Q:) Which of the following assumption of the Rankine theory of lateral earth pressure are correct?
1. The soil mass is semi-infinite, homogenous, dry and cohesion less.
2. The ground surface is a plane which may be horizontal or inclined.
3. The wall yields about the base and thus satisfies the deformation action for plastic equilibrium.

A : 1 and 2 only
B : 1 and 3 only
C : 1,2 and 3
D : 2 and 3 only

Q:) A bed consist of compressible clay of 4 m thickness with pervious sand on top and impervious rock at the bottom. In a consolidation test on an undisturbed specimen of clay from this deposit 90% settlement was reached in 4 hours. The specimen was 20 mm thick. The time for the building founded over this deposit to reach 90% of its final settlement will be

A : 91 years
B : 82 years
C : 73 years
D : 64 years

Q:) A 30 cm square bearing plate settles by 8 mm in the plate load test on cohesion less soil when the intensity of loading is 180 kN/m². The settlement of shallow foundation of 1.5 m square under the same intensity of loading will be nearly

A : 30 mm

B : 26 mm

C : 22 mm

D : 18 mm

Q:) The ratio of the horizontal stress to the vertical stress is called coefficient of

A : Active earth pressure
B : Passive earth pressure
C : Earth pressure
D : Plastic earth pressure

Q:) A canal of 4 m deep has side slopes of 1 : 1. The properties of the soil are c = 15 kN/m², ϕ = 15", e = 0.76 and G = 2.7. Taylor's stability number for that sudden drawdown = 0.136. The factor of safety with respect to cohesion in the case of sudden drawdown will be

A : 0.64

B : 1.43

C : 2.22

D : 3.01

Q:) Consider the following statements:

1. Relative compaction' is not the same as 'relative density'.

2. Vibrio floatation is not effective in the case of highly cohesive soils

3. Zero air void line' and '100% saturation line' are not identical.

Of these statements

A : 1 and 2 are correct

B : 1 and 3 are correct

C : 2 and 3 are correct

D : 3 alone correct

Q:)

Assertion (A): For a given soil, the optimum moisture content increases with the increase in comp active effort.

Reason (R): Higher the comp active effort, higher is the dry density at the same moisture content

Q:) Match List I (Roller type) with List II (Soil type) and select the correct answer:

List - I	List - II
A. Pneumatic roller	1. Cohesive and granular soils
B. Smooth wheeled roller	2.Plastic soils of moderate cohesion
C. Sheep foot roller	3. Cohesion less soils
D. Vibratory	4. Silty soils of low plasticity

Codes:

A : A-4, B-2, C-1, D-3
B : A-3, B-1, C-2, D-4
C : A-4, B-1, C-2, D-3
D : A-3, B-2, C-1, D-4

Q:) Soil is compacted at which one of the following when a higher compactive effort produces highest increase in dry density?

A : Optimum water content
B : Dry side of the optimum moisture content
C : Wet side of the optimum moisture content
D : Saturation moisture content

Q:)

Assertion (A) : The clay core of an earth dam is usually compacted on the wet side of OMC.

Reason (R) : Compaction on the wet side of OMC reduces permeability and prevents cracking in core.

Q:) Match List I with List II and select the correct answer using the code given below the lists

List - I	List - II
A. Smooth wheel rollers	1. Most suitable for compacting
B. Sheep foot rollers	2.Most suited for compacting
C. Pneumatic tyred rollers	3. Used for compacting soils in confined places
D. Rammers	4. Suitable for both cohesion less and cohesive soils.

Codes:

A : A-4, B-3, C-2, D-1
B : A-2, B-1, C-4, D-3
C : A-4, B-1, C-2, D-3
D : A-2, B-3, C-4, D-1

Q:) Match List I (Type of Soil) with List II(Compaction Equipment) and select the correct answer using the code given below the lists

List - I	List - II
A. Wet clays & silts	1. Smooth wheel rollers
B. Crushed rock	2.Vibrator
C. Fill soils	3. pneumatic tyred rollers
D. Sands	4. Grid rollers

Codes:

A : A-4, B-2, C-3, D-1
B : A-3, B-1, C-4, D-2
C : A-4, B-1, C-3, D-2
D : A-3, B-2, C-4, D-1

Q:) Consider the following statements:

1. Poorly graded or uniform sands compact to low dry unit weights.
2. Heavy clays with high plasticity have very low maximum dry unit weight. In clay soils, the maximum dry weight tends to decrease as plasticity increases.

Which of the above statements is/are correct?

A : 1, 2 and 3
B : 1 and 2 only
C : 2 and 3 only
D : 3 only

Q:) Consider the following statements:

1. In clay soils, the maximum dry unit weight tends to decrease as plasticity increases.

2. In clay soils, the maximum. dry unit weight tends to increase as plasticity Increases.

3 Heavy clays with high plasticity have the minimum dry unit weight and high OMC.

Which of the above statements are correct?

A : 1,2 and 3
B : 1 and 2 only
C : 2 and 3 only
D : 1 and 3 only

Q:)

Assertion (A) : In a compaction test, at Y_d max and OMC, the degree of saturation is never 100%.

Reason (R) : It is not possible to expel all the air entrapped in soil by compaction.

Q:) The field density and field moisture content of a soil can be determined by
1. Core cutter method
2. Sand replacement method
3. Proctor compaction test
4. Modified proctor compaction test

A : 1,2 3 and 4
B : 1 and 2 only
C : 2 and 3 only
D : 2 and 4 only

Q:) Consider the following statements:

1. Swelling is greater and shrinkage is less for clay compacted on the dry side of optimum.

2. Clays compacted on the dry-side of optimum are characterized by larger 28. strength.

3. An increase in organic content of clay soils causes an increase in optimum moisture content value.

Which of these statements are correct?

A : 1, 2 and 3
B : 1 and 2 only
C : 1 and 3 only
D : 2 and 3 only

Q:)

Statement (I) : The zero-air curve is non- linear

Statement (II) : The dry density at 100% saturation is a non-linear function of void ratio.

Q:) The specific gravity of a soil sample is 2.7 and its void ratio is 0.945. When it is fully saturated, the moisture content of the soil will be

A : 0.25

B : 0.3

C : 0.35

D : 0.4

Q:) A soil deposit has a void ratio of 1.0. If the void ratio is reduced to 0.60 by compaction, the percentage volume loss is

A : 0.1

B : 0.2

C : 0.3

D : 0.4