01. The ratio $\frac{\text{Liquid Limit- Water content}}{\text{Plasticity Index}}$ For a soil mass is called

a. Liquidity index
b. Shrinkage ratio
c. Consistency index
d. Toughness index

02. When the plastic limit of a soil is greater than the liquid limit, then the plasticity index is reported as

a. Negative
b. Zero
c. Non-plastic (NP)
d. 1

03. Toughness index is defined as the ratio of

a. Plasticity index to consistency index
b. Plasticity index to flow index
c. Liquidity index to flow index
d. Consistency index to liquidity index

04. If the plasticity index of a soil mass is zero the soil is

a. Sand
b. Silt
c. Clay
d. Clayey silt

05. Select the correct statements.

a. A uniform soil has more strength and stability than a non-uniform soil
b. Decrease in liquid limit and no change in plasticity index
c. Decrease in both liquid limit and plasticity index
d. Increase in both liquid limit and plasticity index

06. Select the correct statement.

a. A uniform soil has more strength and stability than a non-uniform soil
b. A uniform soil has less strength and stability than a non-uniform soil
c. Uniformity coefficient does not affect strength and stability
d. Uniformity coefficient of a poorly grade soil is more than that of a well graded soil.

07. The following index properties were determined for four soils A, B, C and D

Soil Property	A	B	C	D
Liquid limit	0.50	0.49	0.43	0.47
Plastic limit	0.23	0.17	0.21	0.26

Which of these soils contains more clay particles ?

a. Soil A
b. Soil B
c. Soil C
d. Soil D

08. The water content of soil which represents the boundary between plastic state and liquid state, is known as

a. Liquid limit
b. Plastic limit
c. Shrinkage limit
d. Plasticity index

09. Which of the following soils has more plasticity index

a. Sand
b. Silt
c. Clay
d. gravel

10. At liquid limit, all soils possess

a. Same shear strength of small magnitude
b. Same shear strength of large magnitude
c. Different shear strength of small magnitude
d. Different shear strength of large magnitude

11. If the material of the base of the casgrande liquid limit device on which the cup containing soil paste drops is softer than the standard hard rubber, then

a. The liquid limit of soil always increases
b. The liquid limit of soil always decreases
c. The liquid limit of soil may increase
d. The liquid limit of soil may decrease

12. According to IS classification the range of silt size particles is

a. 4.75 mm to 2.00 mm
b. 2.00 mm to 0.425 mm
c. 0.425 mm to 0.075 mm
d. 0.075 mm to 0.002 mm

13. Highway research board (HRB) classification of soils is based on

a. Particle size composition
b. Plasticity characteristics
c. Both particle size composition and plasticity characteristics
d. None of the above

14. Inorganic soils with low compressibility are represented by

a. MH
b. SL
c. ML
d. CH

15. Sand particles are made of

a. Rock minerals
b. Kaolinite
c. illite
d. montmorillonite

16. The clay mineral with the largest swelling and shrinkage characteristics is

a. Kaolinite
b. Illite
c. Montmorillonite
d. None of the above

17. Dispersed type of soil structure in and arrangement comprising particles having

a. Face to face or parallel orientation
b. Edge to edge orientation
c. Edge to face orientation
d. All of the above

18. Effective stress is

a. The stress at particles contact
b. A physical parameter that can be measured
c. Important because it is a function of engineering properties of soil
d. All of the above

19. Rise of water table above the ground surface causes

a. Equal increase in pore water pressure and total stress
b. Equal decreases in pore water pressure and total stress
c. Increase in pore water pressure but decrease in total stress
d. Decrease in pore water pressure but increase in total stress

20. The total and effective stresses at a depth of 5 m below the top level of water in a swimming pool are respectively

a. Zero and zero
b. 0.5 kg/cm^2 and zero
c. 0.5 kg/cm^2 and 0.5 kg/cm^2
d. 1.0 kg/cm^2 and 0.5 kg/cm^2

21. A good quality undisturbed soil sample is one which is obtained using a sampling tube having an area ratio of

a. 8%
b. 16%
c. 24%
d. 32%

22. Which one of the following tests cannot be done without undisturbed sampling

a. Shear strength of sand
b. Shear strength of clay
c. Determination of compaction parameters
d. Atterberg limits

23. Consider the following statements:
The standard penetration test (SPT) in soils is the most commonly used field test SPT is used to determine
1. consistency of clay
2. un-drained shear strength of soft sensitive clay
3. relative density of sands.
4. drained shear strength of fine loose sand. of these statements

a. 1 and 2 are correct
b. 2 and 4 are correct
c. 1 and 3 are correct
d. 3 and 4 are correct

24. Match List I with List II and select the correct answer using the codes given below the lists:

List I	List II
A. Void ratio	1. V_v/V
B. Porosity	2. W_w/W_s
C. Degree of saturation	3. W_w/W_v
D. Water content	4. W\V
	5. V_v \V_s

a. A-4 B-3 C-5 D-1
b. A-5 B-4 C-3 D-1
c. A-4 B-1 C-5 D-2
d. A-5 B-1 C-3 D-2

25. Match List I (Field problems) with List II (type of laboratory shear test) and select the correct answer using the codes given below the Lists

List I	List II
A. Stability of a clay foundation of an embankment, whose rate of construction is such that some consolidation occurs	1. nrained riaxial est
B. Initial stability of a footing on saturated clay	2. Drained triaxial test
C. Long-term stability of a slope in stiff, fissured clay	3. Consolidated undrained test
D. Foundation on soft marine clay deposits	4. Quick vane shear test

a. A-1 B-3 C-4 D-2
b. A-1 B-3 C-2 D-4
c. A-3 B-1 C-2 D-4
d. A-3 B-1 C-4 D-2

26. If an unconfined compressive strength of 4 kg/cm^2 in the natural state of slay reduced by four times in the remoulded state, then its sensitivity will be

a. 1
b. 2
c. 8
d. 4

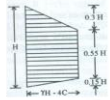
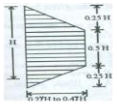
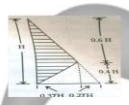
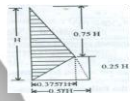
27. In a direct shear test, the shear stress and normal stress on a dry sand sample at failure are 0.6 kg/cm^2 and 1 kg/cm^2 respectively. The angle of internal friction of the sand will be nearly

a. 25^0
b. 31^0
c. 37^0
d. 43^0

28. If an infinite slope of clay at a depth 5 m has cohesion of 1 t/m^2 and unit wt. of 2 t/m , then the stability number will be

a. 0.1
b. 0.2
c. 0.3
d. 0.4

29. Which one of the following typical pressure distribution on braced sheeting in stiff clay with temporary support, as given by tschebotrioff

a. 
b. 
c. 
d. 

30. Given that c = 2 t/m^2 , $\phi = 0^0$ and γ = 2t/m^2 , the depth of tension crack developing in a cohesive soil backfill would be

a. 1 m
b. 2 m
c. 3 m
d. 4 m