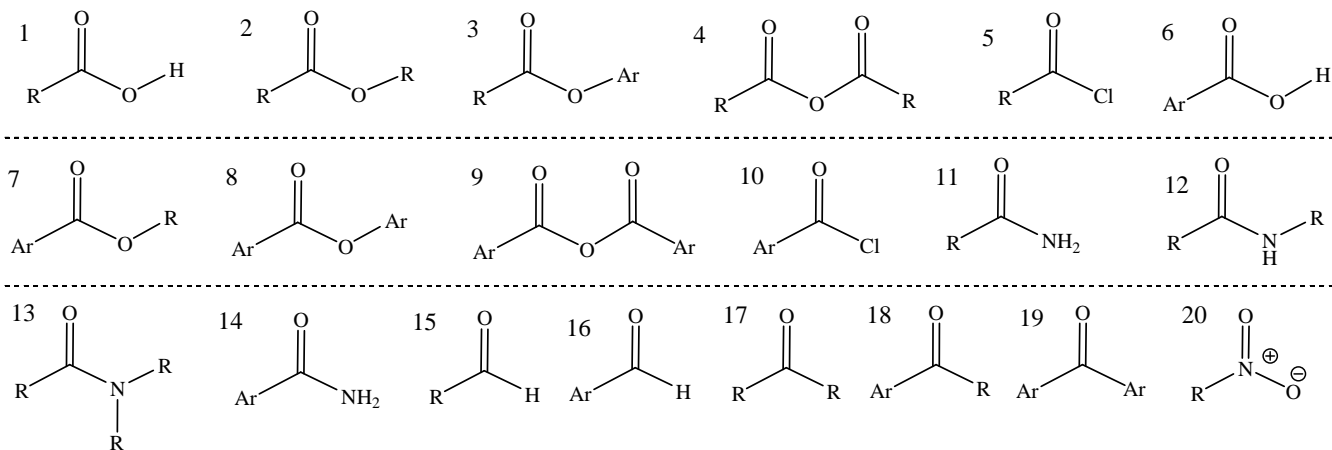
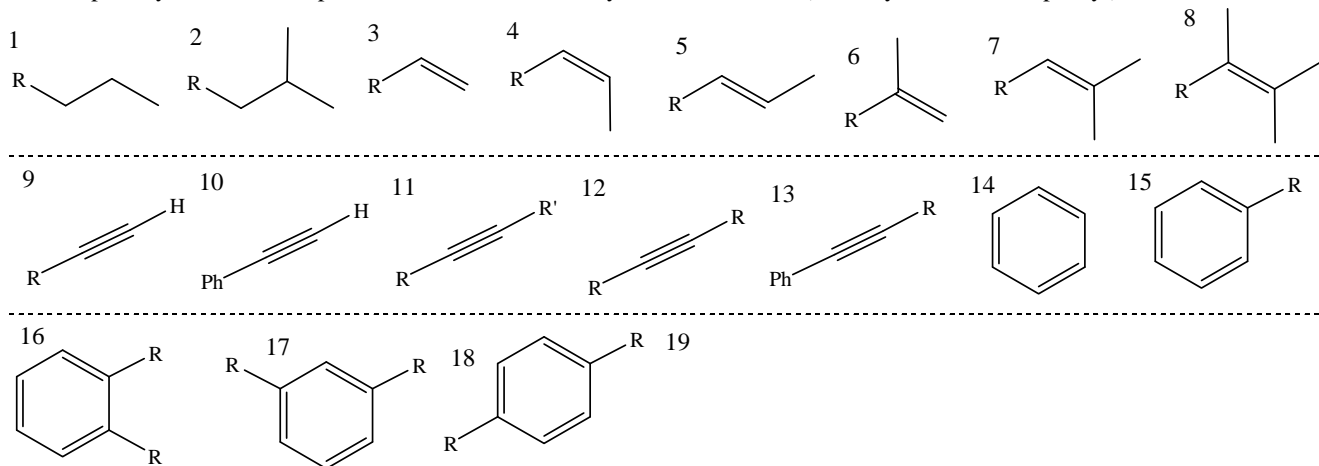


Identify a functional group for each IR below (write a generic structure from the choices in each group next to each IR). **Identify distinguishing absorption bands to demonstrate the logic of your choices, but be aware that not every band is “diagnostic” and sometimes “typical” bands are missing. IR spectra are not 100% reliable. These are ‘real’ spectra, not ‘simulated.’**

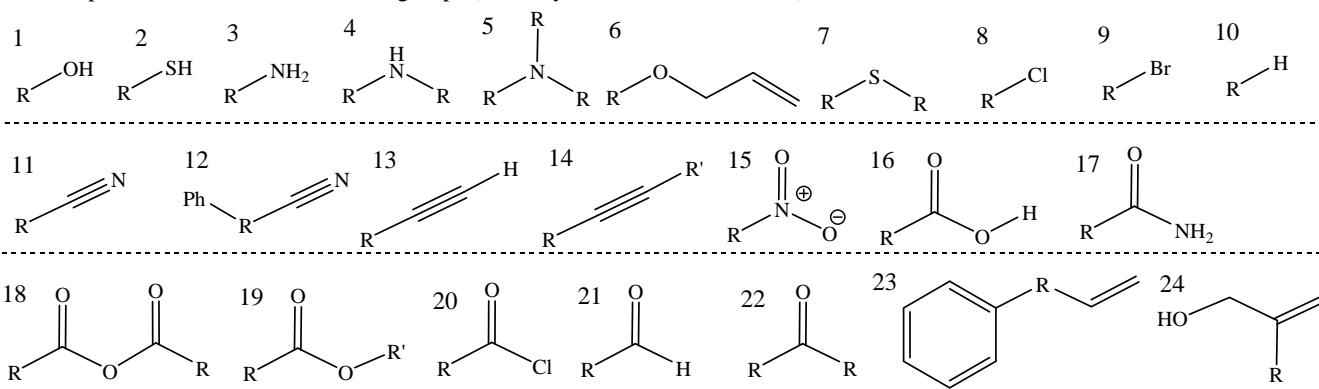
IR Group 1 - carbonyl compounds (R = alkyl branch, Ar = aromatic branch)

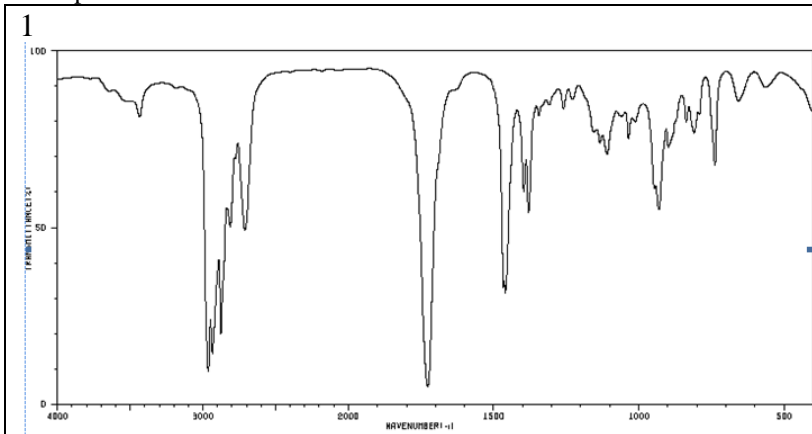
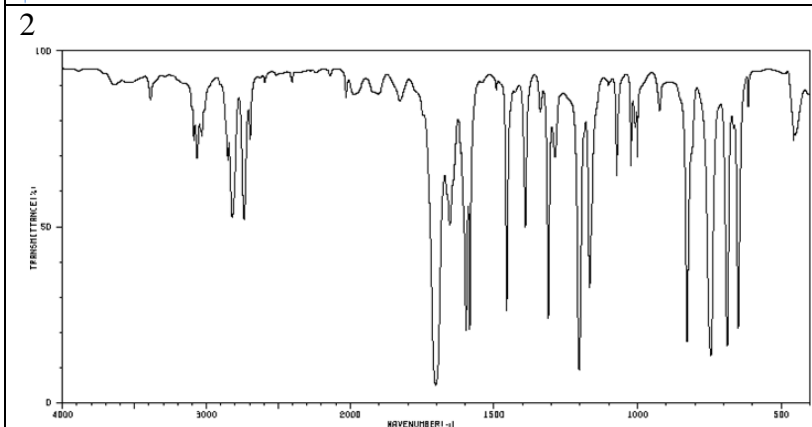
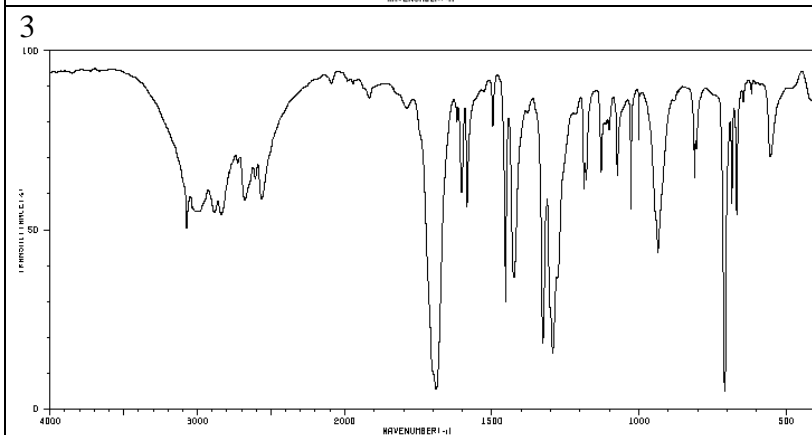
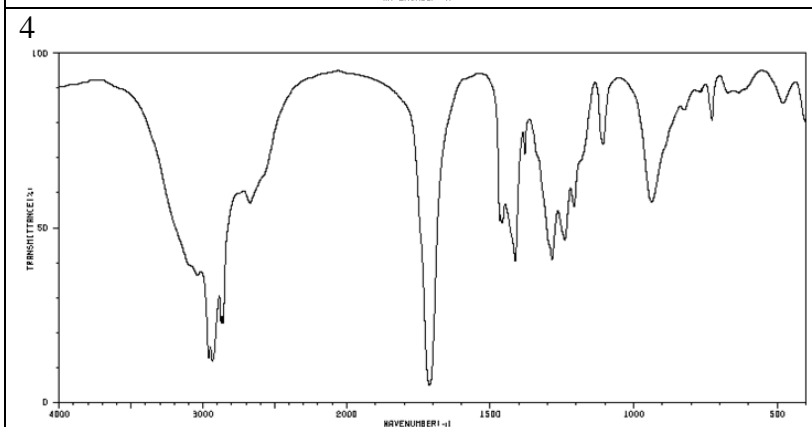


