Total No. of Questions : 4]

SEAT No. :

PB-7

[Total No. of Pages : 2

# [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]**

***P.T.O.***

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 $3 \times 10^{-3}$ cm/sec, $2.8 \times 10^{-4}$ cm/sec and $4.1 \times 10^{-2}$ 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]**