PB-7

[6268]-201

S.E. (Civil) (Insem)
GEOTECHNICAL ENGINEERING
(2019 Pattern) (Semester - IV) (201008)

Time : 1 Hour]

[Max. Marks : 30

Instructions to the candidates:

1) Answer Q.1 or Q.2, Q.3 or Q.4.
2) Figures to the right indicate full marks.
3) Neat figures must be drawn wherever necessary.
4) Assume suitable data if required.
5) Use of non programmable scientific calculator is allowed.

Q1) a) Explain residual soil and transported soils with types and examples of each. **[5]**

b) Discuss on Indian standard soil classification system. **[5]**

c) Develop the relation between S, e, w and G. **[5]**

OR

Q2) a) Explain with sketch, different structure of soil. **[5]**

b) State the meaning of soil exploration? Explain any four purpose of same. **[5]**

c) The bulk unit weight of soil sample is 19 kN/m^3. The specific gravity of soil solid is 2.65 and moisture content 12%. Calculate void ratio, porosity, degree of saturation and dry unit weight. Tale $\gamma_w = 10$ kN/m^3. **[5]**

Q3) a) Describe various factors affecting the permeability of soil. **[5]**

b) In permeability test on a sample 12.2 cm height and 44.41 cm^2 in cross-sectional area, the water level in the stand pipe of 6.25mm internal dia. drop from a height of 75cm to 24.7cm in 15min Find the coefficient of permeability in cm/sec. **[5]**

c) Explain flow net, its properties and uses. **[5]**

OR

Q4) a) Determine the average coefficient of permeability in the horizontal and vertical directions for a deposit consisting of layers of 5m, 1m and 2.5m having the coefficients of permeability of 3×10^{-3} cm/sec, 2.8×10^{-4} cm/sec and 4.1×10^{-2} cm/sec respectively. **[5]**

b) Explain quick sand condition. Calculate critical hydraulic gradient of a sand deposit of specific gravity 2.65 and porosity 45% **[5]**

c) Describe the procedure to construct flow net for seepage through earthen dam. **[5]**

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