Roll No. ☐☐☐☐☐☐☐☐☐☐☐   Total No. of Pages : 02

Total No. of Questions : 09

B.Tech (Civil)   (Sem.–6)
GEOTECHNICAL ENGG.
Subject Code : CE-304
Paper ID : [A0619]

Time : 3 Hrs.   Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :
 1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
 2. **SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.**
 3. **SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.**

SECTION-A

Q1.   Answer briefly :

a) Define zero air void line?

b) Draw a typical consolidation curve for laboratory consolidation test on undisturbed soil samples.

c) Distinguish between seepage and discharge velocities through soil.

d) How do we determine specific gravity of soil using pycnometer?

e) What do you mean by steady and unsteady flow?

f) Differentiate between Standard Proctor and Modified Proctor Test.

g) What is passive earth pressure?

h) Define plasticity index.

i) Cohesionless soils are best suited as backfill material, why?

j) Distinguish between normally consolidated and over-consolidated soils.

SECTION-B

Q2) Enumerate the advantages and limitations of tri-axial shear strength tests.

Q3) Give general engineering properties of different types of soils classified according to Indian standard classification system.

Q4) Give the structure and characteristics of montmorillonite clay minerals.

Q5) In a lab, the consolidation test was performed on a specimen of clay 3 cm thick. The sample was drained at top and bottom. The time required for 50% consolidation of the sample was observed to be 15 minutes. Determine the coefficient of consolidation of clay.

Q6) What are the various methods for obtaining flow nets?

SECTION-C

Q7) A retaining wall with smooth back having 6m high retains a cohesionless soil. The top 4m soil has unit wt of 1.8g/cc and bottom 2m has unit wt of 2. lg/cc. Take angle of internal friction for both soil is 300. Calculate and plot active and passive earth pressure, also find out point of application.

Q8) Obtain the differential equation defining the one – dimensional consolidation as given by Terzaghi, listing the various assumptions.

Q9) Write short notes on any two of the following :

a) Sieve analysis.

b) Triaxial shear test.

c) Causes of over consolidation.