

Chapter 1:	Selection of foundation and Sub-soil exploration / investigation
1	Describe salient features of a good sub soil investigation report. Summer 2018
2	In which conditions the raft foundation is preferred? Summer 2018
3	What are the limitations of plate load test? How plate load test differs from the standard penetration test? Summer 2018
4	What do you understand by site investigation? What are the different purposes for which site investigations are made? Winter 2017
5	Discuss the various factors affecting sample disturbance. Winter 2017
6	Describe plate load test with neat sketches. Winter 2017
7	Enlist methods of sub-soil exploration & explain any one method in detail. Summer 2017
8	Discuss various types of soil samplers with neat sketch. Summer 2017
9	Explain penetration tests and their outcomes. Summer 2017
10	Give the comparison between disturbed and un disturbed samples. Summer 2017

CHAPTER 2: SHALLOW FOUNDATION: PART-1

1	Discuss various types of shallow foundation with neat figures. SUMMER 2017
2	Write short note on: (a) Raft foundation (b) Grillage foundation. SUMMER 2017
3	Discuss the effect of water table on bearing capacity of soil mass. SUMMER 2018
4	Describe the Skempton's analysis for bearing capacity of cohesive soil. SUMMER 2018
5	Explain in Detail Modes of Shear Failures. May-2011
6	Calculate the minimum depth a foundation required to transmit a load of _____ kN/m ² in a cohesionless soil having $\gamma =$ _____ kN/m ² and $\phi =$ _____. Also calculate the bearing capacity if the depth adopted is 1.5 m using Rankine's formula . SUMMER 2017
7	A 2 m wide strip footing is founded at a depth of _____ m below the ground level in a homogeneous bed of sand, having the following properties: $\Phi = 36^\circ$, $\gamma =$ _____ kN/m ³ . Determine the safe bearing capacity of the footing. For $\Phi = 36^\circ$, $N_c = 60$, $N_q = 42$, $N_\gamma = 47$. Assume a factor of safety of 3, inclination angle α is zero. Use Terzaghi's analysis and IS CODE 6403. SUMMER 2018
8	Calculate using Skempton's equation, the ultimate and safe bearing capacity of a square footing on the surface of standard having unconfined compressive strength of kN/m ² , Depth of Footing _____ m, Size of Footing _____ m \times m. SUMMER 2017
9	Determine the depth at which a circular footing of 2 m diameter is provided with a factor of safety 3. It carries a safe load of _____ kN. The soil properties are: $\Phi = 30^\circ$, $\gamma =$ _____ kN/m ³ , $C =$ _____ kN/m ² . For $\Phi = 30^\circ$ $N_c = 37.2$, $N_q = 22.5$, $N_\gamma = 19.7$. Use Terzaghi's analysis. SUMMER 2018

2.0 SHALLOW FOUNDATION 8 th BX FOUNDATION ENGINEERING(2180609)											
Roll No.	QUESTION NO.6			QUESTION NO.7		QUESTION NO.8			QUESTION NO.9		
	Load	unit Weight	Φ	Depth	unit Weight	q _u	D _f	Size of Footing	Load	unit Weight	C
1	1297	19	34	3	16	72	2	2 × 2	2042	15	20
2	1421	16	34	2	19	88	2		1626	15	16
3	934	18	33	3	18	81	2		1944	20	19
4	1174	17	20	2	19	72	2		1733	18	18
5	1202	20	30	3	16	77	2		1898	20	18
6	1411	20	23	3	19	53	2		1926	18	16
7	1203	18	35	2	15	64	3		2145	15	19
8	633	20	34	2	18	95	2		1720	16	18
9	1498	15	34	3	18	58	2		2171	15	17
10	1143	16	21	3	20	66	2		1954	18	17
11	1227	16	29	2	16	52	2		2285	16	16
12	1215	17	21	2	19	59	3		2383	16	18
13	585	15	23	3	18	78	2		2022	18	16
14	1338	16	27	2	16	59	2		1682	15	18
15	972	19	25	3	18	91	3		2500	15	16
16	573	15	27	3	16	56	3		2407	16	19
17	862	15	35	2	16	56	3		1616	17	20
18	601	16	25	2	15	53	2		1617	16	18
19	1266	20	32	3	16	55	2		2367	18	16
20	1282	15	31	2	20	81	2		2399	18	18
21	1240	20	31	3	16	55	3		2482	20	17
22	638	15	35	3	16	68	3		1999	17	16
23	913	15	24	2	17	92	2		1827	18	17
24	857	19	31	3	17	70	3		2383	15	18
25	611	17	29	2	18	50	2		2334	15	18