IR Group 2 - hydrocarbon compounds, alkanes, alkenes, alkynes and aromatics (R = alkyl branch, Ph = phenyl)

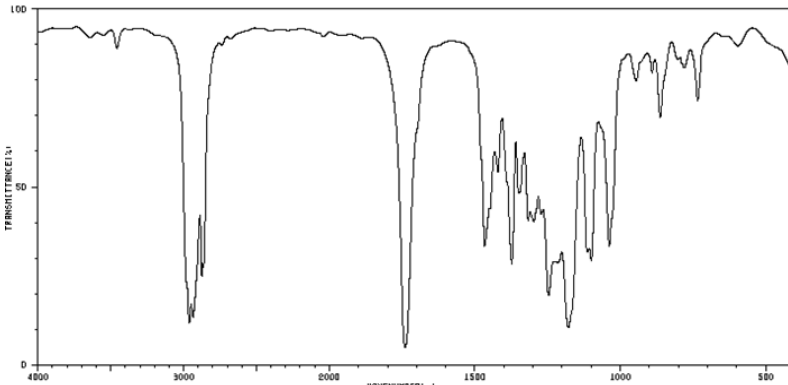
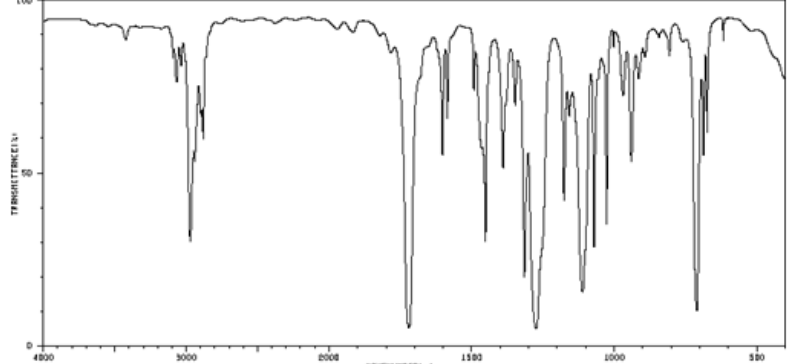
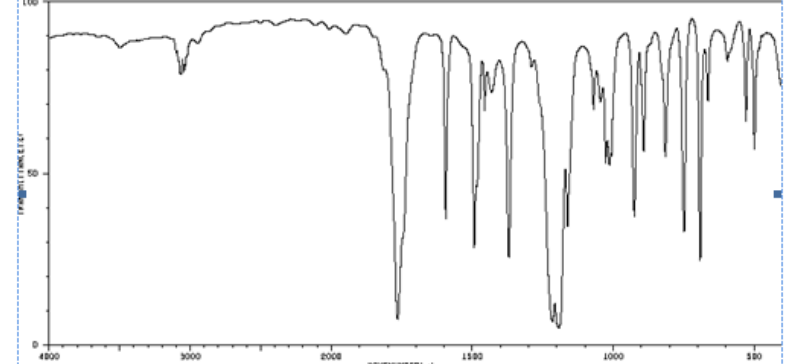
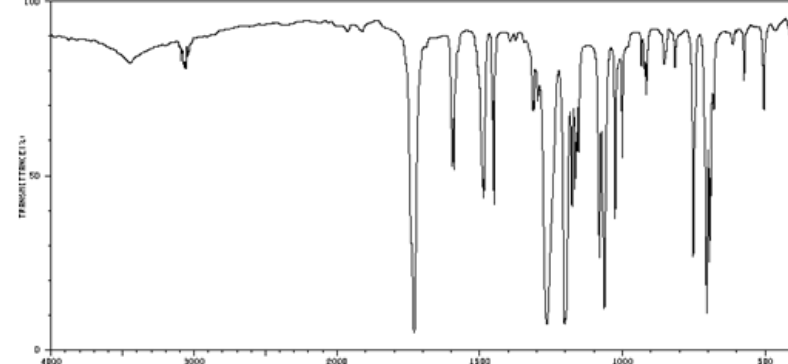


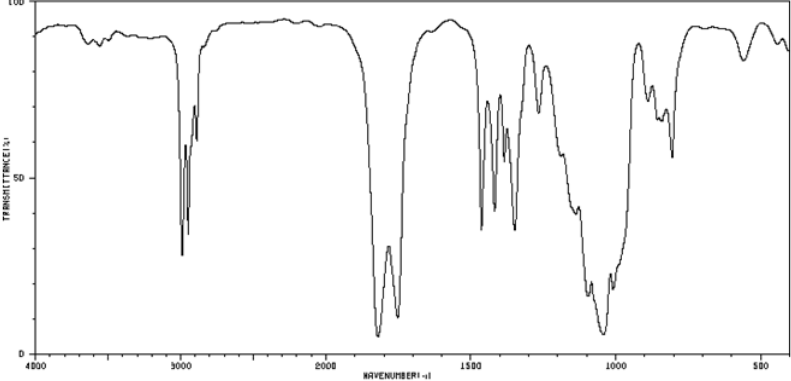
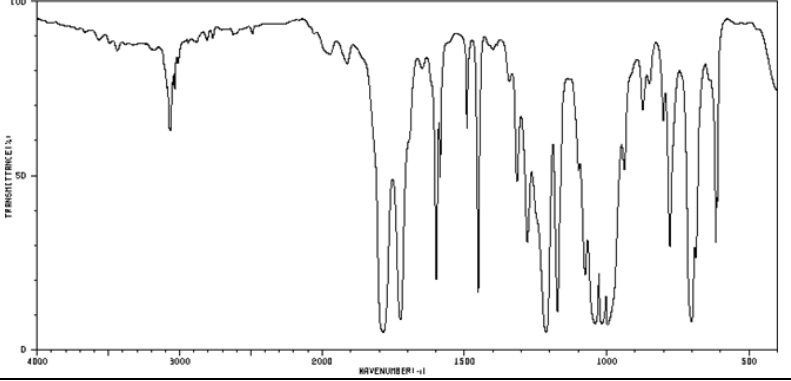
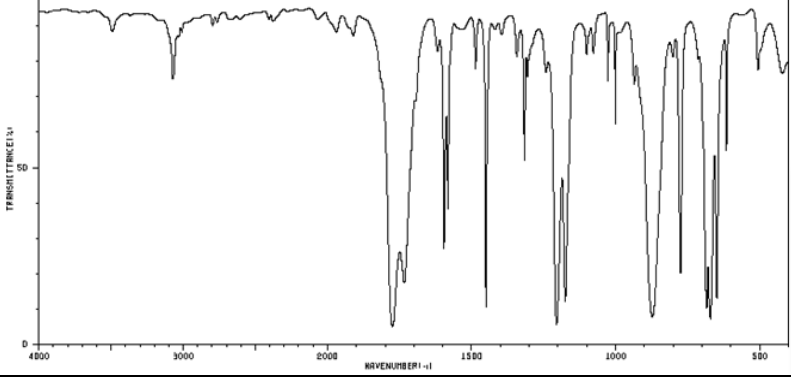
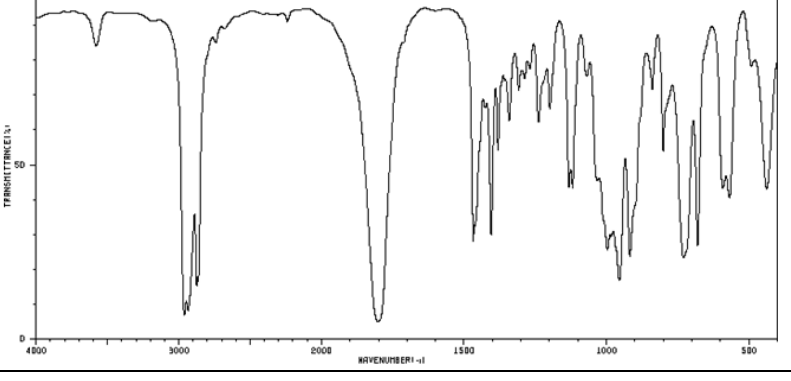
IR Group 3 - Miscellaneous functional groups (R = alkyl branch, Ar = aromatic)

