

HW06

Question 1

1 pts

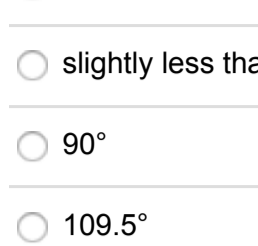
Which of the following has bond angles slightly LESS than 120°?

- SF₂
- O₃
- NO₃⁻
- CH₂O

Question 2

1 pts

Consider the compound peroxyacetyl nitrate, an eye irritant in smog.



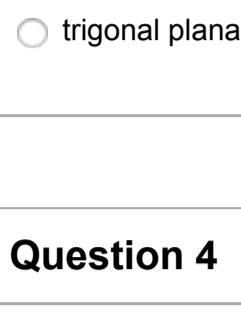
Predict the indicated bond angle.

- 120°
- slightly less than 109.5°
- 90°
- 109.5°
- slightly less than 120°

Question 3

1 pts

What is the shape of phosphorus pentachloride?



- tetrahedral
- trigonal bipyramidal
- trigonal planar
- octahedral
- trigonal planar

Question 4

1 pts

Referring to the phosphorus pentachloride molecule shown above, what is the bond angle between a chlorine in the axial position and a chlorine in the equatorial position?

- 180°
- 120°
- 90°
- 109.5°
- 45°
- 360°

Question 5

1 pts

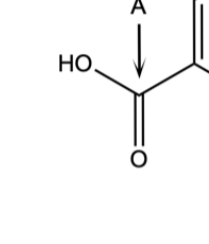
Referring again to phosphorus pentachloride, what are the bond angles between the two axial chlorine atoms?

- 120°
- 90°
- 109.5°
- 180°

Question 6

1 pts

What is the shape of sulfur hexachloride?

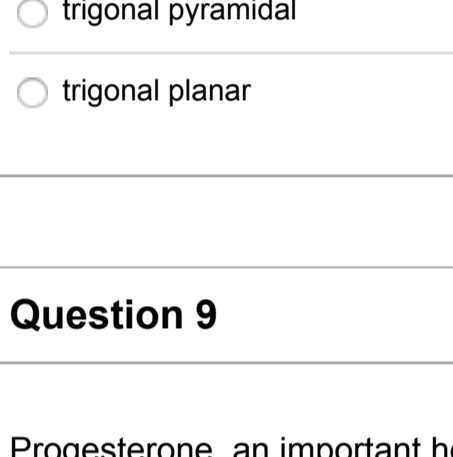


- octahedral
- hexahedral
- tetrahedral
- trigonal planar
- trigonal bipyramid

Question 7

1 pts

Which labelled bond angles are 120°?



- A
- D
- B
- C

Question 8

1 pts

What is the geometry around the left-most carbon in the molecule CH₂CHCH₃?

- tetrahedral
- linear
- trigonal pyramidal
- trigonal planar

Question 9

1 pts

Progesterone, an important hormone in female reproductive processes, is shown in Figure A. The molecular formula is C₂₁H₃₀O₂. In Figure B, the ketone on the five-carbon ring has been substituted with a hydroxyl group, and this small difference results in another hormone with very different biological effects! What is the chemical formula for the compound in Figure B?

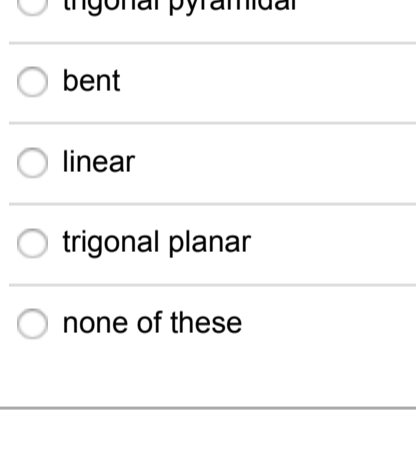


Figure A



Figure B

- C₁₈H₂₄O₂
- C₁₉H₂₈O₂
- C₂₀H₂₈O₂
- C₂₁H₂₉O₂

Question 10

1 pts

What is the shape (molecular geometry) of COCl₂?

- T-shaped
- trigonal pyramidal
- trigonal planar
- tetrahedral

Question 11

1 pts

What is the molecular geometry of the nitrite ion, NO₂⁻?

- trigonal pyramidal
- bent
- linear
- trigonal planar
- none of these

Question 12

1 pts

A molecule has three bonds and one lone pair. What are the electronic and molecular geometries, respectively?

- tetrahedral, tetrahedral
- tetrahedral, trigonal pyramid
- trigonal planar, trigonal pyramid
- trigonal pyramid, tetrahedral
- tetrahedral, trigonal planar

Question 13

1 pts

Determine the molecular geometry of BrF₅.

- Trigonal pyramidal
- Trigonal bipyramidal
- Octahedral
- Square pyramidal

Question 14

1 pts

About what percentage of Earth's dry (no water) atmosphere is able to absorb IR radiation?

- Less than 1%
- Roughly 50%
- IR is absorbed evenly by all atmospheric gases
- 1%
- Only gases in the mesosphere

Question 15

1 pts

Select the molecules that are capable of absorbing IR radiation.

- CH₄
- CF₃CH₂CF₃
- CO₂
- O₂
- Ne
- Ar
- H₂O

Question 16

1 pts

What is the advantage of HFCs over the HCFCs that are used in present day appliances?

- HFCs do not contain ozone-depleting chlorine
- HFCs do not absorb in the IR region
- HFCs are less reactive than HCFCs
- HFCs are inflammable

Question 17

1 pts

Which of the following is a concern with long-term use of HFCs?

- They are highly toxic
- They absorb IR radiation, resulting in global warming risks
- They are flammable
- They will result in large-scale depletion of the ozone layer

Question 18

1 pts

Which of the following contribute significantly to the hole in the ozone layer?

- All of these are correct
- Chlorofluorocarbons
- Automobile exhaust
- Deforestation

Question 19

1 pts

The ozone layer is found in the...

- Troposphere
- Biosphere
- Stratosphere
- Mesosphere

Question 20

1 pts

The depletion of the ozone layer is catalyzed by chlorine. Which of the following best relates stratospheric chlorine to ozone levels?

- As chlorine levels increase, ozone levels decrease
- As chlorine levels increase, the amount of ozone depletion cannot be predicted
- As chlorine levels increase, ozone levels increase