26	547	19	27	3	17	58	3		2436	18	15
27	693	17	27	2	19	88	2		2052	15	16
28	1047	16	27	3	17	51	2		1674	17	19
29	1399	18	22	3	15	70	2		2175	17	19
30	1236	16	29	3	17	51	3		2149	15	17
31	545	16	30	3	16	65	3		2096	15	15
32	773	18	20	3	15	79	2		1701	20	16
33	893	20	27	2	16	82	2		2073	15	15
34	752	20	25	3	19	70	3		1648	20	15
35	594	20	23	3	18	71	3		2217	16	19
36	1344	20	25	2	17	74	3		1731	16	19
37	762	16	26	2	17	73	2		2200	16	20
38	641	17	34	2	17	54	2		2343	15	16
39	646	15	27	2	20	87	3		2233	18	20
40	1113	17	35	3	15	69	2		2467	20	20
41	1475	18	22	2	19	70	3		2477	18	18
42	635	15	22	2	20	81	3		1842	15	17
43	1146	19	32	3	15	57	2		2104	16	19
44	642	20	20	3	17	96	3		1963	15	16
45	1316	15	21	2	17	79	2		1814	20	15
46	1475	19	23	3	18	63	3		1682	19	18
47	512	15	25	3	16	88	3		1779	17	15
48	878	20	33	3	19	66	3		2052	20	20
49	1306	15	29	2	17	86	2		1957	17	17
50	1429	17	26	2	15	60	3		2219	20	16
51	1415	15	30	2	19	54	2		1844	17	16
52	997	20	35	2	17	66	2		1601	20	18

53	983	18	21	3	20	72	2		2133	16	19
54	1389	18	20	3	17	89	3		2007	18	16
55	748	17	24	2	17	68	2		1936	19	17
56	889	19	31	3	18	71	3		2467	15	17
57	593	15	21	3	18	66	2		1795	18	15
58	1365	16	29	2	18	99	3		2275	16	16
59	1232	19	30	2	15	63	3		2194	19	16
60	1207	19	31	3	18	55	3		2461	18	19
61	1082	15	34	3	15	64	3		2042	18	19
62	799	19	31	2	15	73	3		1626	19	17
63	1372	15	31	2	20	94	3		1944	19	15

2.0 SHALLOW FOUNDATION 8th BY FOUNDATION ENGINEERING(2180609)

Roll No.	QUESTION NO.6			QUESTION NO.7		QUESTION NO.8			QUESTION NO.9		
	Load	unit Weight	Φ	Depth	unit Weight	q_u	D_F	Size of Footing	Load	unit Weight	C
1	783	18	33	3	18	67	2	2.5x 2.5	2257	16	20
2	1247	20	33	2	18	59	3		2334	15	18
3	1205	17	29	2	18	100	2		1619	15	19
4	734	15	22	2	20	88	2		2300	17	15
5	1062	18	23	2	19	87	3		1681	15	16
6	1374	16	22	2	18	93	3		1813	17	15
7	966	19	22	3	19	72	3		1696	18	15
8	991	15	22	3	15	65	2		1967	19	16
9	1399	17	27	2	15	85	3		2238	19	15
10	920	19	20	3	15	75	2		1949	16	18
11	708	17	27	3	19	74	3		2335	16	16
12	632	15	31	2	20	67	2		2014	19	20
13	1004	18	26	3	15	63	3		2426	19	18
14	753	16	31	2	20	71	2		1740	16	15
15	1012	20	35	3	20	83	2		2110	16	16
16	1360	19	24	2	20	77	3		2102	17	19
17	1050	20	35	2	18	95	3		1667	20	20
18	1426	17	32	3	20	100	3		2135	20	17
19	602	18	29	3	17	97	2		1761	17	18
20	932	18	20	2	19	63	2		1956	17	19
21	744	16	35	2	18	80	3		1918	19	18
22	1421	20	33	2	18	50	3		1873	15	18
23	1063	15	29	2	17	96	2		2267	19	20