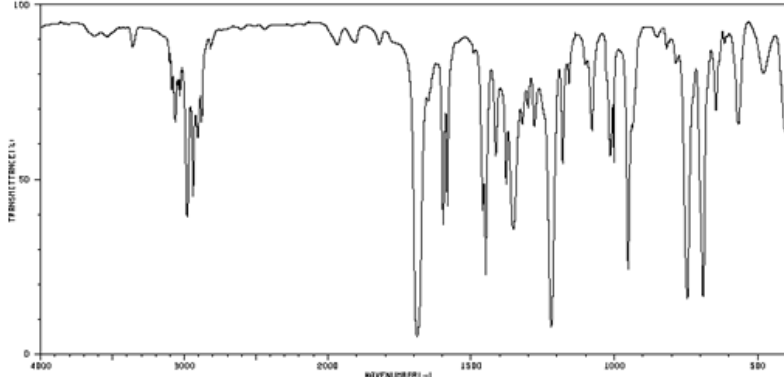
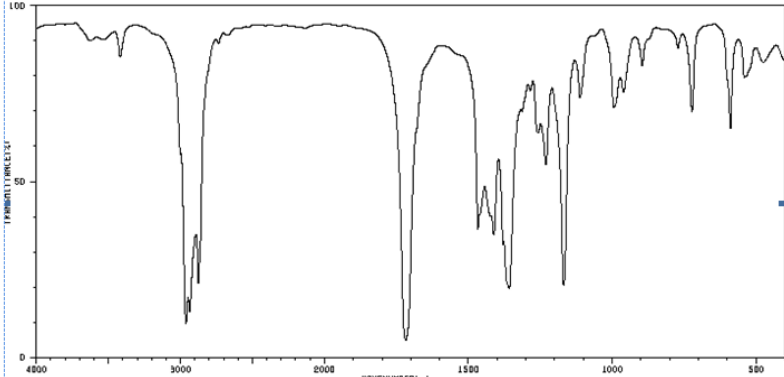
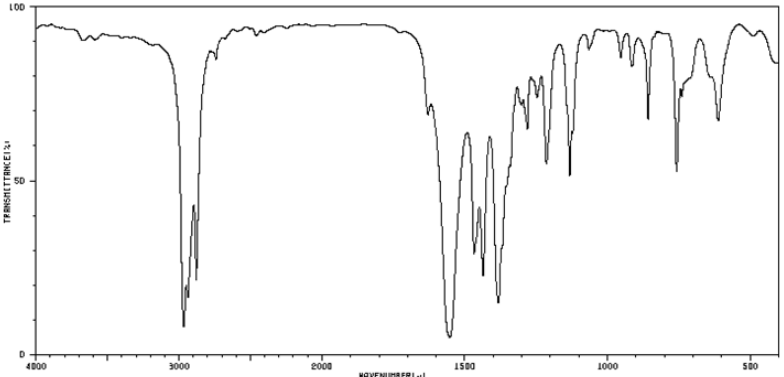
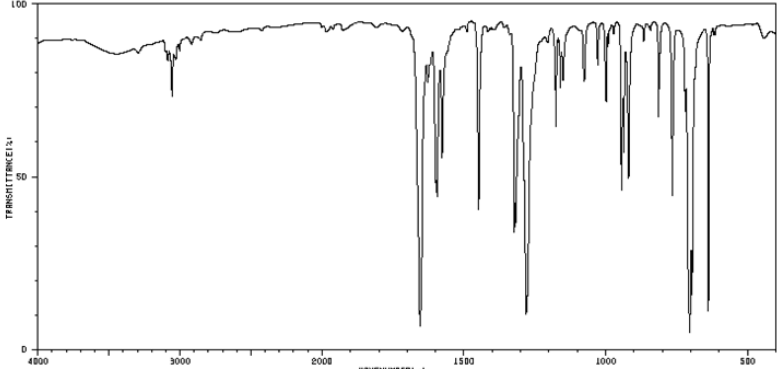


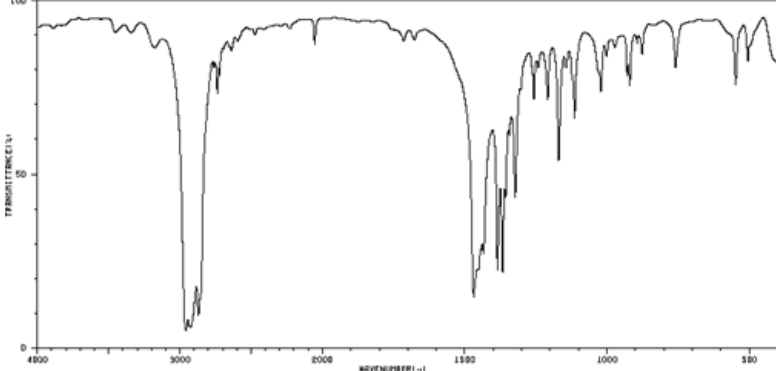
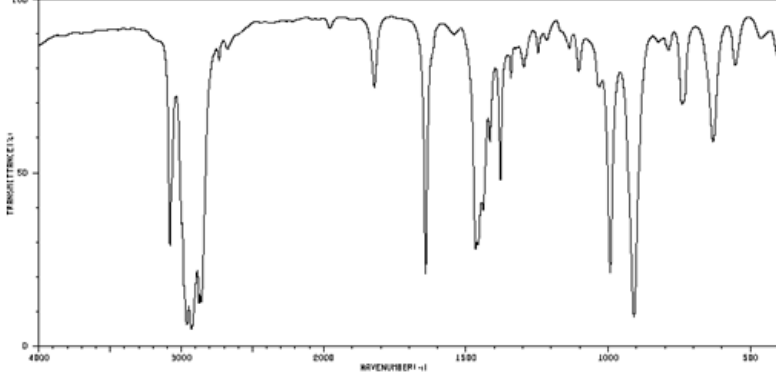
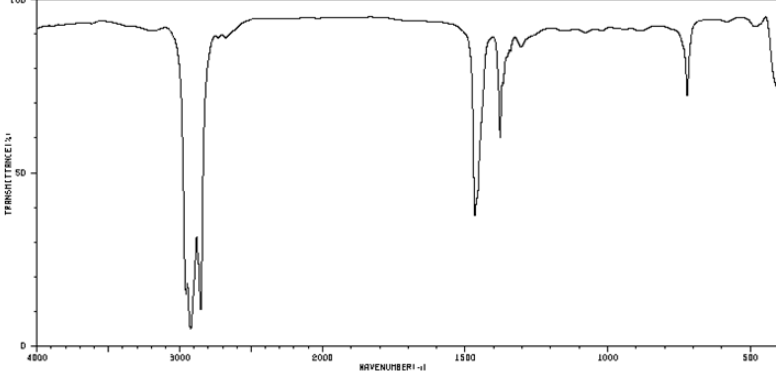
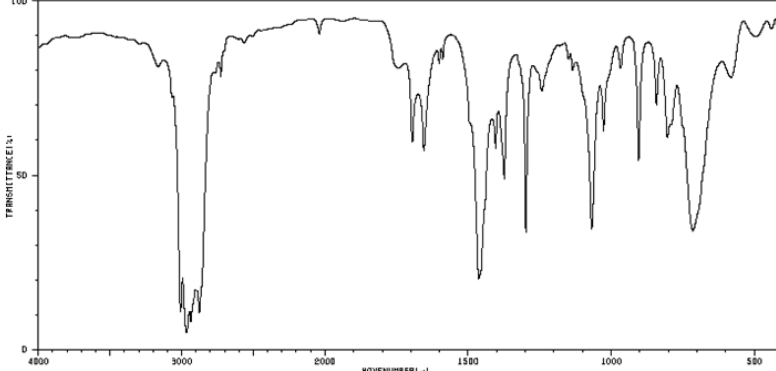
<p>1</p> 	<p>structure</p>	<p>Important wavenumbers</p> <p>3430, 2960-2880, 2820, 2720, 1730, 1470,1340</p>
<p>2</p> 	<p>structure</p>	<p>Important wavenumbers</p> <p>3420, 3090, 3060, 2820, 2740, 1700, 1660, 1600, 1580, 750, 690</p>
<p>3</p> 	<p>structure</p>	<p>Important wavenumbers</p> <p>3200-2550, 1690, 1600, 1580, 1460, 1290, 940, 710</p>
<p>4</p> 	<p>structure</p>	<p>Important wavenumbers</p> <p>3300-2500, 2970, 2870, 1710, 1470, 1370, 940, 730</p>

