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Properties

of

Soils

- ①. The height of capillary rise is maximum in
= Colloids
- ②. Number of phases in soil mass is
= 3
- ③. The collapsible soil is associated with
= loess
- ④. The smallest water content below which soil sample will not reduce its volume any further is known
= Shrinkage limit
- ⑤. The ratio of unconfined compressive strength of an undisturbed soil sample to that of a remoulded sample, at the same water content, is known as
= Sensitivity

- ⑥. The soils which is transported through wind is
=Loess
- ⑦. The soil which is deposited in sea water
=Marine
- ⑧. Drift is the soil transported by
=Glacier
- ⑨. Water content of soils can be accurately determined by
=Oven drying method
- ⑩. The ratio of volume of water present in a given soil mass to the total volume of its voids is known as
=Degree of Saturation
- ⑪. The water content of a soil at which the soil volume becomes constant is called
=Shrinkage limit

- (12). The soil structure in which the particles are arranged more or less parallel to each other
= Dispersed
- (13) The minimum water content at which soil just begins to crumble when rolled into a thread of 3 mm diameter is known as
= Plastic limit
- (14). At shrinkage limit the soil is
= fully saturated
- (15). The ratio of plasticity index to the flow index is termed as
= Toughness Index
- (16). The clay mineral with the largest swelling and shrinkage characteristic is
= Montmorillonite

- (17). The rocks having alumina or clay as their significant components are known as
= Argillaceous rocks
- (18) The water content and specific gravity is determined by
= Pyconometer
- (19) The quickest method for determination of water content is
= Calcium Carbide Method
- (20) The water which can be utilised by the crops from the soil is called as
= Capillary Water

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Classification of Soils

- ① The effective size of a soil is
= D_{10}
- ② In sedimentation analysis the principle used is
= Stokes Law
- ③ Honey-comb structure is found in
= Silts and fine sand
- ④ The particle size distribution curve gives an idea about
= Type of soil
- ⑤ The type of soil structure in which particles of soil are arranged in face-to-face orientation is called
= Dispersed

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Permeability



- ③ The dimensions of coefficient of permeability are
= cm/sec
- ④ Capillary water in soil
= negative pore water pressure
- ⑤ Clay is practically
= impermeable
- ⑥ An artesian aquifer is the one where
water is under pressure between
= two impervious strata
- ⑦ According to Darcy's law for flow
through porous media, the velocity is
proportional to
= Hydraulic Gradient
- ⑧ The law used in permeability test is
= Darcy's law

- ⑦ The coefficient of permeability of clay is generally between
= 10^{-8} and 10^{-5} mm/sec
- ⑧ The material which have the least permeability is
= Clays
- ⑨ A solid impermeable layer underlying or overlying an aquifer is an
= Aquiclude
- ⑩ The coefficient of permeability of soil is determined by
= Darcy's theory



Seepage

Analysis

- ① Phreatic line in an earthen dam is
 - = parabolic
- ② Seepage pressure always acts in the
 - = direction of flow
- ③ Piping in soil occurs when effective pressure becomes
 - = zero
- ④ Quick sand is a flow condition occurring in
 - = cohesionless soil

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Compaction of Soil

① The ratio of the energy imparted to soil sample in modified proctor's compaction test and the standard proctor's compaction test is about

$$= 4.5$$

② In a compaction test, as the compaction effort is increased, the optimum moisture content

= decreases

③ For compaction of soil in laboratory using Indian Standard Light Compaction test, the weight of hammer used for giving blows to soils is

$$= 2.6 \text{ kg}$$

④ Cohesionless soils are best compacted by

= Vibratory roller

⑤ Compaction by vibratory roller is the best method of compaction in case of
= Well graded dry sand