24	505	20	30	3	17	77	2	1904	18	20
25	816	19	33	3	17	82	2	1603	15	20
26	870	18	22	3	16	100	2	1877	17	20
27	845	17	31	3	19	97	3	2357	19	15
28	976	15	22	3	20	53	3	2019	18	17
29	1018	20	20	2	19	82	3	1640	15	15
30	1053	19	34	3	16	89	3	2340	15	17
31	1414	18	30	2	19	98	2	2370	17	17
32	1299	16	27	3	20	74	3	1624	16	15
33	591	16	35	3	16	89	3	1816	16	15
34	1006	18	26	2	16	56	2	2381	18	18
35	1155	18	31	3	16	99	3	2475	18	17
36	597	15	22	2	17	71	3	2027	18	18
37	936	19	35	3	17	87	3	2202	18	17
38	1007	15	28	3	18	56	3	1790	16	18
39	1197	20	35	3	18	67	3	2066	20	18
40	834	20	32	3	18	92	3	2236	15	20
41	767	15	32	3	16	71	3	2299	16	17
42	1188	16	21	2	15	84	3	2154	16	18
43	1143	17	25	3	20	62	3	2133	20	18
44	1122	15	30	3	20	84	2	2062	16	20
45	1286	20	31	3	20	93	2	1698	20	19
46	572	16	26	2	17	79	2	2414	16	15
47	1341	19	31	3	16	89	3	1976	16	16
48	1302	19	28	2	15	63	2	2306	16	15

49	748	16	35	2	18	62	3		1686	16	16
50	1427	16	24	2	15	98	3		2092	20	19
51	652	17	29	2	17	64	3		2496	17	19
52	1256	17	34	2	20	90	2		2238	15	17
53	948	20	20	2	16	94	2		2364	20	19
54	982	17	22	2	17	63	2		2143	19	16
55	649	15	31	2	20	76	2		2288	19	17
56	1057	16	22	2	18	53	2		2301	15	17
57	1371	17	26	2	16	86	3		1656	16	19
58	823	19	34	3	20	60	2		1901	15	18
59	643	19	24	3	18	66	3		2084	16	19
60	1251	20	23	2	15	58	3		1769	16	15
61	563	18	23	3	17	92	3		2072	20	16

2.0 SHALLOW FOUNDATION 8th BZ OUNDATION ENGINEERING(2180609)

Roll No.	QUESTION NO.6			QUESTION NO.7		QUESTION NO.8			QUESTION NO.9		
	Load	unit Weight	ϕ	Depth	unit Weight	q_u	D_f	Size of Footing	Load	unit Weight	C
1	684	18	33	3	15	66	2	3 × 3	2208	17	15
2	517	20	29	2	19	92	2		1984	18	20
3	1121	17	23	2	19	77	2		2244	16	20
4	799	20	31	2	17	80	3		2074	17	15
5	662	16	32	3	20	67	3		1606	15	20
6	619	19	22	2	16	67	3		2384	19	17
7	1212	18	27	2	18	97	3		1856	15	16
8	586	19	21	2	16	51	2		1913	16	20
9	1421	20	29	2	16	71	2		1999	19	15
10	1167	15	27	3	16	76	2		1780	17	18
11	663	15	34	2	20	100	3		1792	16	19
12	1373	20	26	3	16	99	3		2205	16	17
13	1178	15	22	2	15	81	2		1846	15	20
14	1315	15	34	3	18	91	2		1644	17	15
15	1375	16	34	2	16	66	3		1924	17	20
16	1405	15	33	3	17	87	2		2424	18	18
17	775	18	25	2	18	99	2		2226	20	16
18	1123	17	30	3	17	50	3		1998	18	20
19	1283	19	28	2	20	84	2		1833	18	18
20	1424	15	27	3	17	99	3		2027	17	15
21	1394	17	34	3	15	65	3		2339	20	19
22	1388	20	33	2	16	86	2		1806	20	20
23	1339	16	30	2	17	87	3		2102	18	16

