Program: BE -Civil Engineering

Curriculum Scheme: Revised 2016

Examination: Third Year Semester VI

Course Code: CEC601 and Course Name: GEOTECHNICAL ENGINEERING-II

Time: 1 hour Max. Marks: 50

==========

==========

Note to the students:- All the Questions are compulsory and carry equal marks .

Q1.	Which of the following clays behave like a dense sand
Option A:	Normally consolidated clay
Option B:	Under consolidated clay
Option C:	Over consolidated clay with a low OCR
Option D:	Over consolidated clay with a high OCR
Q2.	The time for a clay layer to achieve 90 % consolidation is 15 years. The time required to achieve 90% consolidation, if the layer were twice as thick, 3 times more permeable and 4 times more compressible would be
Option A:	70 years
Option B:	75 years
Option C:	80 years
Option D:	85 years
Q3.	The aim of doubling the pressure each time in the consolidation test is to see that the soil is always
Option A:	Over consolidated condition
Option B:	Normally consolidated condition
Option C:	Under consolidated condition
Option D:	remains saturated
Q4.	A direct shear test was conducted on a cohesionless soil (c = 0) specimen under a normal stress of 200kN/m2. The specimen failed at a shear stress of 100 kN/m2. The angle of internal friction of the soil (degree) is
Option A:	26.6
Option B:	29.5
Option C:	30.0
Option D:	32.6
Q5.	In a plot between normal stress on X axis and shear stress on Y axis, if the failure envelope passes through the origin and has an angle of shearing resistance, it indicates

Option A:	Cohesive soil
Option B:	Cohesionless soil
Option C:	Pure clay
Option D:	Plastic soil
Q6.	The triaxial test in which the drainage of the specimen is permitted in both consolidation stage and shearing stage is called
Option A:	Unconsolidated Undrained test
Option B:	Consolidated Undrained test
Option C:	Consolidated Drained test
Option D:	Unconsolidated Drained test
Q7.	What will be the factor of safety with respect to cohesion of a clay slope laid at 1 in 2 to a height of 10 m, if the angle of internal friction $\varphi = 10°$; $c = 25\ kN/m^2$ and $\gamma = 19\ kN/m^3$?
Option A:	4.34
Option B:	2.06
Option C:	1.02
Option D:	3.06
Q8.	The depth factor D_f for toe failure is _____
Option A:	$D_f > 1$
Option B:	$D_f < 1$
Option C:	$D_f = 1$
Option D:	$D_f = 0$
Q9.	The following assumption is not made for the friction circle method of slope stability analysis
Option A:	Friction is fully mobilized
Option B:	Total stress analysis is applicable
Option C:	The resultant is tangential to the friction circle
Option D:	The resultant passes through the centre of friction circle
Q10.	Assumption of Rankines theory of earth pressure that the back of the wall is
Option A:	Plane and Rough
Option B:	Vertical and Rough
Option C:	Plane and Smooth
Option D:	Vertical and Smooth
Q11.	If the no movement of the wall from the back fill then the pressure acting on the retaining wall is
Option A:	Active Earth pressure
Option B:	Passive Earth pressure
Option C:	Positive earth Pressure
Option D:	At Rest earth pressure

Q12.	What is the value of active earth pressure at the base of retaining wall when water table at ground surface? Where, K_a coefficient of active earth pressure, γ' == unit weight of submerged soil, H is height of retaining wall, $\gamma_w$is unit weight of water
Option A:	$P_a= K_a\ \gamma'\ H + \gamma_w\ H$
Option B:	$P_a= K_a\ \gamma'\ H - \gamma_w\ H$
Option C:	$P_a= 2C\ K_a\ \gamma'\ H + \gamma_w\ H$
Option D:	$P_a= C\ K_a\ \gamma'\ H + \gamma_w\ H$
Q13.	Active pressure in soil is associated with
Option A:	Lateral expansion of the soil
Option B:	Lateral compression of the soil
Option C:	Zero lateral strain
Option D:	Zero lateral stress
Q14.	The earth pressure behind a bridge abutment is
Option A:	Active
Option B:	Passive
Option C:	At rest
Option D:	Constant Always and everywhere
Q15.	The lateral earth pressure coefficient of a soil, K_a for active state, K_p for passive state and K_o for at rest state condition, compare as
Option A:	$K_a < K_o < K_p$
Option B:	$K_o < K_p < K_a$
Option C:	$K_p < K_a < K_o$
Option D:	$K_p < K_o < K_a$
Q16.	A strip footing is resting on the ground surface of a pure clay bed having an undrained cohesion Cu. The ultimate bearing capacity of the footing is equal to
Option A:	2πCu
Option B:	πCu
Option C:	(π+1) Cu
Option D:	(π+2) Cu
Q17.	If the angle of internal friction is 20° then what type of shear failure is expected
Option A:	General Shear Failure
Option B:	Local Shear Failure
Option C:	Punching Shear Failure
Option D:	Mixed Shear Failure
Q18.	The permissible settlement is maximum in case of
Option A:	Isolated footing on clay
Option B:	Raft on sand
Option C:	Isolated footing on sand
Option D:	Raft on clay

Q19.	If the ratio of width of foundation to width of plate is 5 times the ratio of corresponding settlement in clayey soil is
Option A:	1:1
Option B:	1:5
Option C:	1.5:1
Option D:	5:1
Q20.	The observed value of N in static cone penetration test is corrected by _____
Option A:	Overburden and Dilatancy /submergence
Option B:	Effective pressure
Option C:	Pore pressure
Option D:	No correction required
Q21.	According to IS code, there are _____ types of failures of soil support beneath the foundation
Option A:	2
Option B:	4
Option C:	3
Option D:	5
Q22.	The piles that are used for protecting structures from ships and floating object is _____
Option A:	Anchor piles
Option B:	Fender piles
Option C:	Compaction piles
Option D:	Batter piles
Q23.	When a pile hammer hits the pile, the total driving energy is equal to _____
Option A:	Weight of hammer times the height of the drop
Option B:	Weight of the ramming time times the height of the stroke
Option C:	Sum of the impact of the ram
Option D:	Sum of the impact of ram plus the energy delivered by the explosion
Q24.	Settlement of Pile group in clay can be computed on assumption that
Option A:	The Clay contained between the Bottom of the piles and their lower third point is in-compressible
Option B:	The Clay contained between the top of the piles and their lower third point is in-compressible.
Option C:	The Clay contained between the top of the c piles and their lower third point is compressible
Option D:	The Clay contained between the top of the c piles and their lower fourth point is in-compressible
Q25.	Which pile is used to resist horizontal pull of structure?

Option A:	Sheet Pile
Option B:	Fender Pile
Option C:	Anchor Pile
Option D:	Batter Pile