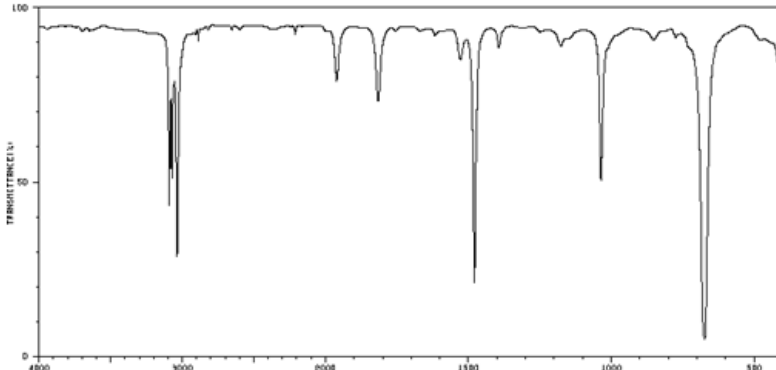
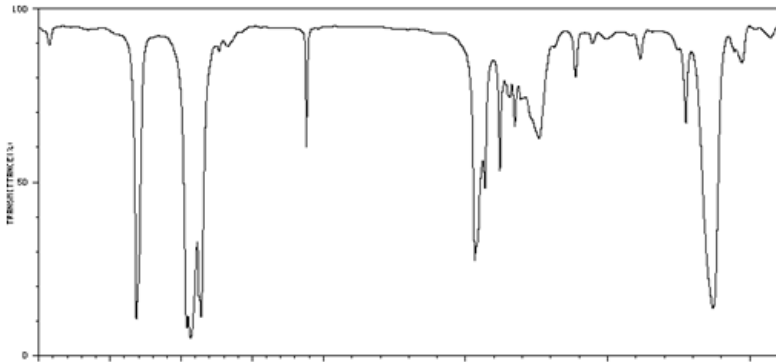
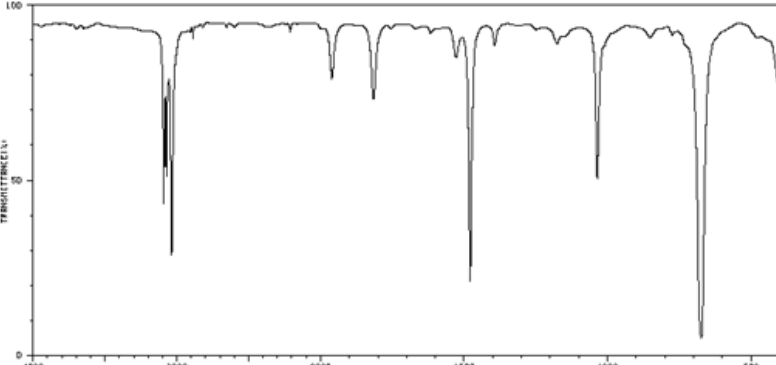
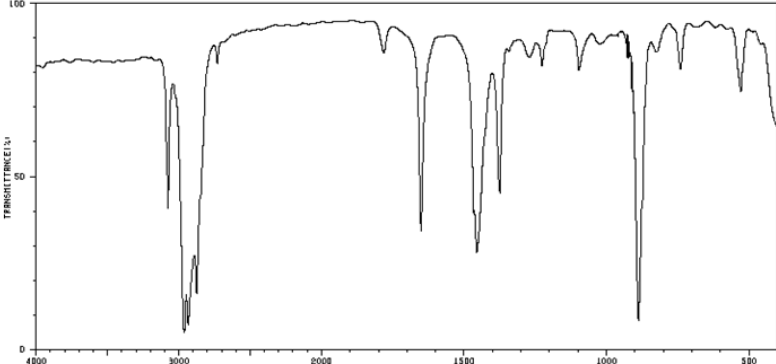
<p>5</p>	<p>structure</p>	<p>Important wavenumbers</p> <p>2980-2880, 1650, 1460, 1360</p>
<p>6</p>	<p>structure</p>	<p>Important wavenumbers</p> <p>3360, 3190, 2950-2870, 1660, 1630, 1460, 1340, 700</p>
<p>7</p>	<p>structure</p>	<p>Important wavenumbers</p> <p>3300, 3090, 2960-2880, 1650, 1550, 1470, 1380, 1230</p>
<p>8</p>	<p>structure</p>	<p>Important wavenumbers</p> <p>3330, 3070, 3050, 2970-2880, 1640, 1620, 1580, 1490, 720, 700,</p>

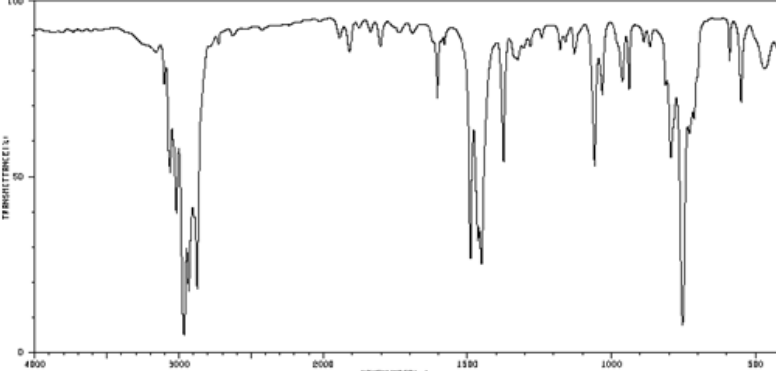
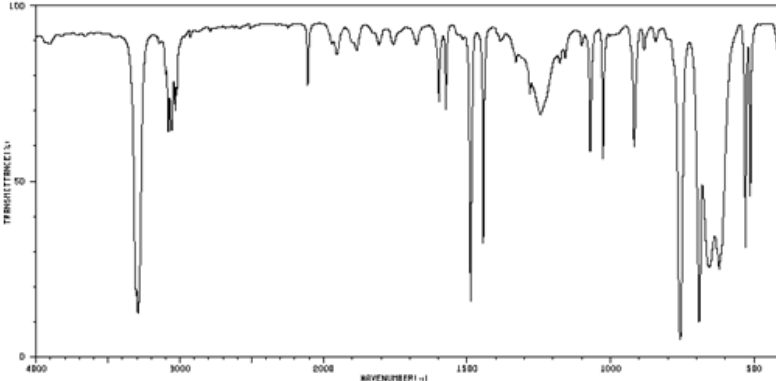
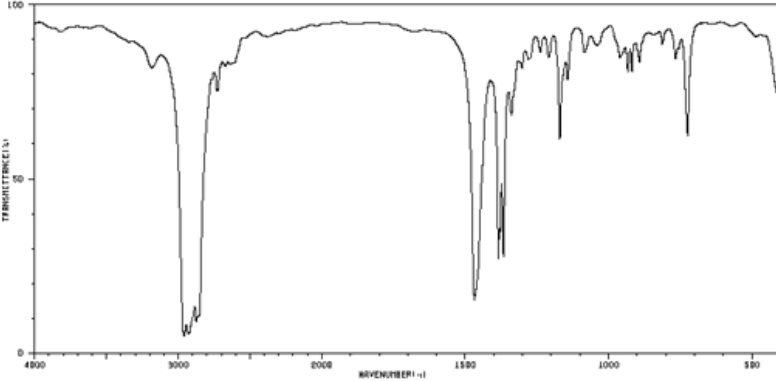
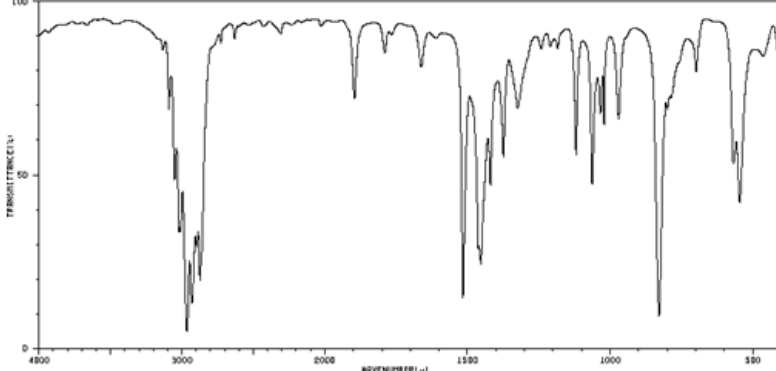
<p>9</p> 	<p>structure</p>	<p>Important wavenumbers</p> <p>3460, 2960- 2860, 1740, 1470, 1370, 1250, 1180, 1100, 1040,</p>
<p>10</p> 	<p>structure</p>	<p>Important wavenumbers</p> <p>3430, 3090, 3040, 2970- 2880, 1720, 1600, 1460, 1340, 1270, 1110, 710</p>
<p>11</p> 	<p>structure</p>	<p>Important wavenumbers</p> <p>3500 3070, 3040 2940 1770 1590 1480, 1370 1220 1190 750, 690</p>
<p>12</p> 	<p>structure</p>	<p>Important wavenumbers</p> <p>3450, 3060, 3040, 1730, 1600, 1490, 1260, 1200, 1060, 750, 700</p>

