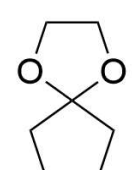
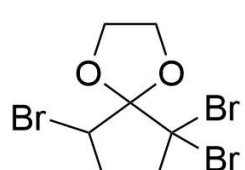
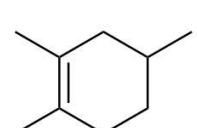
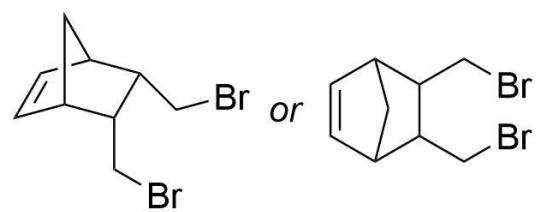

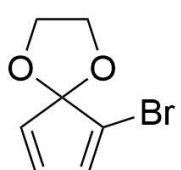
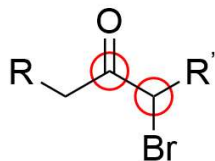


3.	This question is about cubane	Mark												
(a)	C_8H_8	<input checked="" type="checkbox"/>												
(b)	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Molecule</th> <th style="width: 50%;">Number of peaks in ^{13}C NMR</th> </tr> </thead> <tbody> <tr> <td>Cubane</td> <td>1</td> </tr> <tr> <td>Cubane-carboxylic acid</td> <td>5</td> </tr> <tr> <td>Cubane-1,2-dicarboxylic acid</td> <td>4</td> </tr> <tr> <td>Cubane-1,3-dicarboxylic acid</td> <td>5</td> </tr> <tr> <td>Cubane-1,4-dicarboxylic acid</td> <td>3</td> </tr> </tbody> </table> <p><i>3 marks for all five correct. 2 marks for three or four correct. 1 mark for one or two correct.</i></p>	Molecule	Number of peaks in ^{13}C NMR	Cubane	1	Cubane-carboxylic acid	5	Cubane-1,2-dicarboxylic acid	4	Cubane-1,3-dicarboxylic acid	5	Cubane-1,4-dicarboxylic acid	3	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>
Molecule	Number of peaks in ^{13}C NMR													
Cubane	1													
Cubane-carboxylic acid	5													
Cubane-1,2-dicarboxylic acid	4													
Cubane-1,3-dicarboxylic acid	5													
Cubane-1,4-dicarboxylic acid	3													
(c)	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>A</p>  </div> <div style="text-align: center;"> <p>B</p>  </div> </div>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>												
(d)	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>W</p>  </div> <div style="text-align: center;"> <p>X</p>  <p><i>Either representation is acceptable. Stereochemistry is not required.</i></p> </div> </div>	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/>												
(e)	<p>Y</p> 	<input checked="" type="checkbox"/>												
(f)	<p>C</p> 	<input checked="" type="checkbox"/>												

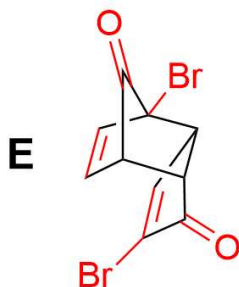
(g)



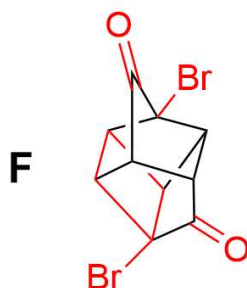
Both must be circled correctly for one mark.



(h)



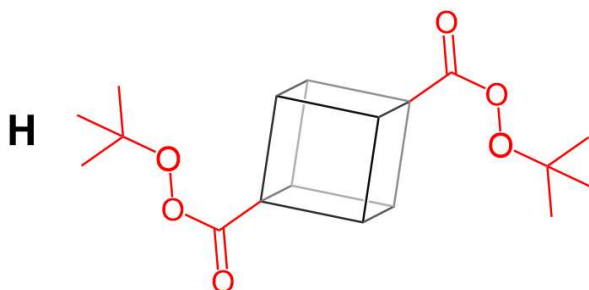
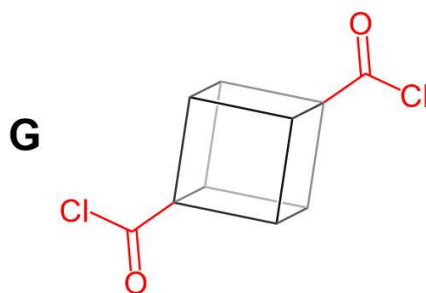
Two marks for completely correct. For any marks, both carbonyls must be present. Up to one other error, one mark.



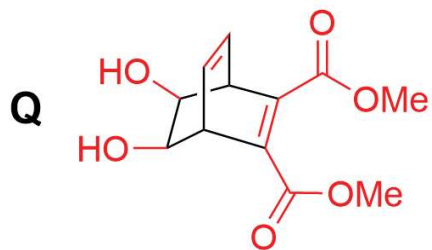
Two marks for completely correct. ECF allow from E for any chemically reasonable substituent error carried forward.



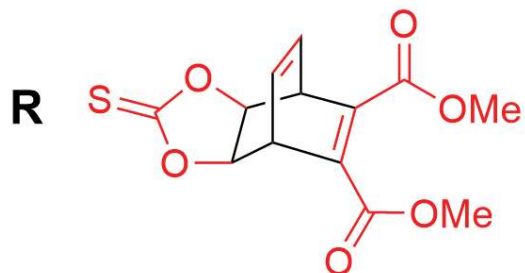
(i)



(i)



Structure must be fully correct. No partial credit.



Structure must be fully correct. No partial credit.

S is CO₂



Structure must be fully correct. No partial credit.

Total out of 24

24