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(Revision – 2021)

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Reg. No……
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DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/ MANAGEMENT/COMMERCIAL PRACTICE, APRIL – 2025

GEOTECHNICAL ENGINEERING

[Maximum Marks: **75**] [Time: **3** Hours]

PART-A

I. Answer '*all*' the following questions in one word or one sentence. Each question carries *'one'* mark.

(9 x 1 = 9 Marks)

		Module Outcome	Cognitive level
1.	Soil Transported from their origin and deposited through still water like lakes are called.....	M1.01	R
2.	A soil with consistency index of zero is at.....limit.	M1.04	R
3.	State Darcy's law.	M2.02	R
4.	In a relatively more permeable soil..... method of permeability test is most suited.	M2.02	R
5.	Name the field test adopted for computing the shear strength of soft clays.	M2.04	R
6.	List any two-field method of compaction.	M3.03	R
7.	Define consolidation of soil.	M3.04	R
8.	List the two geophysical methods of soil exploration.	M4.03	R
9.	List any two-field method to compute the bearing capacity of the soil.	M4.06	R

PART-B

II. Answer any '*eight*' questions from the following. Each question carries *'three'* marks.

(8 x 3 = 24 Marks)

		Module Outcome	Cognitive level
1.	Sketch three phase system of soil mass and represent the parameters.	M1.02	R
2.	List the factors affecting permeability.	M2.01	R
3.	Describe Mohr-Coulomb failure theory.	M2.03	U
4.	Detail the procedure for conducting vane shear test.	M2.04	U
5.	Describe stages of consolidation.	M3.04	U
6.	List methods adopted for Field compaction.	M3.03	R
7.	Distinguish compaction and consolidation of soil.	M3.05	U
8.	List the objectives of soil investigation.	M4.01	R
9.	Differentiate disturbed and undisturbed samples in soil exploration.	M4.02	U
10.	Define terms- **(1)** Gross safe bearing capacity **(2)** Ultimate bearing capacity **(3)** Net safe bearing capacity.	M4.04	R

PART-C

Answer '*all*' questions from the following. Each question carries *'seven'* marks.

(6 x 7 = 42 Marks)

		Module Outcome	Cognitive level
III.	A soil specimen has a water content of 10% and a wet unit weight of 20kN/m. If the specific gravity of the solid is 2.7, determine the dry unit weight, voids ratio and degree of saturation. Take - $10kN/m^2$.	M1.02	A
	OR		
IV.	Explain the procedure for finding field density of soil by sand replacement method.	M1.03	U
V.	A fully saturated clay has a water content 30% and bulk unit weight at 18.64 kN/m. After drying the dry unit weight is 17.66 kN/m. Find: **(i)** The specific gravity of soil **(ii)** Shrinkage limit for the clay.	M1.02	A
	OR		
VI.	Explain the procedure for determining liquid limit.	M1.04	U
VII.	Describe falling head method for finding permeability of soil.	M2.02	U
	OR		
VIII.	Explain Procedure for determining the shear strength by vane Shear test.	M2.04	U
IX.	Discuss the different field methods of compaction.	M3.03	U
	OR		
X.	Explain the Plate load test with neat sketch.	M3.04	U
XI.	Describe the Split Spoon Sampler and its use.	M4.03	U
	OR		
XII.	Explain the parts of a well foundation.	M4.08	U
XIII.	Illustrate different types of shallow foundations with sketches.	M4.08	U
	OR		
XIV.	Explain the procedure for determination bearing capacity of soil by Standard Penetration test.	M4.06	U

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