24	679	17	26	2	17	99	2	2116	19	19
25	571	20	31	3	16	97	2	2268	17	20
26	784	16	26	3	18	99	3	2341	18	15
27	903	17	20	3	19	58	3	2421	18	19
28	1490	19	33	3	18	67	3	2482	19	19
29	887	16	33	2	19	84	3	2137	16	19
30	643	20	25	3	16	61	2	1800	19	18
31	705	18	29	2	20	91	3	2405	15	16
32	1073	15	32	2	17	58	2	1683	16	19
33	1093	15	22	2	20	93	3	2093	20	15
34	894	18	22	3	19	78	3	2101	15	18
35	1179	17	22	3	17	96	2	1834	19	15
36	1421	16	24	3	15	87	3	2393	17	20
37	617	16	33	2	17	81	3	2185	20	18
38	653	16	27	3	15	75	2	2482	15	19
39	763	19	20	2	16	63	2	2239	19	15
40	1003	15	29	2	20	63	2	1643	15	20
41	594	19	31	2	15	95	2	1613	19	20
42	630	19	24	3	20	94	2	2197	19	17
43	658	20	33	2	17	69	2	2426	20	19
44	550	15	24	2	18	70	2	1939	15	19
45	1238	19	33	3	17	98	2	2400	17	16
46	1344	20	32	3	15	73	3	1624	16	16
47	1382	18	24	3	15	96	2	1719	19	19
48	1390	20	31	3	15	77	2	1709	18	18

49	655	16	25	3	19	74	2	1827	16	20
50	1051	20	24	2	20	68	2	1637	20	17
51	822	20	35	2	16	66	3	2047	16	15
52	757	17	28	3	15	67	2	1712	16	17
53	585	16	31	3	15	80	2	1845	20	16
54	527	19	26	2	15	57	2	1842	19	18
55	1187	16	31	2	18	52	3	2077	16	15
56	657	15	26	3	18	90	3	2302	20	15
57	1053	15	26	3	20	58	3	1745	20	15
58	756	17	32	2	19	62	2	2129	20	20
59	1432	18	34	2	16	80	3	2203	20	19
60	502	17	29	3	20	53	3	1857	15	17
61	887	17	29	3	17	63	3	2352	16	19

Chapter 3: Pile foundations

1	The load carrying capacity of piles depends on which factors? SUMMER 2018							
2	Write a short note on group action of piles. SUMMER 2018							
3	Write short note on efficiency of pile group and determine for (3x3) by Field's rule. WINTER 2017, SUMMER 2017.							
4	Explain in details negative skin friction on a pile. SUMMER 2018							
5	Classify the piles based on the materials, function, and method of installation. SUMMER 2018							
6	Write static and dynamic formulae to estimate pile capacity. WINTER 2017							
7	Explain under rammed and sheet pile wall. WINTER 2017							
8	Write Short note on soldier piles and lagging. WINTER 2017							
9	Explain the pile load test to determine the ultimate load carrying capacity of pile. – SUMMER 2017							
10	A _____ m long _____ diameter pile is driven in a uniform deposit of sand ($\phi = 40^\circ$). The water table is at great depth and is not likely to risk. The average dry unit weight of sand is _____ kN/m ³ . using $N_q = 135$ calculate the safe bearing load capacity of pile with F. O. S 2.5, K = 2.0. Jan 2008.							
11	An RCC pile of _____ m overall length is driven into a deep stratum of soft clay having an unconfined compressive strength of _____ kN/m ² . The Size of pile is 45 cm. Determine the safe load that can be carried by the pile with a factor of safety = 3. $\alpha = 0.8$, SUMMER 2018							
12	A group of 16 piles of _____ cm diameter is arranged with centre to centre spacing of _____ m. The piles are 9 m long and are embedded in soft clay with cohesion _____ kN/m ² . Adhesion factor is 0.6. Determine the Safe load capacity (group Capacity) of the pile group. Factor of Safety 3. WINTER 2017							
13	The following are the result of a pile load test on a 400 mm diameter pile.							
	Load (kN)	200	500	1000	1300	1500	1600	1700
	Settlement(m m)	2	4	8	14	22	30	50
Determine the Ultimate load and also the safe load as per IS:2911(Part-IV)- January 2008								

14

A 16 pile group carry a load of _____ kN. Length of each pile is 10.5m, Spacing 1.5 m and diameter of pile is 500 mm. Liquid limit of Soil is 60 %, unit weight kN/m^3 and e_o is 1. **Compute total settlement of pile** group assuming the load to be transferred at two third length of the pile and thickness uniform clay is 20 cm. under laying by rock. Assume depth is divided in to 3 layer (4m, 4m, and 5m). Reference code **IS 8009 (Part- II-1980)**