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Compressibility

and

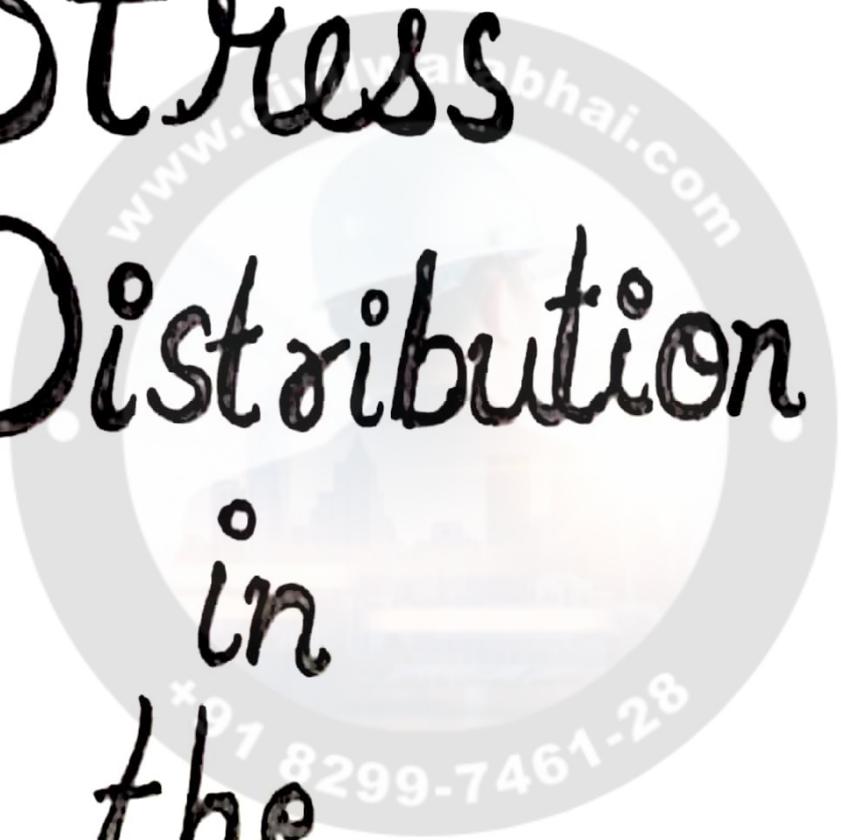
Consolidation

- ① Consolidation time of a soil sample increases with decrease in
= Permeability
- ② Terzaghi's one dimensional consolidation theory assumes that
= C vs ρ relationship is linear
- ③ In consolidation testing, curve fitting method determines
= Coefficient of consolidation
- ④ The compression resulting from a long term static load and consequent escape of pore water is known as
= Consolidation
- ⑤ The ratio of decrease in void ratio of soil due to increase in effective stress is called
= Coefficient of compressibility.

- ⑥ The slope of $C \log P$ for a soil mass gives
= Compression Index
- ⑦ The process involving decrease in the water content of a saturated soil without replacement of water by air is called as
= Consolidation
- ⑧ The slope of isochrones at any point at a given time indicates the rate of change of pore water pressure with
= depth

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Stress Distribution in the Soil



- ① Soil pressure distribution below a rigid footing on the surface of a cohesive soil is maximum at centre & minimum at edges
- ② Effective stress on soil decreases both = void ratio and permeability
- ③ Newmark's chart is used in foundation engineering to determine stresses in soil = due to surface loading

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Shear Strength of Soil



① The process by which a mass of saturated soil is caused by external forces to suddenly lose its shear strength and to behave as a fluid is called

= Liquefaction

② Skempton's pore pressure coefficient β for saturated soil is

= 1

③ Vane shear test is applicable for

= Soft clay

④ The condition at which every point in a soil mass is on the verge of failure is called

= Plastic Equilibrium

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Retaining Wall and Earth Pressure Theories



- ① Rankine's Theory of earth pressure assumes that the back of the wall is
 - = Vertical and Smooth
- ② Coulomb's theory of earth pressure is based on
 - = Wedge Theory
- ③ As ϕ increases, co-efficient of active earth pressure
 - = Decreases