UNIT – V :Shear Strength of Soils

1. Shear strength is the resistance offered by soil against
   a) Compression b) Tension c) Shearing stress d) Bending stress
   Answer: c
2. The Mohr–Coulomb failure criterion is
   a) $\tau = c + \sigma \tan \varphi$ b) $\tau = c - \sigma \tan \varphi$ c) $\tau = \sigma/c$ d) $\tau = c\sigma$
   Answer: a
3. In the Mohr–Coulomb equation, 'c' represents
   a) Compression index b) Cohesion
   c) Consolidation coefficient d) Capillarity
   Answer: b
4. In the Mohr–Coulomb equation, 'φ' represents
   a) Porosity b) Plasticity Index
   c) Angle of internal friction d) Unit weight
   Answer: c
5. The SI unit of cohesion is
   a) kN b) m^2 c) kPa d) m/s
   Answer: c
6. The most reliable test for determining shear strength parameters is
   a) Direct shear test b) Triaxial compression test
   c) Compaction test d) Consolidation test
   Answer: b
7. The direct shear test is mainly suitable for
   a) Clay b) Sand c) Organic soils d) Peat
   Answer: b
8. Unconfined Compression Test is generally conducted on
   a) Sands b) Gravels c) Saturated clays d) Rockfill
   Answer: c
9. UU test stands for
   a) Unloaded Undrained b) UnconsolidatedUndrained
   c) Uniform Undrained d) Unconfined Undrained
   Answer: b
10. CU test stands for
    a) Consolidated Undrained b) Consolidated Unloaded
    c) Constant Undrained d) Compression Undrained
    Answer: a
11. CD test stands for
    a) Consolidated Drained b) Compression Drained
    c) Constant Drained d) Controlled Drained
    Answer: a
12. The shear strength of sand depends mainly on
    a) Cohesion b) Friction
    c) Cementation only d) Organic matter
    Answer: b

13. Dense sand during shearing exhibits
    a) Compression only b) Dilatancy
    c) Consolidation only d) Liquefaction
    Answer: b
14. Dilatancy refers to
    a) Increase in volume during shear b) Decrease in volume during shear
    c) Increase in water content d) Loss of strength
    Answer: a
15. Critical void ratio is the void ratio at which soil
    a) Expands continuously b) Compresses continuously
    c) Shears at constant volume d) Reaches liquid limit
    Answer: c
16. Shear strength parameters are obtained from
    a) Failure envelope b) Grain size curve
    c) Compaction curve d) Flow net
    Answer: a
17. Acohesionless soil has
    a) $c = 0$ b) $\varphi = 0$ c) $c = \varphi$ d) $c > \varphi$
    Answer: a
18. The Mohr circle represents
    a) Stress condition at a point b) Compaction characteristics
    c) Consolidation behaviour d) Soil classification
    Answer: a
19. Stress path method is used to study
    a) Changes in stress during loading b) Water flow
    c) Soil classification d) Compaction control
    Answer: a
20. Shear failure in soils occurs when
    a) Applied shear stress exceeds shear strength b) Water content becomes zero
    c) Void ratio becomes maximum d) Effective stress becomes zero
    Answer: a