3.0 PILE FOUNDATION 8th BX FOUNDATION ENGINEERING(2180609)

Roll No.	QUESTION NO.10			QUESTION NO.11		QUESTION NO.12			QUESTION NO.14	
	Length	Diameter	Unit Weight	Length	qu	Diameter	spacing c/c	C	load	unit weight
101	14	289	19	442	65	491	1	26	2737	15
102	15	280	15	439	69	455	1	31	3760	17
103	14	329	20	428	59	444	1	25	2399	17
104	10	345	20	471	79	499	1	24	3611	17
105	14	275	20	487	54	413	1	38	3264	18
106	15	309	19	493	63	495	1	26	3615	18
107	13	319	16	457	52	486	1	22	2318	15
108	10	311	15	412	61	409	1	38	2248	15
109	12	254	19	484	55	458	1	34	2832	17
110	11	275	18	469	55	478	1	31	2088	15
111	15	350	15	479	62	479	1	36	3280	15
112	10	259	17	416	76	475	1	26	2097	16
113	11	314	19	438	68	477	1	38	2953	17
114	10	321	20	462	76	435	1	33	3768	17
115	14	292	20	432	54	494	1	23	2476	17
116	12	311	15	439	60	423	1	37	3276	16
117	12	293	15	401	80	493	1	20	3120	18
118	10	286	16	410	77	468	1	40	3926	15
119	14	278	17	474	70	451	1	34	3149	18
120	13	289	16	444	62	467	1	23	3263	15
121	10	270	17	433	61	447	1	28	2928	17
122	12	277	16	422	50	454	1	21	2912	18
123	13	254	20	407	61	481	1	33	3135	16
124	13	256	19	435	69	480	1	23	2141	16
125	12	255	16	484	54	426	1	34	3732	15
126	11	287	17	421	56	432	1	40	2849	16
127	13	304	19	453	56	438	1	34	2890	18
128	11	276	17	431	57	454	1	24	3058	18
129	10	252	15	419	63	414	1	23	3876	18
130	10	257	19	415	56	403	1	30	2860	17
131	11	333	17	457	77	454	1	33	2872	18
132	12	322	15	419	59	480	1	36	2638	16
133	13	264	17	437	55	423	1	35	2423	15
134	11	308	19	440	71	441	1	33	3070	18
135	14	346	18	475	65	479	1	27	3731	18
136	10	340	17	427	71	435	1	32	2644	17
137	15	264	19	457	58	449	1	25	2464	16
138	13	334	16	444	76	430	1	21	2962	15

139	12	300	19	421	69	486	1	23	2031	18
140	13	257	18	489	71	475	1	34	2872	16
141	15	322	17	415	55	433	1	40	2794	18
142	15	342	19	400	51	430	1	34	2118	15
143	12	342	19	454	72	500	1	39	2296	18
144	15	320	15	415	57	419	1	27	2500	17
145	10	300	20	429	51	493	1	20	2130	17
146	11	310	16	412	71	471	1	30	2746	18
147	13	328	16	484	77	420	1	20	3735	16
148	12	300	16	405	78	491	1	37	3721	17
149	13	336	17	433	51	422	1	27	2678	15
150	11	329	18	494	62	485	1	30	3084	18
151	12	302	15	469	51	468	1	36	3675	15
152	14	282	20	477	60	430	1	34	2939	17
153	15	306	17	493	75	445	1	37	3136	17
154	10	288	17	406	65	402	1	38	3225	17
155	11	350	19	406	69	489	1	33	3575	18
156	10	291	15	439	71	451	1	25	2083	15
157	10	326	20	432	73	413	1	24	2121	18
158	10	345	19	423	76	436	1	37	2250	17
159	11	302	16	450	72	495	1	30	2594	17
160	11	254	20	441	66	443	1	26	2062	15
161	14	314	19	474	66	483	1	24	3202	15
162	14	315	15	402	68	405	1	22	3738	17
163	12	279	19	460	75	406	1	29	2330	16

