

# University of Mumbai

## Examination 2020

Program: BE Civil Engineering

Curriculum Scheme: Revised 2016

Examination: Third Year Semester V

Course Code: CE-C502 and Course Name: Geotechnical Engineering-I

Time: 1 hour

Max. Marks: 50

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

Q1.	Water transported soils are termed as
Option A:	Aeoline
Option B:	Alluvial
Option C:	Colluvial
Option D:	Till
Q2.	The ratio of the volume of voids to the total volume of soil is
Option A:	Voids ratio.
Option B:	Degree of saturation.
Option C:	Air content.
Option D:	Porosity
Q3.	A soil has a bulk density of 1.80 g/cc at water content of 5%. If the void ratio remain constant then the bulk density for water content of 10% will be
Option A:	2.1 g/cc
Option B:	1.88 g/cc
Option C:	1.82 g/cc
Option D:	1.95 g/cc
Q4.	The most accurate method for the determination of water content in the laboratory is
Option A:	Sand bath method
Option B:	Oven-drying method
Option C:	Pycnometer method
Option D:	Calcium Carbide method
Q5.	A borrow material with in-situ dry unit weight of 16 KN/m <sup>3</sup> is to used in the construction of highway embankment. The wet unit weight of compacted soil in the embankment is 19.6 KN/m <sup>3</sup> with water content 15%. Volume of embankment is 50000 m <sup>3</sup> . Then volume of borrow pit is
Option A:	53294.00 m <sup>3</sup>
Option B:	53304.30 m <sup>3</sup>
Option C:	53280.30 m <sup>3</sup>
Option D:	53310.00 m <sup>3</sup>

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Q6.	Toughness index of soil is the ratio of
Option A:	Plasticity index to the flow index
Option B:	Liquidity index to the flow index
Option C:	Consistency index to the flow index
Option D:	Shrinkage index to the flow index
Q7.	The mass and volume of saturated clay specimen were 29.8 gm and 17.7 cm <sup>3</sup> respectively on oven drying the mass reduced to 19 gm and volume 8.9 cm <sup>3</sup> . calculate shrinkage limit.
Option A:	10.10 %
Option B:	9 %
Option C:	9.50 %
Option D:	10.52 %
Q8.	A soil sample has LL=45% PL =25% for natural water content of 30% the consistency index will be
Option A:	75 %
Option B:	50 %
Option C:	40 %
Option D:	25%
Q9.	The minimum water content at which the soil just begins to crumble when rolled into threads 3 mm in diameter, is known
Option A:	Liquid limit
Option B:	Plastic limit
Option C:	Shrinkage limit
Option D:	Permeability limit
Q10.	A soil having D <sub>10</sub> =0.14, D <sub>30</sub> =0.33 and D <sub>60</sub> =1 calculate coefficient of curvature
Option A:	0.77
Option B:	0.9
Option C:	1.4
Option D:	2.2
Q11.	The particle size distribution curve with a hump is obtained for a
Option A:	Uniform soil
Option B:	Well-graded soil
Option C:	Gap-graded soil
Option D:	Poorly-graded soil
Q12.	According to IS classification system, the soils can be classified in to.....groups
Option A:	15
Option B:	18
Option C:	3

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Option D:	7
Q13.	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 void ratio
Q14.	The maximum size particle size for which Darcy's law is applicable is
Option A:	0.2 mm
Option B:	0.5 mm
Option C:	1 mm
Option D:	2 mm
Q15.	A constant head permeameter is used for
Option A:	Coarse grained soils
Option B:	Silty soils
Option C:	Clayey soils
Option D:	Organic soils
Q16.	The space between two adjacent flow lines is called as
Option A:	Flow channel
Option B:	Flow line
Option C:	Equipotential line
Option D:	Flow net.
Q17.	A soil has discharge velocity of $6 \times 10^{-7}$ m/s and a void ratio of 0.50. Its seepage velocity is
Option A:	$18 \times 10^{-7}$ m/s
Option B:	$12 \times 10^{-7}$ m/s
Option C:	$24 \times 10^{-7}$ m/s
Option D:	$36 \times 10^{-7}$ m/s
Q18.	In a pumping-out test, the drawdown is 5m. if the coefficient of permeability of the soil is $10^{-4}$ m/s, the radius of influence will be about
Option A:	250 m
Option B:	300 m
Option C:	150 m
Option D:	200 m
Q19.	At construction site 3m thick clay layer with unit weight 20 KN/m <sup>3</sup> then total stress at 3m depth will be
Option A:	62 KN/m <sup>2</sup>
Option B:	60 KN/m <sup>2</sup>

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Option C:	60.5 KN/m <sup>2</sup>
Option D:	61 KN/m <sup>2</sup>
Q20.	A sand deposit 10m thick with unit weight 20KN/m <sup>3</sup> then effective stress at 10m depth will be
Option A:	100KN/m <sup>2</sup>
Option B:	150KN/m <sup>2</sup>
Option C:	200KN/m <sup>2</sup>
Option D:	300KN/m <sup>2</sup>
Q21.	The line of optimums generally corresponds to percentage air void of about
Option A:	0 %
Option B:	5 %
Option C:	10 %
Option D:	20 %
Q22.	Higher density and lower Optimum moisture content is easily achieved by
Option A:	Coarse grained soil
Option B:	Fine grained soil
Option C:	Cohesionless soil
Option D:	Saturated soil
Q23.	The standard penetration is useful to measure
Option A:	Shear strength of soft clay
Option B:	Shear strength of sands
Option C:	Consistency of clays
Option D:	Permeability of clays
Q24.	For standard proctor test the mass of hammer and the drop of hammer are as follows:
Option A:	2.6 kg and 450 mm
Option B:	2.6 kg and 310 mm
Option C:	4.8 kg and 310 mm
Option D:	4.89 kg and 450 mm
Q25.	The maximum dry density of sample by the light compaction test is 1.78 g/ml at an optimum water content of 15%. Take specific gravity of solids =2.67 find the degree of saturation
Option A:	70.1 %
Option B:	80.1 %
Option C:	90.1 %
Option D:	50.1 %