SHAMBHUNATH INSTITUTE OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF CIVIL ENGINEERING

Subject: Geotechnical Engineering

Subject code RCE-501

Basic job of a civil engineer is to design a structure safe in all conditions where soil plays a very vital role . In practical practice there maybe too much variation in soil proprties which an engineer as to face . So in this subject we study the different conditions an methods to deal with it.

Unit Number	Topic number	Topic covered	lecture number	refference books
UNIT 1	1	Origin and Classification	1	Geotechnical Engineering by KR Arora, Gopal ranjan
	2	Soil formation	2	
	3	Transport and deposit	3	
	4	Soil composition	4	
	5	Basic Definations	5	
	6	Weight Volume relationships	6	
	7	Clay minerals	7	
	8	Soil structure	8	
	9	Index properties	9	
	10	Sensitivity and thixotropy	10	
	11	Particle size analysis	11	
	12	Unified and indian standard soil classification	12	
UNIT 2	1	Total stress in soil	13	
	2	effective stress in soil	14	
	3	neutral stress	15	
	4	darcy law	16	
	5	Hydraulic conductivity	17	
	6	Equivalent hydraulic conductivity in stratified soil	18	
	7	seepage through dam	19	
	8	capillarity	20	
	9	critical hydraulic gradient	21	
	10	quick sand condition	22	
	11	uplift pressure	23	
	12	piping	24	
UNIT 3	1	soil compaction	25	
	2	water content dry unit weight relationship	26	
	3	factors controlling compaction	27	
	4	field compaction equipment	28	
	5	field compaction control	29	
	6	proctorneedle method	30	
	7	primary consolidation	31	
	8	secondary consolidation	32	
	9	terzaghis one d theory	33	
	10	consolidation test	34	
	11	normal over consolidated soil	35	
	12	determination of coefficent of consolidation	36	
	13	contact pressure	37	
UNIT 4	1	Mohr coulumb failure criteria	38	
	2	shear strength parameters and determination	39	
	3	direct and tri-axial shear test	40	
	4	unconfined compression test	41	
	5	pore pressure	42	
	6	skempton's pore pressure coeffiecient	43	
	7	classical theory of earth pressure	44	
	8	coulumb approach	45	
	9	rankine approach	46	
	10	inclined backfill	47	
	11	graphical method	48	
	12	stability of slopes	49	
	13	culman method	50	
	14	method of slices	51	
	15	stability number and chart	52	
UNIT 5	1	bearing capacity of shallow foundation	53	
	2	SPT	54	
	3	Plate load test	55	
	4	Effect of water table	56	
	5	Types of piles	57	
	6	static and dynamic formulae	58	
	7	pile group	59	
	8	settlement of group	60	
	9	negetive skin friction	61	
		Total number of lectures	61	

Aims and objectives reached:

Teachers signature		Hod Signature