3.0 PILE FOUNDATION 8th By FOUNDATION ENGINEERING(2180609)

Roll No.	QUESTION NO.10			QUESTION NO.11		QUESTION NO.12			QUESTION NO.14	
	Length	Diameter	Unit Weight	Length	qu	Diameter	spacing c/c	C	load	unit weight
201	11	290	15	431	57	449	1	38	2578	15
202	12	267	18	447	71	488	1	34	2657	16
203	12	251	17	437	60	425	1	34	3055	15
204	11	326	16	402	72	491	1	30	2559	17
205	13	301	20	412	69	434	1	35	3193	16
206	10	308	16	432	78	475	1	25	2687	15
207	11	269	18	419	59	432	1	32	3832	17
208	10	263	17	463	62	491	1	35	3723	17
209	14	331	18	475	67	430	1	22	3154	16
210	13	294	16	480	76	430	1	24	2071	17
211	11	348	19	443	77	408	1	23	2133	15
212	13	306	18	488	64	432	1	31	3516	15
213	10	349	18	407	54	404	1	37	2388	17
214	11	313	19	472	54	447	1	35	3107	16
215	13	261	19	458	55	498	1	31	2515	15
216	15	349	17	416	57	408	1	40	2508	16
217	14	251	16	458	59	439	1	33	2823	18
218	12	278	18	499	52	462	1	35	3177	15
219	11	341	16	446	73	455	1	26	3795	16
220	10	324	19	453	75	495	1	39	3215	18
221	15	330	19	451	60	445	1	32	3400	18
222	15	300	20	447	62	477	1	32	2356	18
223	15	250	19	444	54	402	1	22	3807	18
224	13	305	17	434	78	496	1	39	2172	17
225	11	284	16	452	59	464	1	35	3431	15
226	14	336	20	479	72	429	1	40	4000	15
227	12	333	17	406	52	454	1	35	2752	15
228	14	297	15	446	54	449	1	37	2694	15
229	10	260	18	419	75	487	1	36	3305	18
230	12	287	16	457	57	448	1	35	3844	15
231	12	346	20	404	56	430	1	35	3157	18
232	15	281	15	473	77	440	1	39	2536	16
233	11	336	19	441	74	430	1	22	2023	15
234	11	306	17	481	66	447	1	20	2438	15
235	12	306	18	481	80	445	1	28	3354	15
236	12	348	19	425	61	450	1	23	2875	18

237	11	277	19	402	56	472	1	27	3431	16
238	15	310	15	423	51	460	1	35	3302	18
239	14	349	15	451	63	430	1	35	3153	17
240	12	313	20	408	56	453	1	33	2474	16
241	12	284	20	492	70	468	1	40	3960	17
242	11	314	19	458	51	470	1	40	3763	17
243	10	334	20	477	74	447	1	39	2442	18
244	10	330	16	459	68	410	1	34	2415	18
245	10	264	18	479	65	424	1	29	3387	17
246	11	257	18	401	79	416	1	38	2705	17
247	15	298	19	437	69	494	1	20	3496	18
248	15	272	16	455	50	458	1	35	2317	18
249	11	279	17	414	50	495	1	26	3131	17
250	11	273	20	414	80	472	1	27	2532	15
251	10	269	18	485	61	461	1	23	2774	17
252	14	344	18	441	63	490	1	26	3624	17
253	12	347	18	434	50	496	1	25	3272	18
254	11	332	16	404	54	405	1	28	3965	15
255	10	345	18	429	58	457	1	24	2641	17
256	10	276	17	437	53	475	1	40	2472	15
257	13	326	19	452	67	441	1	22	3110	18
258	10	289	20	423	73	488	1	26	2910	17
259	11	279	20	407	50	484	1	21	3550	16
260	10	253	20	405	79	434	1	40	2832	17
261	13	294	19	410	63	469	1	36	2413	18
262	10	273	19	446	60	403	1	21	2805	16
263	15	319	15	465	52	449	1	39	2789	18

