Q 1 Bearing capacity of a soil strata supporting a footing of size 3 m x 3 m will not be affected by the presence of ground water table located at a depth which is

(a) 1.0 m below the base of the footing

(b) 1.5 m below the base of the footing

(c) 2.5 m below the base of the footing

(d) 3 m below the base of the

Q 2 A rectangular footing 1 m x 2m is placed at a depth of 2m in a saturated clay having an unconfined compressive strength of 100 kN/ m2. According to Skempton, the net ultimate bearing capacity is

(a) 420 kN/m2

(b) 412.5 kN/m2

(c) 385 kN/m2

(d) 350 kN/m2

Q 3 Consider the following statement associated with local shear failure of soils.

1• Failure is sudden with well defined ultimate load.

2• This failure occurs in highly compressible soils.

3• Failure is preceded by large settlement.

Of these statements

(a) 1, 2 and 3 are correct

(b) 1 and 2 are correct

(c) 2 and 3 are correct

(d) 1 and 3 are correct

Q 4 A rectangular footing L x 8 is to be placed at a depth D below ground level such that D 1 8 < 2.5. The factor NC to be used in deciding on the footing as given by skempton is calculated using the equation (where NCR = NC for rectangular footing, NCS = NC at surface)

A. NCR = 1.5 NCS

B. NCR = $(1+0.2\frac{D}{B})\,N_{CS}$

C. NCR = $(1+0.2\frac{B}{L})\,N_{CS}$

D. NCR = $(1+0.2\frac{B}{L})\,(1+0.2\frac{D}{L})\,N_{CS}$

Q 5 As per Terzaghi's equation, the bearing capacity of strip footing resting on cohesive soil (c = 10 kN/m2) for unit depth and unit width (assume NC as 5.7) is

(a) 47 kN/m2

(b) 57 kN/m2

(c) 67 kN/m2

(d) 77 kN/m2

Q 6 Influence factor for immediate settlement of footing depends on its

(a) Size and shape

(b) Rigidity alone

(c) Location and size

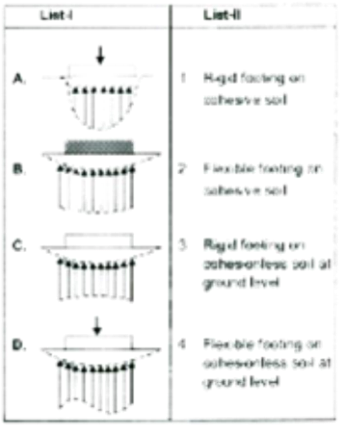
(d) Size, shape, rigidity and location

Q 7 Match List-I (in-situ test) with List-II (Measurement) and select the correct answer:

	List – I		List – II
A•	SPT test	1•	Penetration resistance (N value)
B•	Plate load test	2•	Load settlement data
C•	Field vane shear test	3•	Point resistance and skin friction
D•	CPT test	4•	In situ shear strength

Codes ;
A• A – 1, B – 2, C – 4, D – 3
B• A – 1, B – 2, C – 3, D – 4
C• A – 2, B – 1, C – 3, D – 4
D• A – 2, B – 1, C – 4, D – 3

Q 8 Match List-I (Contact pressure distribution diagrams) with List-II (Description of footings) and select the correct answer:



Q 9 Match List-I (Field test) with List-II (Property) and select the correct answer using the codes given below the lists:

	List – I		List – II
A•	Pumping test	1•	Bearing capacity
B•	Plate load test	2•	load carrying capacity
C•	Pile load test	3•	Permeability

Codes ;
A• A – 1, B – 2, C – 3
B• A – 3, B – 1, C – 2
C• A – 2, B – 3, C – 2
D• A – 3, B – 2, C – 1

Q 10 In a plate load test on sandy soil, the test plate of 60 cm x 60 cm undergoes a settlement of 5 mm at a pressure of 12 x 104 N/m2. What will be the expected settlement of 3 m x 3 m footing under same pressure?

(a) 25 mm

(b) 20 mm

(c) 15mm

(d) 9 mm

Q 11 The contact pressure distribution under a rigid footing on a cohesionless soil would be

(a) Uniform throughout

(b) Zero a centre and maximum at edges

(c) Zero at edges and maximum at centre

(d) Maximum at edges and minimum at centre

Q 12 A plate load test is conducted on a cohesionless soil with a test plate having width Bp (cm) and settlement of this plate Sp (cm) is obtained at the same load intensity as on' foundation. A footing having a width Bf (cm) is to be constructed as foundation. What is the settlement Sf (cm) experienced by this footing?

(a) Sf = Sp {[Bf (Bp+30)] /[Bp (Bf +30)]} 2

(b) Sf = Sp {[Bp (Bf + 30)] /[Bf (Bp + 30)}2

(c) Sf = Sp [Bf / Bp]

(d) Sf = Sp [Bp / Bf]

Q 13 In case of footing on the surface or shallow depth is very dense sand, which one of the following types of failure is likely to occur?

(a) Punching shear failure

(b) Local shear failure

(c) General shear failure

(d) Any of the above three

Q 14 The bearing capacity factors Nc' Nq and NY are functions of

(a) Width and depth of footing

(b) Density of soil

(c) Cohesion of soil

(d) Angle of internal friction of soil

Q 15 In which one of the following zones is a logarithmic spiral shape of failure surface assumed in the case of bearing capacity analysis of C φ soils?

(a) Active zone

(b) Passive zone

(c)Radial shear stress

(d) Surcharge zone

Q 16 Consider the following statements:

1• Initial load tests and routine tests are carried out on test piles and working piles, respectively.
2• A cyclic load test is performed to determine a pile's skin resistance and base resistance separately.
3• In a pile load test, the safe load is taken as half the final load at which the settlement equals 10% of pile diameter.
Which of the statements given above are correct?

(a) 1,2 and 3

(b) Only 1 and 2

(c) Only 2 and 3

(d) Only 1 and 3

Q 17 Consider the following statements:

1• The bearing capacity of a footing on clay does not significantly get altered by the presence of water table
2• The bearing capacity of a footing on saturated clay (4) = 0) is a function of its size.
Which of the statements given above is/are correct?

(a) 1 only

(b) 2 only

(c) Both 1 and 2

(d) Neither 1 nor 2

Q 18 Consider the following statements in respect of static cone penetration test :

1• Cone used has an apex angle of 60° and base area of 10 cm.
2• This test gives a continuous record of cone resistance.
Which of the statements given above is/are correct?

(a) 1 only

(b) 2 only

(c) Both 1 and 2

(d) Neither 1 nor 2

Q 19 Match List-I (Field Test) with List-II (Suitability) and select the correct answer using the code given below the lists:

List – I	List – II
A• Plate load test test	1• To estimate bearing capacity of granular soil Standard penetration
B• Standard penetration	
C• Vane shear test	2• To estimate in situ strength of soft clay
D• Dilatancy test	3• To identify silt from clay
	4• To estimate bearing capacity for permissible settlement in clays

Codes :
A• A – 2, B – 4, C – 1
B• A – 4, B – 2, C – 1
C• A – 4, B – 2, C – 3
D• A – 2, B – 4, C – 3

Q 20 If an SPT test gave the average blow count of 32 in fine sand below water table, then what is the corrected value of blow count?

(a) Active zone

(b) Passive zone

(c)Radial shear stress

(d) Surcharge zone