Q) An engineer find suitable sand for embankment filling observes that a particular type of 0% what can be conclude from this?

A: Sand is in its loosest state

B: Sand is in its densest state

C: Sand is in intermediate state of compaction

D: This sand cannot be further compacted

Q) In soil, the value of which of the following can be more than 100%?

(i) Air content

(ii) Water content

(iii) Void ratio

(iv) Porosity

A: Only (i)

B: (i) and (ii)

C: (ii) and (iii)

D: (ii), (iii) and (iv)

Q) The moist soil is _____ saturated soil.

A: Impartially

B: Fully

C: Dry

D: Partially

Q) A soil has a bulk density of 2.3 g/cm^3 and water content 15%, the dry density of soil sample is:

A: 2.0 g/cm^3

B: 1.5 g/cm^3

C: 1.0 g/cm^3

D: 2.5 g/cm^3

Q) The degree of saturation in soils can be defined as the ratio of

A: Water by weight to the dry soil weight

B: Volume of water to the gross volume of soil

C: Volume of water to volume of voids in soil

D: Weight of water to weight of soil

Q) The relative density of a soil is equal:

A: $\frac{\rho_{max} - \rho_{min}}{\rho_{max} - \rho} \times 100\%$

B : $\frac{\rho - \rho_{min}}{\rho_{max} - \rho_{min}} \times 100\%$

C : $\frac{\rho_{max}}{\rho} \times \left(\frac{\rho - \rho_{min}}{\rho_{max} - \rho_{min}}\right) \times 100\%$

D: $\frac{\rho_{max} + \rho}{\rho_{max} - \rho_{min}} \times 100\%$

Q) The unconfined compressive strength of a clay in un-disturbed and disturbed state was found to be 180 kN/sqm and 10 kN/sqm respectively. Based on sensitivity, the soil may be classified as:

A: In-sensitivity

B: Sensitivity

C: Quick clays

D: Extra sensitivity clays

Q) A soil having particles of approximately the same size is known as

A: Well graded

B: Poorly graded

C: Uniformly graded

D: Gap graded

Q) The ratio of a given volume change in a soil expressed as percentage of the dry volume, to the corresponding change in water content in called

A: Specific gravity of soil solids

B: Mass-specific gravity of soils

C: Shrinkage ratio of soils

D: Density ratio of soils

Q) A given soil sample has the folloing given size analysis

<2.00 mm – 80%

<0.66 mm – 60%

<0.005 mm – 30%

<0.002 mm – 2%

<0.005 mm – 10%

A: Skip graded

B: uniformly graded

C: Well graded

D: Average graded

Q) The gain in strength of soil with passage of time after it has been remoulded is known as:

A: Plasticity

B: Sensitivity

C: Activity

D: Thixotropy

Q) A soil has liquid limit of 70%, plastic limit of 30% and it has a natural moisture content of 50%. The liquidity index of a soil is

A: 1.5

B: 1

C: 0.5

D: 2

Q) Liquid limit test is performed on soil samples passing though IS sieve of size

[OPSC AE paper – II 2019]

A: 25 µ

B: 2 mm

C: 425 µ

D: 250 µ

Q) Silts have the following property

A: Plasticity

B: Limited plasticity

C: No plasticity

D: Elasticity

Q) Given that plasticity index (PI) of local soil is 15 and PI of sand is zero. For a desired PI of 6, the percentage of sand in the mix should be:

A: 70

B: 60

C: 40

D: 30

Q) An oven dried soil mass of 200 gm is placed in pycnometer and completely filled with water. Combined mass of bottle, soil and water is 1605 gm. Calculate specific gravity of soil if pycnometer with water alone has weight of 1480 gm-

A: 2.63

B: 2.65

C: 2.67

D: 2.69

Q) If the natural water content of soil mass lies between its liquid limit and plastic limit, the soil mass is said to be in

A: Liquid state

B: Plastic state

C: Semi-solid state

D: Solid state

Q) In hydrometer analysis for a soil mass

A: Both meniscus correction and dispersing agent correction are additive

B: Both meniscus correction and dispersing agent correction are subtractive

C: Meniscus correction is additive and dispersing agent correction is subtractive

D: Meniscus correction is subtractive and dispersing agent correction is additive

Q) Which of the following can be considered as quick clay?

A: Sensitivity = 0

B: Sensitivity = 1

C: Sensitivity = 100

D: Sensitivity = infinity

Q) In comparison to Atterberg limits of normal soil, the expansive soils which of the following :

(i) More liquid limit

(ii) Less plastic limit

(iii) Less shrinkage limit

(iv) More volumetric shrinkage

Select the correct answers using the codes given below:

A: (i), (ii), (iii) and (iv)

B: (i), (iii) and (iv)

C: (ii), (iii) and (iv)

D: (i), (ii) and (iv)

Q) Which of the following method is most accurate for the determination of the water content of soil:

A: Sand bath method

B: Calcium carbide method

C: Oven drying method

D: Pycnometer method

Q) If the consistency index of soil is in the range of 50-75% then the soil is said to be

A: Soft

B: Medium

C: Stiff

D: Hard

Q) 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

D : 1

Q) Flow index is-

A: The rate at which a soil mass loses its shear strength with an increase in water content.

B: The rate at which a soil mass gains its shear strength with an increase in water content.

C: The rate at which a soil mass loses its shear strength with a decrease in water content

D: The rate at which a soil mass gains its shear strength which a decrease in water content.

Q) Hydrometer is used for determination of

A: Specific gravity of liquids

B: Density of liquid

C: Particle size distribution of soil

D: Turbidity of water

Q) The minimum water content at which the soil retains its liquid state and also possesses a small shearing strength agents following, is known as

A: Liquid limit

B: Plastic limit

C: Shrinkage limit

D: Permeability limit

Q) Which of the following method is used to determine the water content?

A: Radiation method

B: Sieve analysis

C: Pipette method

D: Hydrometer method

Q) hat is the range of soil particle size to apply stokes law?

A: Greater than 0.2 mm

B: Between 0.2 mm to 0.0002 mm

C: Both 1 an d3

D: Less than 0.0002 mm

Q) According to IS classification, the range of silt size particles is-
[KPSC AE 2020]
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

Q) Soil classification chart was derived by:

[UPPSC STATE ENG. A.E. 2004 (I)]

A: Terzaghi

B: Mayerh off

C: Fellenious

D: Casagrande

Q) A soil has liquid limit of 40% and lies above the A-line when plotted on plasticity chart. As per IS soil classification, the ground symbol of the soil is:
[Rajasthan JEN (degree)Shift-II 2016]

A: CH

B: MH

C: MI

D: CI

Q) Which of the following are the uses of a particles size distribution curve for a coarse grained soils?

(i) For approximately assessing the coefficient of permeability

(ii) For approximately judging the compressibility of soil

(iii) To assess the susceptibility of soil to frost action

(iv) For assessing the mode of deposition of soil

[GPSC AE (CLASS 1 &2) 2019]

A: (i) and (ii)

B: (i), (ii) and (iii)

C: (i), (ii) and (iv)

D: (i), (ii), (iii), (iv)