3.0 PILE FOUNDATION 8th BZ FOUNDATION ENGINEERING(2180609)

RollNo.	QUESTION NO.10			QUESTION NO.11		QUESTION NO.12			QUESTION NO.14	
	Length	Diameter	Unit Weight	Length	qu	Diameter	spacing c/c	C	load	unit weight
301	12	269	16	490	76	439	1	26	2037	18
302	14	337	20	418	80	480	1	29	2944	18
303	15	265	17	422	77	464	1	38	2986	17
304	12	261	20	455	50	406	1	29	2237	15
305	10	265	18	408	55	414	1	34	3939	18
306	11	296	20	432	65	489	1	25	3400	18
307	12	318	20	486	79	418	1	26	3171	18
308	11	252	17	458	52	460	1	36	2143	17
309	13	349	17	455	55	460	1	39	2657	18
310	11	275	17	409	69	443	1	29	2036	17
311	14	276	18	487	61	471	1	29	3853	18
312	15	343	19	423	67	454	1	26	2719	17
313	14	285	18	428	57	428	1	34	2052	18
314	11	257	20	401	69	453	1	23	3144	17
315	15	281	18	402	73	405	1	27	2589	16
316	11	345	16	457	75	451	1	36	3453	15
317	13	277	15	493	58	468	1	33	2725	17
318	10	277	18	420	66	459	1	27	3983	18
319	13	251	16	421	75	428	1	24	2175	18
320	13	252	15	413	54	450	1	27	3585	17
321	15	275	19	488	65	482	1	20	2731	15
322	14	340	15	418	74	482	1	40	3042	15
323	15	266	20	435	60	498	1	32	2871	16
324	13	339	17	428	78	488	1	35	3824	18
325	12	318	19	489	64	400	1	36	3672	18
326	11	261	15	431	65	407	1	23	3064	18
327	15	306	20	422	66	498	1	33	3377	18
328	14	271	16	464	64	452	1	31	2705	17
329	11	308	16	424	59	419	1	25	2258	18
330	10	296	20	458	76	480	1	35	2070	17
331	15	318	19	459	71	436	1	30	3884	16
332	13	300	20	471	79	457	1	25	3111	16
333	15	306	16	414	65	425	1	23	3499	18
334	14	286	18	408	60	407	1	22	2841	17
335	15	346	16	410	72	471	1	38	2299	17
336	14	306	18	480	79	455	1	24	2948	15
337	12	278	19	421	75	451	1	27	3842	16
338	12	256	20	402	77	465	1	25	3759	17

339	10	316	16	442	79	462	1	38	2274	16
340	10	274	15	498	69	431	1	36	2236	15
341	15	314	18	409	54	468	1	35	2225	17
342	12	337	17	486	73	445	1	31	2900	15
343	15	347	15	485	59	464	1	33	2027	15
344	15	306	17	444	76	472	1	23	3426	15
345	15	317	18	492	69	467	1	20	3137	16
346	13	330	18	457	70	426	1	21	2256	15
347	11	287	18	422	57	425	1	26	3558	17
348	14	262	19	470	63	480	1	38	3057	17
349	11	329	20	440	51	406	1	23	3154	18
350	15	270	16	418	79	500	1	21	2589	16
351	14	292	20	481	72	421	1	30	3989	18
352	10	252	16	460	50	422	1	30	3193	15
353	12	277	19	424	64	499	1	21	3940	16
354	12	315	20	407	78	442	1	26	3590	17
355	11	285	19	459	78	418	1	25	2996	18
356	12	262	16	488	64	451	1	23	2768	18
357	12	344	17	465	71	478	1	31	2879	15
358	10	253	17	410	62	473	1	28	2602	18
359	15	319	19	418	58	486	1	30	3675	18
360	14	269	16	473	68	408	1	34	3081	17
361	14	324	20	459	65	446	1	38	3255	17
362	14	304	18	463	62	447	1	38	2983	15
363	12	275	16	458	61	411	1	38	2652	18

Chapter 4:Retaining wall

1	Discuss drainage of back fill in retaining walls. SUMMER 2017
2	Write Short note on soldier piles and lagging. WINTER 2017
3	Enlist different types of retaining wall with sketch. WINTER 2017
4	How the counter fort retaining wall differs from the cantilever retaining walls?. – SUMMER 2018
5	What are the different mode of failure of retaining walls?. – SUMMER 2018
6	Write a short note on types of sheet pile walls. – SUMMER 2018

Chapter 5: Foundation on problematic soil & introduction to geosynthetic:

1	Classify geotextile materials. What are the basic functions performed by geotextiles? SUMMER 2017
2	What is 'active zone' in black cotton soil? State properties of black cotton soil. SUMMER 2017
3	Define swelling potential and swelling pressure. WINTER 2017
4	List various types of geosynthetics with their functions. WINTER 2017
5	Explain identification of collapsible soils. WINTER 2017
6	Explain in detail various uses of geosynthetics. WINTER 2017
7	Discuss Characteristics of expansive soil. WINTER 2017
8	What are the general characteristics of expansive soil? How expansive soil can be identified in the laboratory. – SUMMER 2018.
9	Enlist various function of geotextile and explain any one in detail. – SUMMER 2018

