

Program: BE Civil Engineering

Curriculum Scheme: Revised 2016

Examination: Third Year Semester V

Course Code: CEC 502 and Course Name: Geotechnical Engineering I

Time: 1 hour

Max. Marks: 50

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

Q1.	Dry unit weight and water content of soil is 15KN/m^3 and 15% respectively. Find Bulk unit weight of soil in KN/m^3 is
Option A:	17.25
Option B:	18.25
Option C:	16.35
Option D:	19.35
Q2.	The particle of coarse-grained are composed of
Option A:	Primary minerals
Option B:	Non-clay minerals
Option C:	Clay minerals
Option D:	Crystalline minerals
Q3.	Soil formation by physical disintegration does not include
Option A:	Temperature changes
Option B:	Wedging Action of Ice
Option C:	Hydration
Option D:	Abrasion
Q4.	Cohesionless soils are formed due to
Option A:	Physical disintegration
Option B:	Oxidation
Option C:	Hydration
Option D:	Chemical Decomposition
Q5.	The most accurate method of determination of water content in the laboratory is
Option A:	Sand bath method
Option B:	Pycnometer method
Option C:	Calcium carbide method
Option D:	Oven-drying method
Q6.	Porosity is defined as
Option A:	V_v/V_s

Option B:	V_v/V
Option C:	V_s/V_v
Option D:	V/V_v
Q7.	The toughness index (I_t) is defined by the ratio of
Option A:	$I_t = W_p/I_p$
Option B:	$I_t = I_p/I_f$
Option C:	$I_t = I_f/I_p$
Option D:	$I_t = W_u/I_f$
Q8.	Apparatus used to test liquid limit of a soil is
Option A:	Mohr
Option B:	Casagrande
Option C:	Otto
Option D:	Terzaghi
Q9.	The depth of the groove cut by Casagrande tool for determining the liquid limit is
Option A:	10 mm
Option B:	11.0 mm
Option C:	2 mm
Option D:	8 mm
Q10.	What is the diameter of the sieve that is used for finding the liquid limit?
Option A:	275 microns
Option B:	700 microns
Option C:	425 microns
Option D:	200 microns
Q11.	The shape of particle size curve, which is represented by the coefficient of curvature (C_c) is given by
Option A:	$C_c = (D_{30})^2/[D_{10} \times D_{40}]$
Option B:	$C_c = (D_{40})^2/[D_{10} \times D_{30}]$
Option C:	$C_c = (D_{30})^2/[D_{10} \times D_{60}]$
Option D:	$C_c = D_{60}/D_{10}$
Q12.	The coefficient of uniformity (C_u) is the ratio of
Option A:	D_{60} and D_{10}
Option B:	D_{30} and D_{10}
Option C:	D_{10} and D_{30}
Option D:	D_{60} and D_{30}
Q13.	The D_{10} represents a size, such that the particles finer than this size are
Option A:	20%
Option B:	60%
Option C:	10%
Option D:	100%

Q14.	The recommended time interval in pipette analysis is
Option A:	1/2,1,2,4,8,15, and 30 min
Option B:	2,4,6,12,20 and 30 min
Option C:	1,8,16,24 min
Option D:	24,30,34,40,46 min
Q15.	What is the effect of adsorbed water on the permeability of soil?
Option A:	Structural arrangement is varied
Option B:	Reduced degree of saturation
Option C:	Size of the particles is diminished
Option D:	Reduces the pore size
Q16.	According to theory of flow of fluids through porous medium, the saturated porous medium is
Option A:	Compressible
Option B:	Incompressible
Option C:	Moderately compressible
Option D:	Highly compressible
Q17.	The loss of head per unit distance in soil is called
Option A:	Velocity potential
Option B:	Hydraulic gradient
Option C:	Velocity gradient
Option D:	Stream function
Q18.	The permeability of soil varies
Option A:	Inversely as square of grain size
Option B:	As square of grain size
Option C:	As grain size
Option D:	Inversely as void ratio
Q19.	The coefficient of permeability of a soil
Option A:	Increases with an increase in temperature
Option B:	Increases with a decrease in temperature
Option C:	Increases with a decrease in unit weight of water
Option D:	Decrease with an increase in void ratio
Q20.	In a falling head permeameter test on a silty clay sample, the following results were obtained: sample length 12mm, sample diameter 80mm, initial head 1200mm, final head 400 mm, time for fall in head 6 mins, stand pipe diameter 4mm. Find the coefficient of permeability of the soil in mm/sec.
Option A:	9.159 e-06 cm/sec
Option B:	9.159 e-05 cm/sec
Option C:	9.159 e-04 cm/sec

Option D:	9.159 e-05 mm/sec
Q21.	Condition of a flow in which a vertical upward seepage flow causes soil to lose its shear strength and causes soil particles to move up in the direction of flow is known as
Option A:	Capillary Action
Option B:	Quick Sand Condition
Option C:	Condition of Permeability
Option D:	Condition of Seepage
Q22.	For design of retaining walls due to the presence of backfill it is necessary to determine
Option A:	Erosion
Option B:	Lateral Pressure
Option C:	Surcharge
Option D:	Lateral Stress
Q23.	Mass of standard proctor hammer is
Option A:	2.8 kg
Option B:	2.6 kg
Option C:	3 kg
Option D:	2.1 kg
Q24.	Soil compacted dry of the optimum as compared to that wet of the optimum
Option A:	has less permeability
Option B:	swells less
Option C:	shrinks less
Option D:	has less resistance to compression
Q25.	If a soil sample has a dry unit weight of 19.5 KN/m^3 , moisture content of 8% and a specific gravity of solids particles is 2.67. Calculate void ratio and saturated unit weight
Option A:	0.45 , 30 KN/m^3
Option B:	0.54 , 17.5 KN/m^3
Option C:	0.34 , 21.5 KN/m^3
Option D:	0.56 , 25 KN/m^3