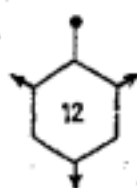
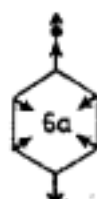


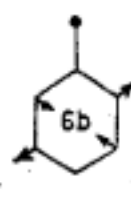
~ 800



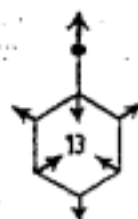
~ 1000



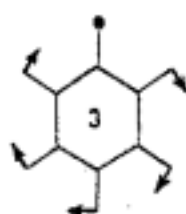
~ 500



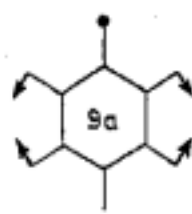
~ 620



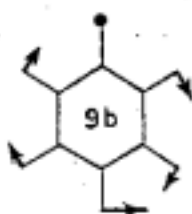
~ 1200



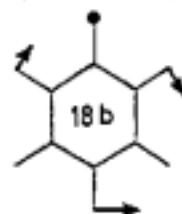
~ 1300



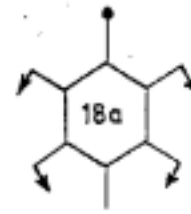
~ 1170



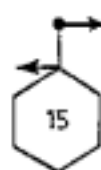
~ 1150



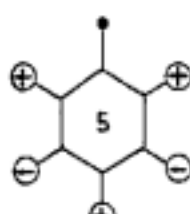
~ 1080



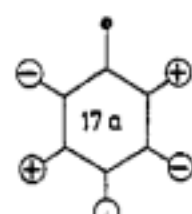
~ 1030



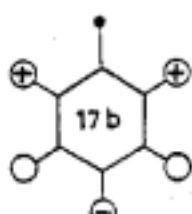
~ 300



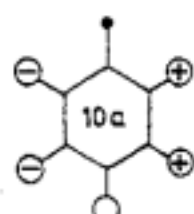
~ 980



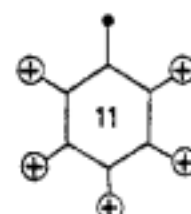
~ 960



~ 900



~ 830



~ 750



~ 200

1.1.0.2. Monosubstituted-d(3)

2	3040-3070	10a	810-840
3	1270-1290	11	645-670
4	675-700	17a	880-900
5	905-920	17b	790-810
7a	2260-2270	18a	1020-1040
7b	3020-3050	18b	1090-1110
9a	870-880	20a	3060-3095
9b	1150-1175	20b	3015-3070

1.1.0.3. Monosubstituted-d(4)

2	3040-3070	10a	810-840
3	1270-1320	11	600-620
4	705-730	17a	910-930
5	945-970	17b	830-865
7a	2260-2295	18a	1020-1030
7b	3020-3050	18b	1100-1120
9a	1170-1180	20a	3060-3090
9b	860-870	20b	3015-3055

1.1.0.4. Monosubstituted-d(5)

1	650-790	11	530-575
2	2270-2305	12	950-965
3	970-1040	13	1080-1210
4	605-655	14	1260-1300
5	785-830	15	180-370
6a	360-520	16a	345-385
6b	585-605	16b	390-485
7a	2210-2265	17a	745-790
7b	2240-2280	17b	715-770
8a	1550-1585	18a	810-845
8b	1535-1580	18b	800-835
9a	860-880	19a	1330-1405
9b	830-870	19b	1305-1375
10a	655-695	20a	2290-2320
10b	130-205	20b	2250-2295

1.1.0. Mono-"light"

1	685-830*	11	725-840**
2	3035-3085	12	990-1010
3	1270-1335	13	1100-1295
4	675-715	14	1300-1345***
5	960-1000	15	200-410
6a	305-530	16a	395-430
6b	610-630	16b	420-600
7a	3000-3045	17a	935-985
7b	3020-3070	17b	865-940
8a	1590-1620	18a	995-1045
8b	1570-1600	18b	1060-1095
9a	1155-1195	19a	1475-1520
9b	1135-1170	19b	1405-1470
10a	810-875	20a	3055-3105
10b	140-245	20b	3015-3075

*In the case of coupling with in-plane modes of the substituent group of frequency 800-900 cm^{-1} , the frequency of vibration 1 may drop to 625 cm^{-1} .

** Over 800 cm^{-1} only with electron withdrawing substituents.

*** Coupled with OH mode in associated state may rise up to 1380 cm^{-1} .

1.1.0.1. Monosubstituted-d(2)

2	3040-3100	10a	810-840
3	1265-1300	11	625-640
4	720-750	17a	875-930
5	940-960	17b	760-780
7a	2985-3040	18a	1030-1045
7b	3030-3070	18b	855-870
9a	1155-1190	20a	2255-2280
9b	1115-1160	20b	3015-3085