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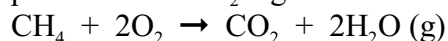
Answer the questions on this test sheet

- 1) The following reaction was performed in a rigid volume and the temperature was returned to the starting temperature. HF gas is reacted with an excess of SiO_2 . The starting pressure for the HF is 17.7 MPa.

What is the final pressure of the SiF_4 gas?

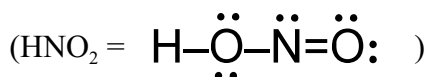
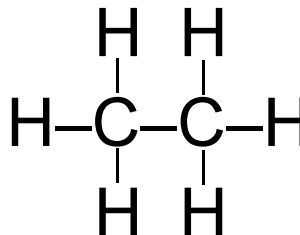
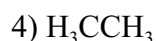
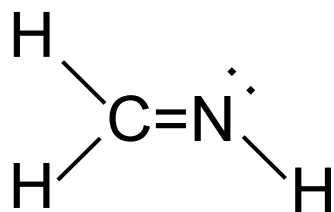
$$P(\text{SiF}_4) = \underline{4.43 \text{ MPa.}}$$

- 2) The following reaction was initiated at 292°C at 4.07 atm of CH_4 atm in a constant volume container. The O_2 was in excess. At the end of the reaction the temperature was 469°C . What was the final pressure of the H_2O gas?



$$P(\text{H}_2\text{O}) = \underline{10.7 \text{ atm.}}$$

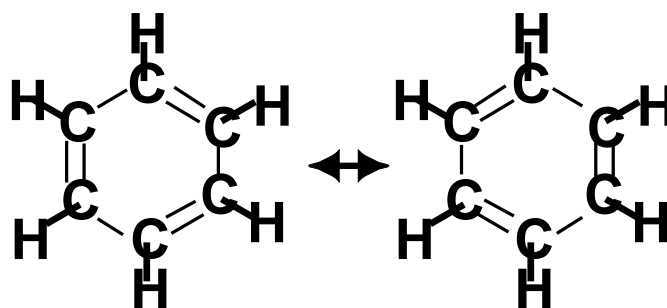
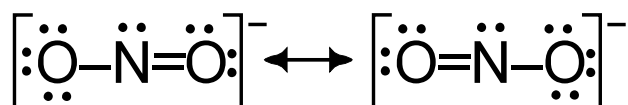
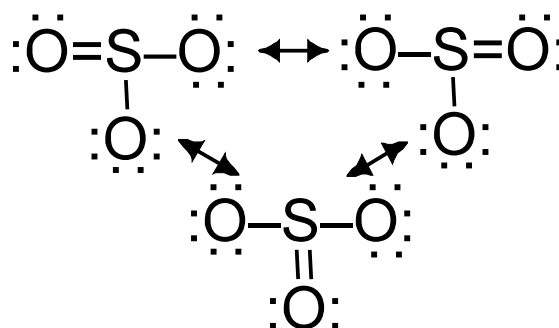
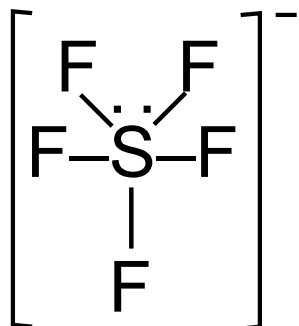
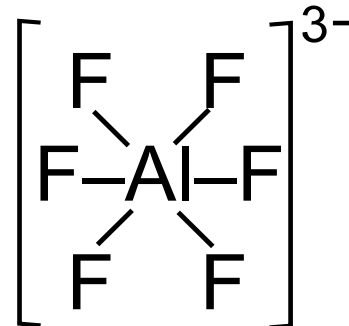
Draw the Lewis dot structure for the following compounds:



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Draw the Lewis dot structure for the following compounds:

7) HCN

8) C₆H₆ in a ring9) NO₂⁻10) SO₃11) SF₅⁻12) AlF₆³⁻

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What are the electronic and geometrical shapes for the following compounds or ions? If there is more than one central atom for a compound or ion, give the geometry for both. (SEE BELOW for LEWIS DOT)

13) ICl_3 electronic: trigonal bipyramid molecular: T-shaped14) $\text{C}_5\text{H}_5\text{N}$ – Cs and Ns in a ring electronic: trigonal molecular: C = trigonal + N = bent 120° 15) HNNH electronic: trigonal molecular: bent 120° 16) CH_4 electronic: tetrahedral molecular: tetrahedral

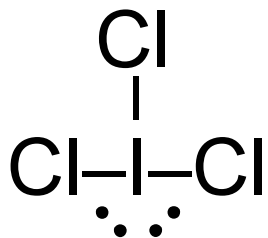
17) Give the electron configuration for the following element according to the aufbau principle based on the hydrogen atom.

Ar: $1s^2 2s^2 2p^6 3s^2 3p^6$ F: $1s^2 2s^2 2p^5$ 18) Give the electron configuration for the following element according to the aufbau principle based on the hydrogen atom. Use the core (short cut) method on these.Er: $[\text{Xe}]6s^2 4f^2$ La: $[\text{Xe}]6s^2 4f^1$

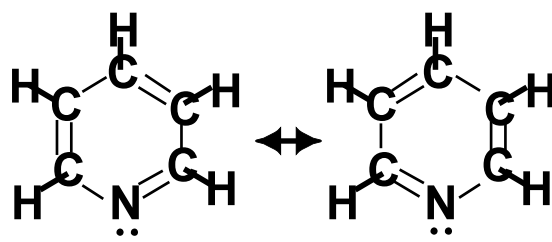
19) Which of the following have the rotation hindered. Tell why it the roatation is or is not hindered.

 H_2CCH_2 : hindered – double bond HCCH : not hindered – triple bonded $\text{ClH}_2\text{CCH}_2\text{Cl}$: not hindered – single bonded H_3CCH_3 : not hindered – single bonded20) The following reaction: $\text{N}_2 + 3\text{H}_2 \rightarrow 2\text{NH}_3$ took place in a rigid container. The starting temperature was 122°C and the partial pressure of the H_2 was initially 21.5atm. After the reaction is complete, The temperature increased to 311°C . What was the final NH_3 pressure? $P(\text{NH}_3) =$ 21.2 atm

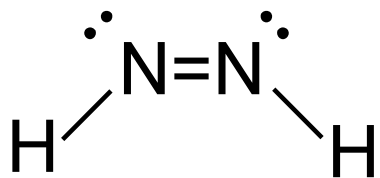
13)



14)



15)



16)