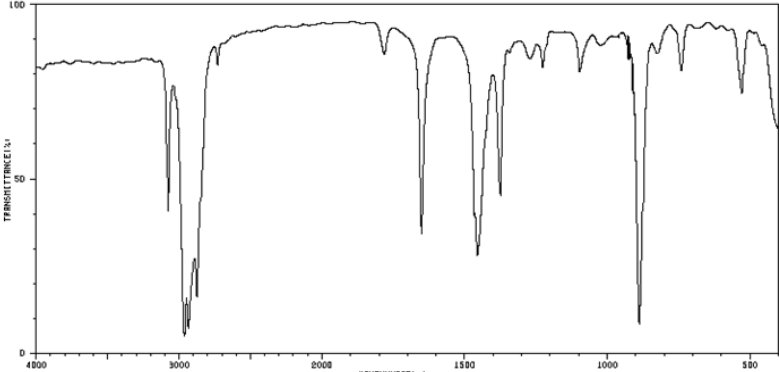
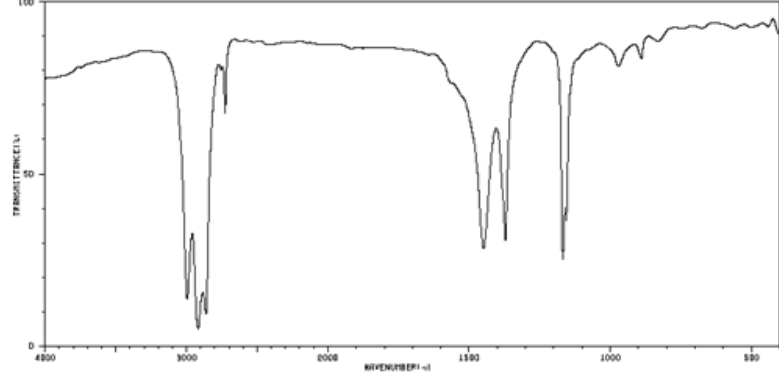
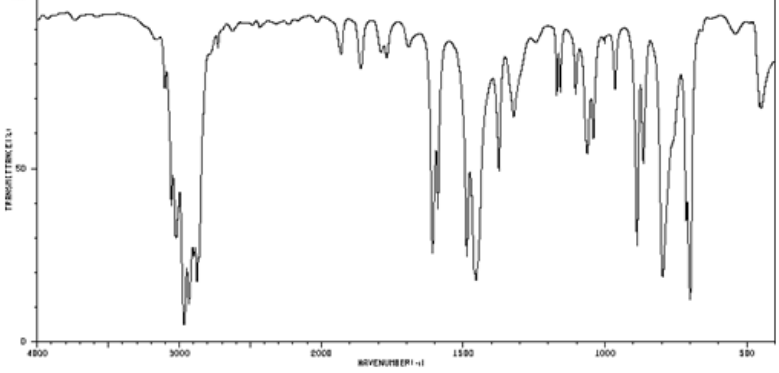
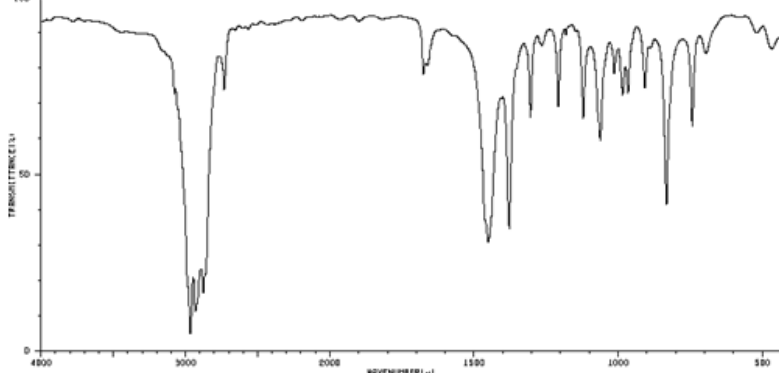
<p>13</p> 	<p>structure</p>	<p>Important wavenumbers</p> <p>3640, 3560, 2990- 2890, 1820, 1760, 1460, 1380, 1040</p>
<p>14</p> 	<p>structure</p>	<p>Important wavenumbers</p> <p>3090, 3050, 1790, 1730, 1600, 1450, 1210, 1180, 1040, 780, 700, 620</p>
<p>15</p> 	<p>structure</p>	<p>Important wavenumbers</p> <p>3490, 3070, 1780, 1600, 1580, 1450, 1210, 1180, 870, 780, 670</p>
<p>16</p> 	<p>structure</p>	<p>Important wavenumbers</p> <p>3680, 2960-2860, 1800 1470, 1380,</p>

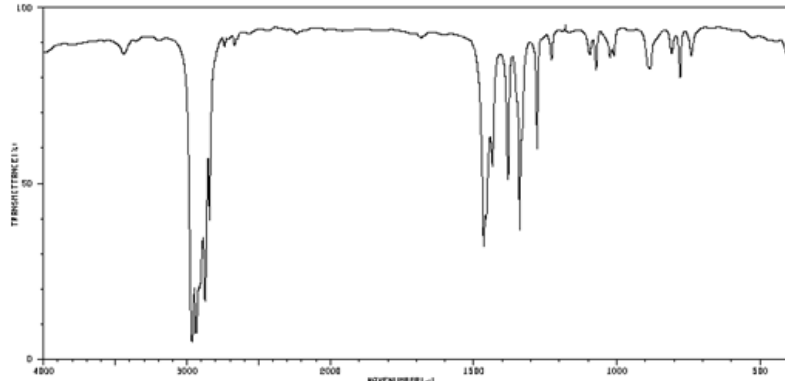
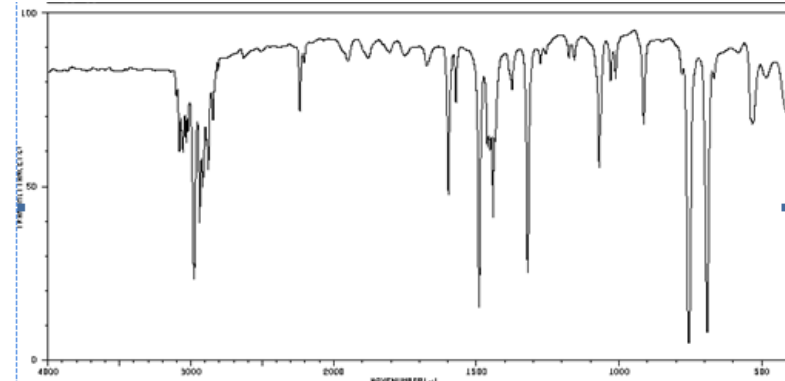
<p>17</p> 	<p>structure</p>	<p>Important wavenumbers</p> <p>3400, 3090, 3030, 2980- 2880, 1690, 1600, 1550, 1460, 1350, 1220, 750, 690</p>
<p>18</p> 	<p>structure</p>	<p>Important wavenumbers</p> <p>3420, 2960- 2880, 1720, 1470, 1360, 1170,</p>
<p>19</p> 	<p>structure</p>	<p>Important wavenumbers</p> <p>2970-2880, 1550, 1370 1470</p>
<p>20</p> 	<p>structure</p>	<p>Important wavenumbers</p> <p>3070, 1670, 1590, 1450, 1280, 700, 640</p>

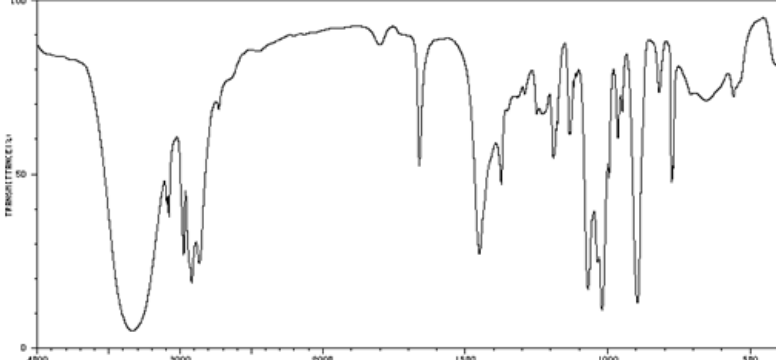
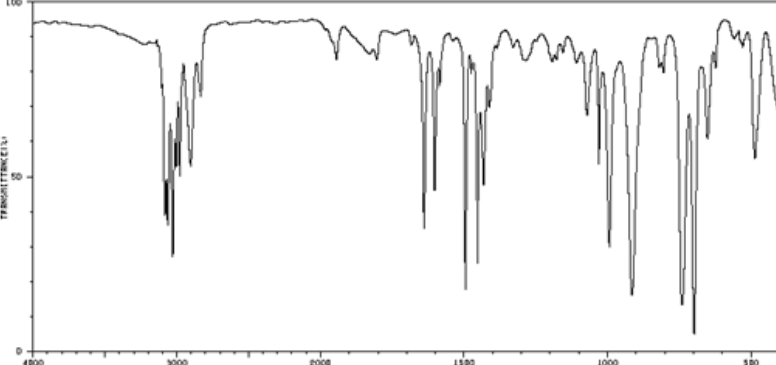
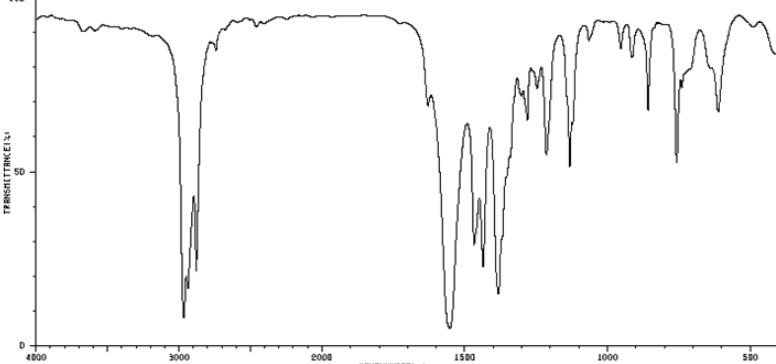
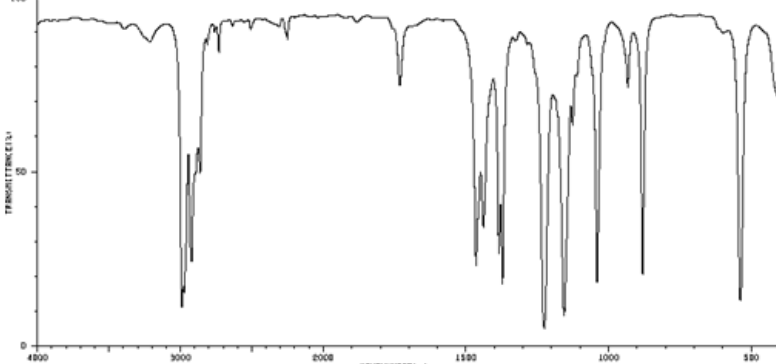
<p>1</p> 	<p>structure</p>	<p>Important wavenumbers</p> <p>2960-2870 2120 1470, 1370</p>
<p>2</p> 	<p>structure</p>	<p>Important wavenumbers</p>
<p>3</p> 	<p>structure</p>	<p>Important wavenumbers</p> <p>2970-2850 1470, 1370 720</p>
<p>4</p> 	<p>structure</p>	<p>Important wavenumbers</p> <p>3010 2970-2880 1690, 1670 1460, 1370 710</p> <p>Cis-4-octene</p>

