1. For conducting a Standard Proctor Compaction Test, the weight of hammer (P in kg), the fall of hammer (Q in mm), the number of blows per layer (R) and the number of layers (S) required are respectively

	P	Q	R	S
(a)	5.89	550	50	3
(b)	4.89	450	25	3
(c)	3.60	310	35	4
(d)	2.60	310	25	5

2. Sheep-foot rollers are recommended for compacting

(a) granular soils

(b) cohesive soils

(d) hard rock

(d) any type of soil

3. Consider the following statements:

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

2• Vibro 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

4. 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• Cohesionless soils
d• Vibratory roller	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

(d) A – 4, B – 1, C – 2, D – 3

(d) A – 3, B – 2, C – 1, D – 4

5. In a compaction test if the compacting effort is increased, it will result in

(a) Increase in maximum dry density and OMC

(b) Increase in maximum dry density but OMC remains unchanged

(c) Increase in maximum dry density and decrease in OMC

(d) NO change in maximum dry density but decrease in OMC

6. The following soils are compacted at the same compactive effort in the field. Which one of the following is the correct sequence in the increasing order of their maximum dry density?

(a) Silt clay - Clay - Sand - Gravel sand clay mixture

(b) Sand - Gravel sand clay mixture - Silty clay – Clay

(c) Clay - Silty clay - Sand - Gravel sand clay mixture

(d) Sand - Gravel sand clay mixture - Clay - Silty clay

7. Consider the following:

1• Increase in shear strength and bearing capacity
2• Increase in slope stability
3• Decrease in settlement of soil
4• Decrease in permeability

Which of the above with respect to compaction of soil is/are correct?

(a) 1 only

(b) 1 and 2 only

(c) 2 and 3 only

(d) 1,2, 3 and 4

8. 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

9. The field density and field moisture content of a soil can be determined by

1• Core cutter method

2• Sand replacement method

3• Sand replacement method

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

10. 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) 25%

(b) 30%

(c) 35%

(d) 40%

11. 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) 10%

(b) 20%

(c) 30%

(d) 40%

12. If during a permeability test on a soil sample with a falling head permeameter, equal time intervals are noted for drop of head from h, to h2 and again from h2 to h3' then which one of the following relations would hold good?

(a) h23 = h1 h2

(b) h22 = h1 h3

(c) h12 = h2 h3

(d) (h1 - h2) =(h2 - h3)

13. Due to rise in temperature, the viscosity and unit weight of percolating fluid are reduced to 70% and 90% respectively. Other things being constant, the change in coefficient of permeability will be

(a) 20.0%

(b) 28.6%

(c) 63.0%

(d) 77.8%

14. Consider the following statements:

1• Constant head permeameter is best suited for determination of coefficient of permeability of highly impermeable soils.

2• Coefficient of permeability of a soil mass decreases with increase in viscosity of the pore fluid.

3• Coefficient of permeability of a soil mass increases with increase in temperature of the fluid.

Of these statements

(a) 1 and 2 are correct

(b) 1 and 3 are correct

(c) 2 and 3 are correct

(d) 1, 2 and 3 are correct

15. In a two-layer soil system, the top soil and bottom soil are of same thickness but the coefficient of permeability of the top soil is twice that of the bottom soil of coefficient of permeability 'k'. When horizontal flow occurs, the equivalent coefficient of permeability of the system will be

(a) 2k

(b) 1.5 k

(c) 1.25 k

(d) 1.2 k