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Question Paper Code: 41142

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2017

Fourth Semester

Civil Engineering

14UCE402 - SOIL MECHANICS

(Regulation 2014)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

- The ratio of the volume of voids to the total volume of soil is
 - Void ratio
 - Degree of Saturation
 - Air content
 - Porosity
- The shrinkage index is equal to
 - Liquid limit minus Plastic limit
 - Liquid limit minus Shrinkage Limit
 - Plastic Limit minus Shrinkage Limit
 - None of these
- A flow net has 4 flow channels and 20 equi-potential drops, the shape factor is
 - 1/5
 - 5
 - 8
 - None of these
- The permeability of soil varies
 - inversely as square of grain size
 - as square of grain size
 - as grain size
 - inversely as void ratio
- New mark's influence chart can be used for the determination of vertical stress under
 - Circular load Area only
 - Rectangular loaded area only
 - Strip load only
 - Any Shape of loaded Area
- When Consolidation of a Saturated soil Sample occurs, the degree of Saturation
 - increases
 - decreases
 - Remains constant
 - May increases or decreases

7. When drainage is permitted throughout the triaxial test, the test is known is
- (a) Quick test (b) Drained Test
(c) Consolidated undrained test (d) None of these
8. The shear strength of a Cohesionless Soil is
- (a) proportional to the angle of Shearing Resistance
(b) Inversely proportional to the angle of Shearing Resistance
(c) proportional to the tangent of the angle of shearing resistance
(d) None of these
9. The failure occurs by rotation along a slip surface by downward and outward movement of the soil mass is
- (a) Rotational Failure (b) Wedge Failure
(c) Compound Failure (d) Translational Failure
10. Method useful for Stability analysis of slopes made of homogeneous soils
- (a) Friction Circle (b) Swedish Circle
(c) Fellenius method (d) None of these

PART - B (5 x 2 = 10 Marks)

11. Define liquid limit.
12. What are the steps in the construction of a flownet?
13. What is Immediate settlement?
14. Write a short note on shear.
15. What is the main cause of slope failure?

PART - C (5 x 16 = 80 Marks)

16. (a) Discuss methods of Compaction used in field. (16)
- Or
- (b) Give detail about factors influencing compaction behaviour of soils. (16)
17. (a) Discuss in detail about field methods for determination of Coefficient of Permeability. (16)

Or

- (b) What is flow net? Describe its properties and applications. Describe different methods used to construct the flow net. (16)
18. (a) Detail about Boussinesq theory of stress distribution. Give its limitations. (16)
- Or
- (b) Discuss the Factors influencing compression behaviour of soils. (16)
19. (a) Describe about Vane shear Test. Give its merits and demerits. (16)
- Or
- (b) Explain Mohr-Coulomb failure theory in detail. (16)
20. (a) Explain Fellenius method and Friction circle method. (16)
- Or
- (b) Describe about slope protection measures. (16)
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