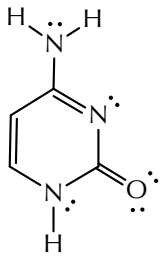
10.02 Nucleic acids (RNA and DNA) are among the most important molecules on our planet. Each of them includes four nucleobases, heterocyclic molecules that comprise the so-called "base pairs" in the double helix structure. The four nucleobases from DNA are shown below. For each one, answer the following questions:

(i) Is the resonance contributor of the 6-membered ring, as drawn, an aromatic ring? Yes or No?

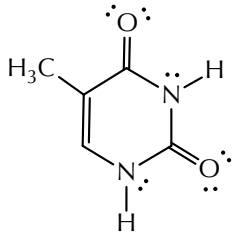
(ii) Is there at least one other resonance contributor that has an aromatic ring? Yes or No? If yes, draw it. If no, say "N/A"

(a) cytosine



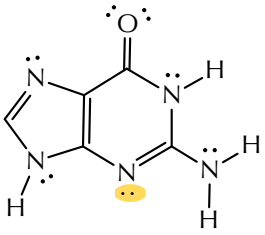
Is the resonance contributor of the 6-membered ring, as drawn, aromatic? Yes No	
Is there another resonance contributor that is aromatic? If yes, draw it. If no, say "N/A"	

(b) thymine



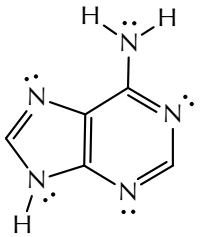
Is the resonance contributor of the 6-membered ring, as drawn, aromatic? Yes No	
Is there another resonance contributor that is aromatic? If yes, draw it. If no, say "N/A"	

(c) guanine



Is the resonance contributor of the 6-membered ring, as drawn, aromatic? Yes No	
Is there another resonance contributor that is aromatic? If yes, draw it. If no, say "N/A"	

(d) adenine



Is the resonance contributor of the 6-membered ring, as drawn, aromatic? Yes No	
Is there another resonance contributor that is aromatic? If yes, draw it. If no, say "N/A"	