Chapter 1 problems: Answers

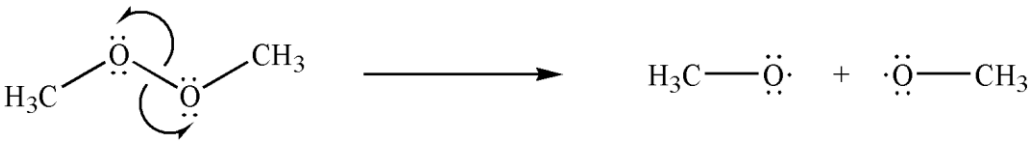
MULTIPLE CHOICE

1. ANS: A
2. ANS: B
3. ANS: A
4. ANS: A
5. ANS: C
6. ANS: C
7. ANS: B

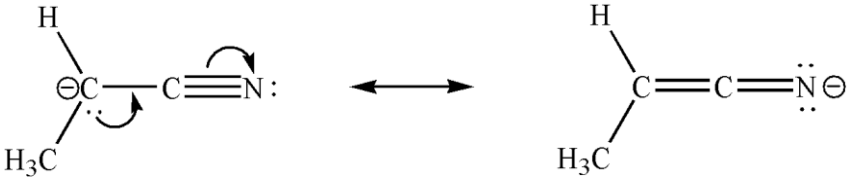
SHORT ANSWER

8. ANS:
Nitrogen has seven electrons ($Z = 7$). The student violated Hund's rule by pairing two electrons in the same *p* orbital instead of placing an unpaired electron in each of the three available *p* orbitals, as Hund's rule states that for a given electron configuration, the state with the greatest number of parallel spins has the lowest energy. The lowest energy electron configuration is $1s^2 2s^2 2p_x^1 2p_y^1 2p_z^1$.

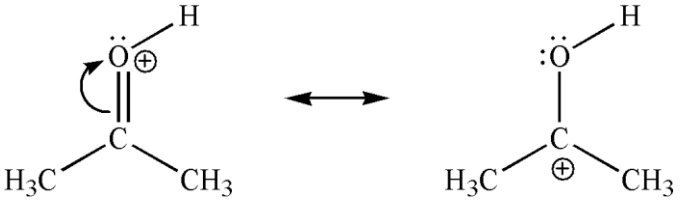
9. ANS:



10. ANS:
The better resonance contributor places the negative charge on the more electronegative atom, nitrogen.

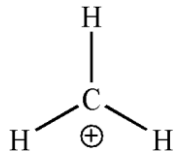


11. ANS:



The original structure is the better contributor to the resonance hybrid, as it has more bonds and all atoms have octets of electrons.

12. ANS:



13. ANS: