22404

1242: 3 Ho	5 ours	/	70	Marks	Sea	t No								
Instru	ctions	_	(1)	All Question	is are Con	npulso	ry.							
	(2) Illustrate your answers with neat sketcher necessary.									hes	wł	nere	ever	
			(3)	Figures to the right indicate full marks.										
			(4)	Assume suit	able data,	if neo	cessa	ary.						
			(5)	Use of Non- Calculator is	-programm permissil	nable 1 ple.	Elect	tron	ic]	Poc	ket			
			(6)	Mobile Phor Communicat Examination	ne, Pager ion device Hall.	and	ny c not	other per	r E mis	lect ssibl	roni le i	ic n		
													Ma	rks
1.	Atter	npt	any	<u>FIVE</u> of th	e followin	ıg:								10
a)	Defin	le s	oil a	s per I.S. 28	09–1972.									
b)	Define geology and state it's branches.													
c)	Defin	le v	void 1	ratio and bull	k unit wei	ight.								

- d) Define _
 - i) Ultimate bearing capacity.
 - ii) Safe bearing capacity.
- e) Enlist the methods of soil stabilization.
- f) Define liquid limit and plastic limit of soil.
- g) State the necessity of site investigation.

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Marks

2. Attempt any THREE of the following :

- a) Explain step by step procedure for determination of bulk unit weight and dry unit weight by core cutter method.
- b) Calculate coefficient of uniformity and coefficient of curvature for a soil sample for which $D_{10} = 0.430 \text{ mm}$, $D_{30} = 0.790 \text{ mm}$, and $D_{60} = 1.300 \text{ mm}$.
- c) Explain
 - i) Cohesion
 - ii) Internal friction
- d) Define Rock and explain the classification of rock based on mode of origin.

3. Attempt any THREE of the following :

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- a) Define flow net and state its characteristics with neat sketch.
- b) State the assumptions made in Rankine's theory.
- c) State any four assumptions made in Terzaghi's analysis if bearing capacity of soil.
- d) Explain the effect of water table on the bearing capacity of soil.

4. Attempt any THREE of the following :

- a) Differentiate between active and passive earth pressure.
- b) Explain various field identification tests of soil.
- c) Differentiate between compaction and consolidation with eight points.
- d) Explain determination of coefficient of permeability by constant head method.
- e) A soil sample is tested in constant head permeameter, dia of sample is 4 cm and length is 10 cm under constant head 15 cm discharge was found to be 70 cc in 10 mins. Find coefficient of permeability.

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5. Attempt any TWO of the following :

- a) Explain the various field application of geotechnical engineering in details.
- b) Explain mechanical sieve analysis for grading of soil and Draw particle size distribution curve.
- c) A soil sample of volume 160 cc, weight 304 gms. When partially saturated. It weight 269.28 gms, when fully dry specific gravity of soil is 2.64. Determine porosity, voids ratio, water content and degree of saturation.

6. Attempt any TWO of the following :

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- a) Explain the direct shear test to determine shear strength of soil with neat sketch.
- b) Following observation were made using standard proctor test on a soil sample.

Bulk density (9 m/cc)	1.75	1.95	2.10	2.20	2.15	2.05
Water content (%)	5	10	15	20	25	30

Determine OMC and MDD by plotting compaction curve on graph.

c) State field method of compactions and explain suitability of various compaction equipment.