

Arjuna JEE 2.0 2026

Chemistry

Chemical Bonding and Molecular Structure

DPP: 4

Time Duration-49 Mins.

Q1 Predict the correct order of repulsion among the following:

- (A) bond pair - bond pair > lone pair - bond pair > lone pair - lone pair
- (B) lone pair - bond pair > bond pair - bond pair > lone pair - lone pair
- (C) lone pair - lone pair > lone pair - bond pair > bond pair - bond pair
- (D) lone pair - lone pair > bond pair - bond pair > lone pair - bond pair

Q2 Which of the following molecules has more than one lone pair?

- (A) SO_2
- (B) XeF_2
- (C) SiF_4
- (D) CH_4

Q3 In the structure of ClF_3 , the number of lone pairs of electrons on central atom 'Cl' is:

- (A) one
- (B) two
- (C) four
- (D) three

Q4 The central atom of which one of the following molecules, has 3 bond pairs and 2 lone pairs of electrons in its valence shell?

- (A) Boron trifluoride
- (B) Phosphorous trichloride
- (C) Chlorine trifluoride

(D) Xenon trioxide

Q5 Number of b.p. and l.p. in NO_3^- is:

- (A) 3 b.p. + 1 l.p.
- (B) 4 b.p. + 0 l.p.
- (C) 2 b.p. + 2 l.p.
- (D) 1 b.p. + 1 l.p.

Q6 SF_4 can be classified as

- (A) AB_4 type
- (B) AB_4E type
- (C) AB_4E_2 type
- (D) None of these.

Q7 Pentagonal bipyramidal structure contains bond angles approximately

- (A) $120^\circ, 90^\circ, 180^\circ$
- (B) $120^\circ, 72^\circ, 180^\circ$
- (C) $72^\circ, 90^\circ, 120^\circ$
- (D) $72^\circ, 90^\circ, 180^\circ$

Q8 In which of the following molecules, the central atom has two lone pairs of electrons?

- (A) SF_4
- (B) BrF_5
- (C) SO_2
- (D) XeF_4

Q9 Among the following molecules:

$\text{SO}_2, \text{SF}_4, \text{ClF}_3, \text{BrF}_5$ and XeF_4 which of the following shapes does not describe any of the molecules mentioned?



- (A) Bent
- (B) Trigonal bipyramidal
- (C) See-saw
- (D) T-shape

Q10 In which of the following molecule/ion, all the bonds are not equal?

- (A) XeF_4
- (B) BF_4^-
- (C) C_2H_4
- (D) SiF_4

Q11 Incorrect matching amongst the following is:

- (i) Linear — H_2O , SO_2
- (ii) V-shaped - : CH_2 , SnCl_2
- (iii) SeeSaw — SF_4 , TeCl_4
- (iv) T-shaped - ICl_3 , ClF_3

- (A) only (i)
- (B) both (ii and (ii)
- (C) only (iii)
- (D) both (iii) and (iv)

Q12 According to VSEPR theory molecule having T-shape is:

- (A) ClF_3
- (B) NH_3
- (C) BF_3
- (D) H_2O

Q13 Which of the following has a regular geometry?

- (A) CHCl_3
- (B) PCl_3
- (C) XeF_6
- (D) SF_4

Q14 Given below are two statement: one is labelled as Assertion A and the other is labelled as Reason R:

Assertion (A): ClF_3 has T-shape structure.

Reason (R): It has two lone pairs arranged at 180° angle.

In the light of the above statements, choose the **correct** answer from the options given below:

- (A) A is true, but R is false.
- (B) A is false, but R is true.
- (C)

Both A and R are true and R is the correct explanation of A.

(D) Both A and R are true, but R is not the correct explanation of A.

Q15 Which of the following molecules is linear in shape?

- (A) XeF_6
- (B) XeO_3
- (C) XeF_4
- (D) XeF_2

Q16 The shape of XeF_2 is

- (A) Linear
- (B) Bent
- (C) T-shaped
- (D) None of these

Q17 Which of the following is planar?

- (A) XeO_4
- (B) XeO_2F_2
- (C) XeO_3F_2
- (D) XeF_4



Answer Key

Q1 (C)
Q2 (B)
Q3 (B)
Q4 (C)
Q5 (B)
Q6 (B)
Q7 (D)
Q8 (D)
Q9 (B)

Q10 (C)
Q11 (A)
Q12 (A)
Q13 (A)
Q14 (A)
Q15 (D)
Q16 (A)
Q17 (D)



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