<p>5</p> 	<p>structure</p>	<p>Important wavenumbers</p> <p>3080, 3030 2960-2870 1630, 1480, 1360 760, 700</p>
<p>6</p> 	<p>structure</p>	<p>Important wavenumbers</p> <p>3320 2960-2880 2120 1470, 1380 630</p>
<p>7</p> 	<p>structure</p>	<p>Important wavenumbers</p> <p>3090, 3040 1480 1040 670</p>
<p>8</p> 	<p>structure</p>	<p>Important wavenumbers</p> <p>3080 2960-2880 1660 1460, 1380 890</p>

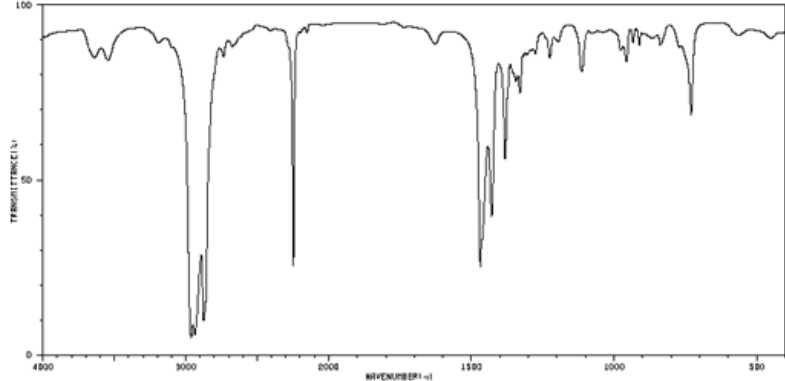
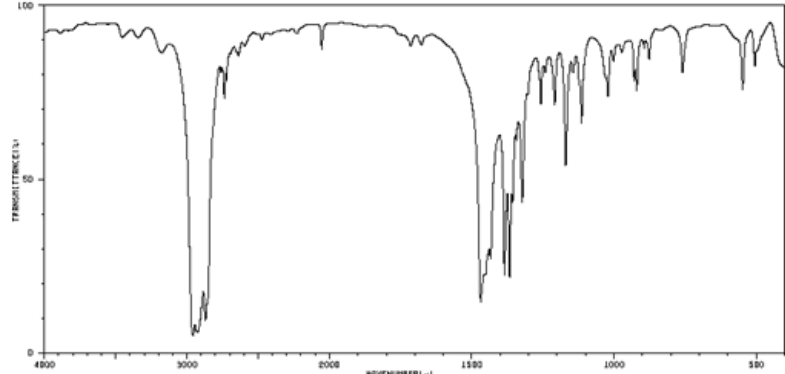
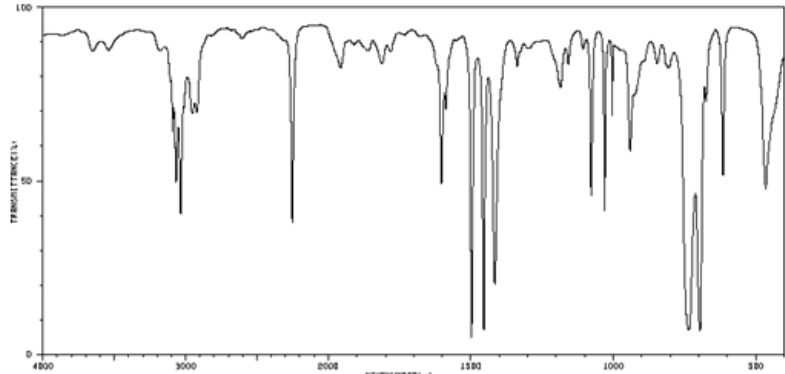
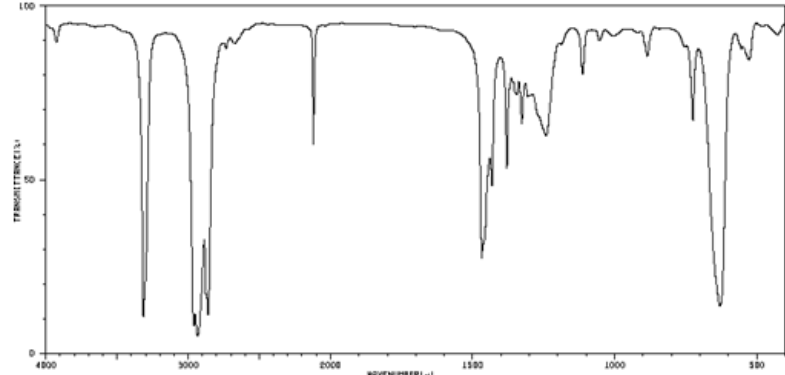
<p>9</p> 	<p>structure</p>	<p>Important wavenumbers</p> <p>3060, 3020 2970-2870 1610 1490, 1380 750</p>
<p>10</p> 	<p>structure</p>	<p>Important wavenumbers</p> <p>3310 3080, 3030 1490, 1440 760, 690 620</p>
<p>11</p> 	<p>structure</p>	<p>Important wavenumbers</p> <p>2960-2860 1470, 1380, 1370 (2 peaks) 730</p>
<p>12</p> 	<p>structure</p>	<p>Important wavenumbers</p> <p>3050, 3010 2970-2870 1520 1460, 1370 830</p>

<p>13</p> 	<p>structure</p>	<p>Important wavenumbers</p> <p>3030 2970-2880 1480, 1380 970</p>
<p>14</p> 	<p>structure</p>	<p>Important wavenumbers</p> <p>2990-2860 1450, 1370 1170</p>
<p>15</p> 	<p>structure</p>	<p>Important wavenumbers</p> <p>3020 2960-2870 1610 1490, 1380 880, 780, 700</p>
<p>16</p> 	<p>structure</p>	<p>Important wavenumbers</p> <p>3080 2970-2880 1670 1460 830</p>

