless and cohesive soils?
 - (c) State the requirement of good foundation.
 - (d) What is the efficiency of pile group?
 - (e) What is machine foundation?
 - (f) What are the components of well foundation?
 - (g) What is injection?
 - (h) Describe chemical stabilizers.
 - (i) What do you understand about Geo-synthetics?
 - (j) Explain under-reamed piles. (10×2=20)