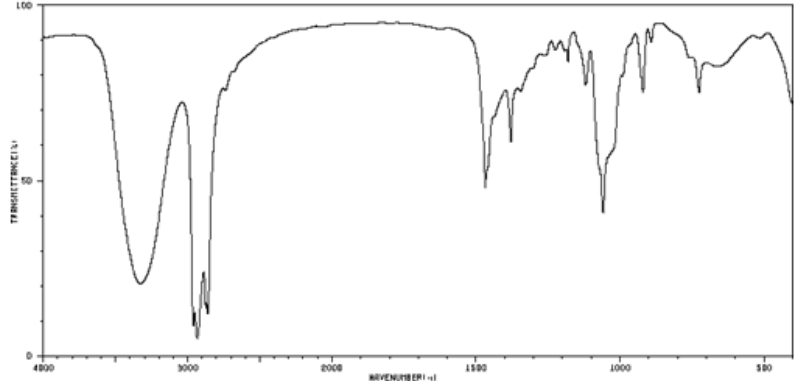
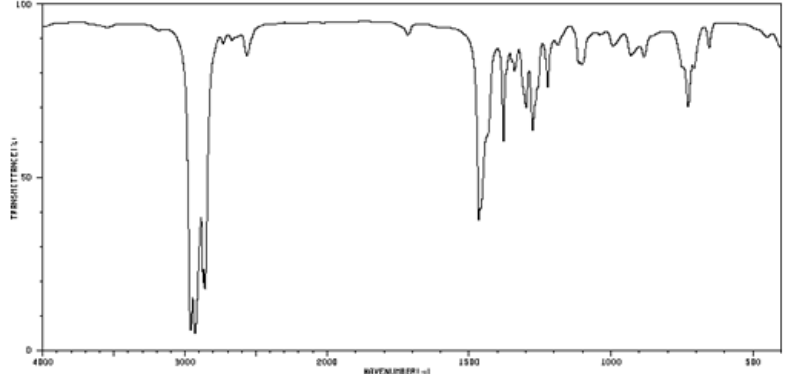
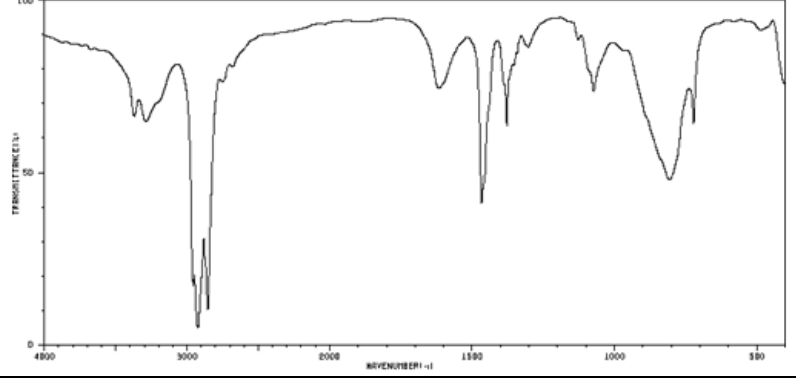
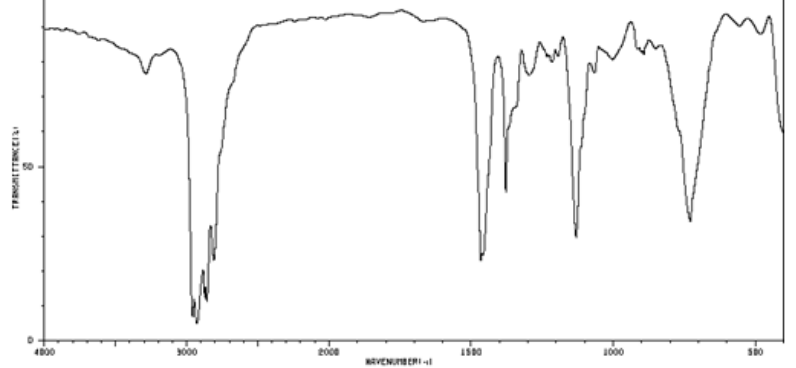
<p>17</p> 	<p>structure</p>	<p>Important wavenumbers</p> <p>2960-2840 1460, 1340</p>
<p>18</p> 	<p>structure</p>	<p>Important wavenumbers</p> <p>3100-3020 2980-2840 2240 1570, 1490 760, 690</p> <p>1-phenyl-1-butyne</p>

<p>1</p> 	<p>structure</p>	<p>Important wavenumbers</p> <p>3340 3080 2980-2870 1650 1460, 1370 1020 900</p>
<p>2</p> 	<p>structure</p>	<p>Important wavenumbers</p> <p>3080, 3030 2980-2830 1640m 1600m 1500 1460 990, 910 740m 700</p>
<p>3</p> 	<p>structure</p>	<p>Important wavenumbers</p> <p>2970-2880, 1550, 1370 1470</p>
<p>4</p> 	<p>structure (M+2 ~ M+)</p>	<p>Important wavenumbers</p> <p>2990-2860 1480, 1370 1230 1160 1040 880 640</p>

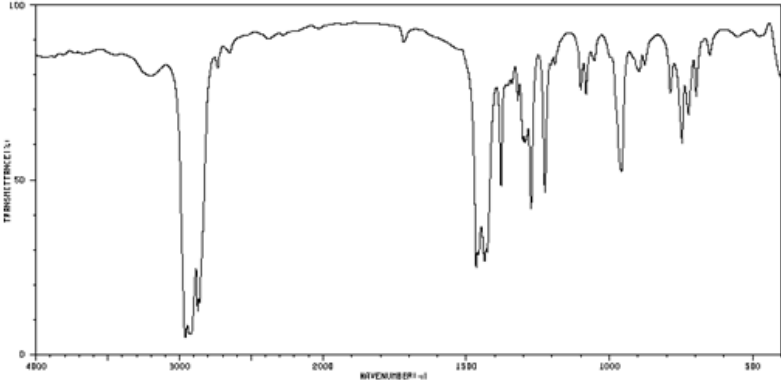
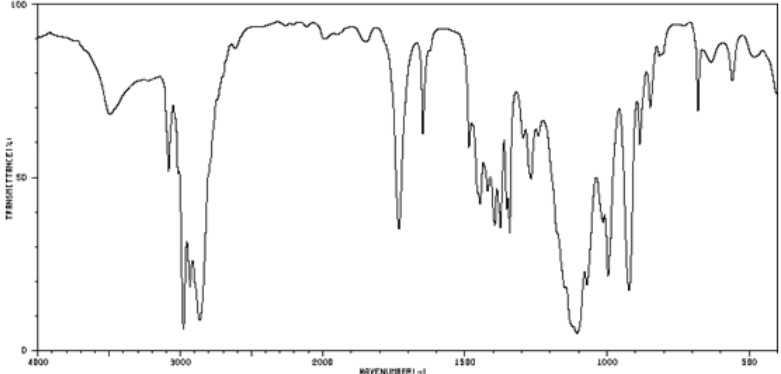
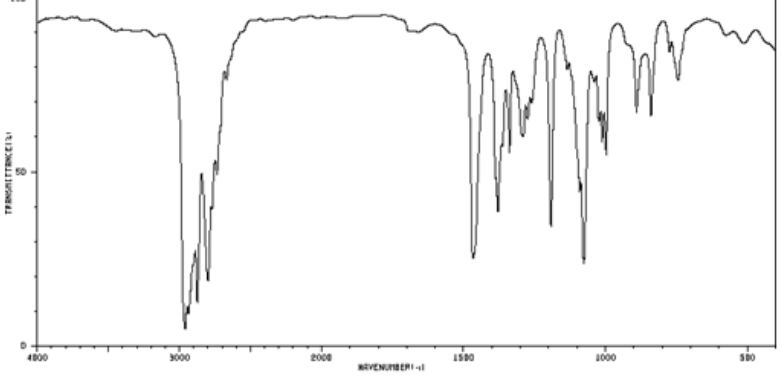
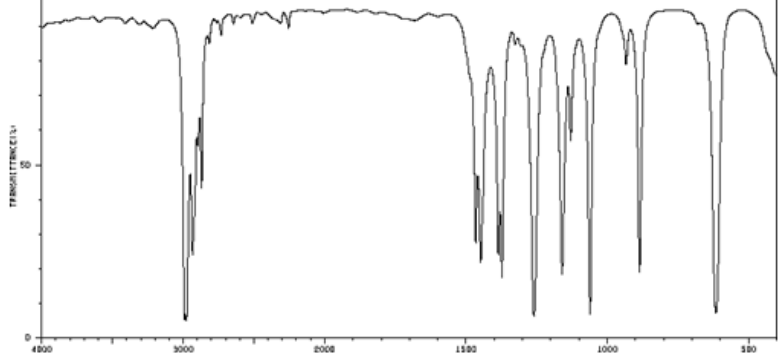
Group 3

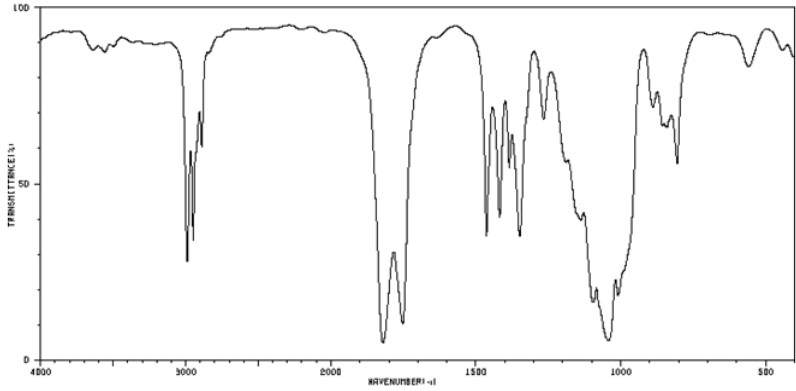
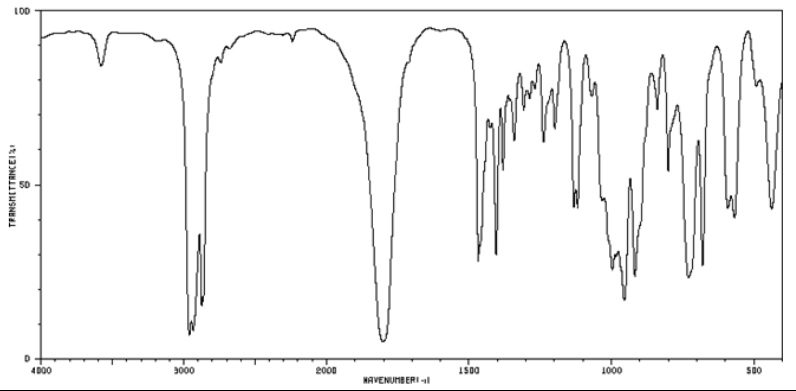
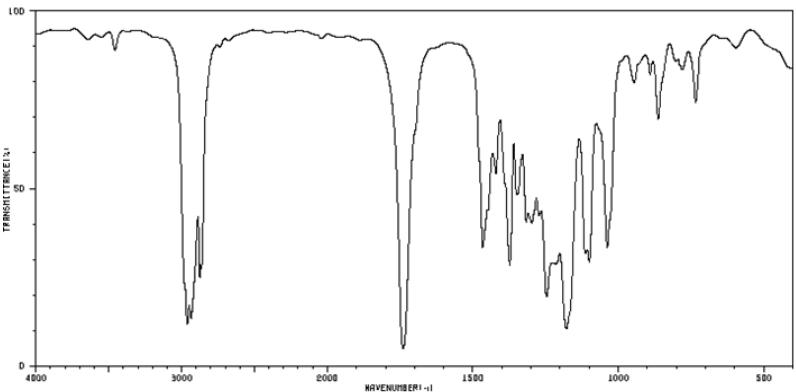
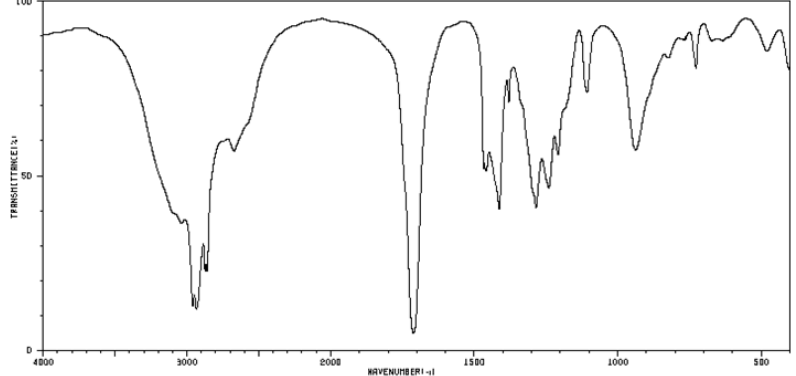
<p>5</p> 	structure	Important wavenumbers 3640, 3540 - impurity 2960-2880 2250 1470, 1380 730
<p>6</p> 	structure	Important wavenumbers 2960-2870 2120 1470, 1370
<p>7</p> 	structure	Important wavenumbers 3070, 3040 2970-2870 2230 1600, 1500 740 690
<p>8</p> 	structure	Important wavenumbers 3320 2960-2880 2120 1470, 1380 630

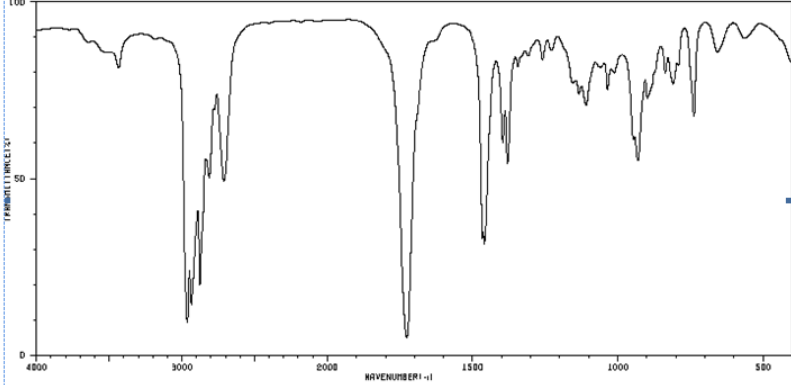
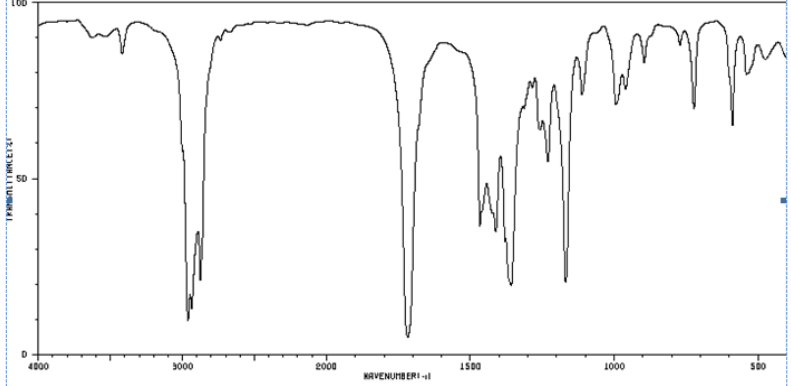
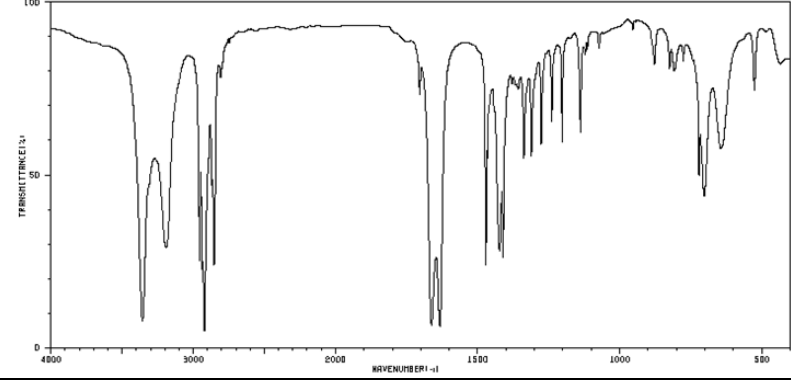
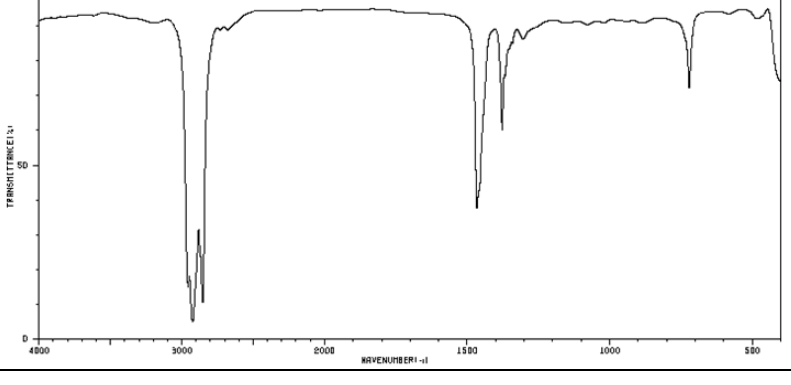
Group 3

<p>9</p> 	structure	<p>Important wavenumbers</p> <p>3320 2960-2860 1470, 1380 1060</p>
<p>10</p> <p>M+2 = 4.5% of M+</p> 	structure	<p>Important wavenumbers</p> <p>2970-2860 2660 1470, 1380 730</p>
<p>11</p> 	structure	<p>Important wavenumbers</p> <p>3370, 3290 2960-2850 1620 1470-1380 810</p>
<p>12</p> 	structure	<p>Important wavenumbers</p> <p>3290 2960-2870 1470, 1360 720</p>

Group 3 hilarious

<p>13</p> <p style="text-align: center;">$M+2 = 4.5\%$ of $M+$</p> 	structure	<p>Important wavenumbers</p> <p>2960-2860 1470, 1440, 1380</p>
<p>14</p> 	structure	<p>Important wavenumbers</p> <p>3490 – impurity (wet?) 3080 2980-2860 1730 - ?? 1650 1460-1340 1100 990, 920</p>
<p>15</p> 	structure	<p>Important wavenumbers</p> <p>2960-2800 1470, 1380</p>
<p>16</p> <p style="text-align: center;">$M+2 = 32\%$ of $M+$</p> 	structure	<p>Important wavenumbers</p> <p>2990-2870 1470, 1370 1260 1160 1060 890 620</p>

<p>17</p> 	<p>structure</p>	<p>Important wavenumbers</p> <p>3640, 3560, 2990- 2890, 1820, 1760, 1460, 1380, 1040</p>
<p>18</p> 	<p>structure</p>	<p>Important wavenumbers</p> <p>3680, 2960-2860, 1800 1470, 1380,</p>
<p>19</p> 	<p>structure</p>	<p>Important wavenumbers</p> <p>3460, 2960- 2860, 1740, 1470, 1370, 1250, 1180, 1100, 1040,</p>
<p>20</p> 	<p>structure</p>	<p>Important wavenumbers</p> <p>3300-2500, 2970, 2870, 1710, 1470, 1370, 940, 730</p>

<p>21</p> 	<p>structure</p>	<p>Important wavenumbers</p>
<p>22</p> 	<p>structure</p>	<p>Important wavenumbers</p>
<p>23</p> 	<p>structure</p>	<p>Important wavenumbers</p>
<p>24</p> 	<p>structure</p>	<p>Important wavenumbers</p>