CHEMISTRY

AAKASH INSTITUTE ENGLISH

MOCK TEST 7

Example

1. The bond order between C and C in acetylene molecule is

A. 1

B. 2

C. 3

D. 4

Answer: C

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2. The species having bond order same as that of

(a) CO

(b) O_2

(c) N_2

(d) H_2

A. (a) and(b)

B. (a) and(d)

C. (c) and(d)

D. (a), (b) and(d)

Answer: B

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3. Resonance hybrid of nitrate ion is

A. 

B. 

Answer: C

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4. Which of the following has the least polarity in the bond?

A. H-F

B. $H - Cl$

C. H-O

D. H-S

Answer: D

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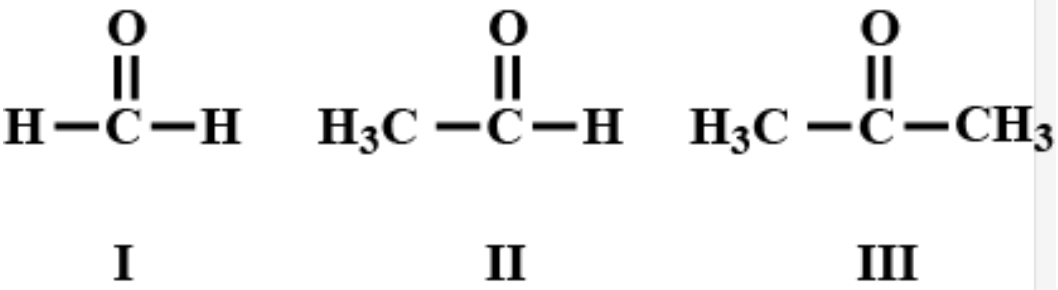
5. The correct order of dipole moment of the following compounds is



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6. In HCI molecule, expected value of dipole moment is 6.12 D but experimental value is 1.03 D. Then, the percentage ionic character will be

A. 16.13

B. 15.14

C. 6.02

D. 18.9

Answer: A

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7. In two different polar molecules, the ionic charge is 9.6 x 10-10 e.s.u and 3.2 x 10-19 coulombs respectively. If inter ionic distance in both the molecules is 1 A unit, then the dipole moment are respectively

A. $4.8D, 4.8D$

B. $1D, 4.8D$

C. 9.6D, 9.6D

D. 3.33D, 4.8D

Answer: C

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8. the bond between P atom and Cl atom are in PCl_5 are likely to be

A. Ionic with no covalent character

B. Covalent with no ionic character

C. Covalent with some ionic character

D. Ionic with some metallic character

Answer: C

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9. Which pair of the following has maximum and minimum ionic character respectively

A. $RbCl, BeCl_2$

B. $LiCl, RbCl$

C. RbCl, LiCl

D. RbCl, AgCl

Answer: A

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10. which of the following is not the correct matches according to VESPER theory

A. ICl_2 Linear ion

B. ICl_4^- Sqare plannee ion

C. IF_5 sea -saw

D. SO_2 Bent

Answer: C

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11. XeOF, contains

A. Six electron pairs forming an octahedron with two positions occupied by lone pairs

B. Two pi-bonds and the remaining six electron pairs, forming an octahedron

C. Three pi-bonds and the remaining four electron pairs forming a tetrahedron

D. One T-bond and the remaining six electron pairs forming an octahedron with one position occupied by a lone pair

Answer: D

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12. Which of the following compounds have zero dipole moment ?

A. 

B. null

C. SF_4

Answer: B

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13. The shape of BF species is

A. Tetrahedral

B. Square planar

C. Trigonal planar

D. Linear

Answer: A

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14. Which of the following given molecules has all the bond angles equal to 120°?

A. CH_4

B. BF_3

C. $BeCl_2$

D. PCl_5

Answer: B

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15. Which one of the following compounds is not planar?

A. $C_2H_2 > SO_2 > CH_4 > H_2O > NH_3$

B. $H_2O > NH_2 > CH_4 > C_2H_2 > SO_2$

C. $H_2O > NH_3 > CH_4 > SO_4 > C_2H_2$

D. $C_2H_2 > SO_2 > CH_4 > NH_3 > H_2O$

Answer: D

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16. A sigma bond is formed by the overlapping of

A. Only s-s orbitals

B. Only s-p orbitals

C. s-s, s-p or p-p orbitals along internuclear axis

D. p-p orbitals perpendicular to the internuclear axis

Answer: C

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17. The strength of bonds formed by overlapping of 2s-2s, 2p-2p and 2p-2s follows the order

A. $2s - 2s > 2p - 2p > 2s - 2p$

B. $2s - 2s > 2p - 2s > 2p - 2p$

C. 2p-2pgt2s-2pgt 2s-2s

D. $2p - 2p > 2s - 2s > 2p - 2s$

Answer: C

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18. Number of sigma and pi bonds present in pent- 2-en-4-yne.

A. 13σ , 3π

B. 11σ , 2π

C. 10σ , 3π

D. 12σ , 2π

Answer: A

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19. The overlapping involved in HF molecule is

A. s-s

B. s-p

C. p-p

D. s-d

Answer: B

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20. Write Finkelstein Reaction (Halogen Exchange)

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21. Valence bond theory was introduced by

A. Heitler and London

B. Sidgwick and Powell

C. F. Hund and R.S. Milliken

D. Latimer and Rodebush

Answer: A

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22. Which of the following statement regarding valence bond theory (VBT) is not true ? .

A. Covalent bond is a region of high electron charge density that results by the overlap of atomic orbitals of two atoms

B. Each bond is formed by maximum overlap for its maximum stability

C. The potential energy of a diatomic molecule is greater than the sum of potential energies of free atoms

D. Formation of a covalent bond between two atoms results by pairing of electrons present in the valence shell having opposite spins

Answer: C

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23. The triple bond in ethyne is made of

A. 3sigma bonds

B. 3pi bonds

C. 1sigma and 2pi bonds

D. 2sigma and 1pi bond

Answer: C

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24. Which of the following condition favours the bond formation?

A. Maximum attraction and maximum potential energy

B. Minimum potential energy and maximum attraction

C. Minimum potential energy and minimum attraction

D. Maximum potential energy and minimum attraction

Answer: B

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25. Which of the following statements is false?

A. sigma bond is shorter than that of pi bond

B. Bond energies of σ and π bonds are of the order of 264 and 347 kJ/mol respectively

C. Free rotation of atoms about sigma bond is allowed but not in case of pi bond

D. pi bond results from lateral overlap of atomic orbitals

Answer: D

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26. Which of the following overlaps is incorrect (assuming Z-axis is internucler axis) ?

$(A) 2P_y + 2p_y \rightarrow \pi$- Bond formation

$(B) 2p_x + 2p_x \rightarrow \sigma$- Bond formation

(C) $3d_{xy} + 3d_{xy} \rightarrow \pi$- Bond formation

$(D) 2s + 2p_y \rightarrow \pi$- Bond formation

(E) $3d_{xy} + 3d_{xy} \rightarrow \delta$- Bond formation

A. $2p_y + 2p_y$ right arrow $\pi 2p_y$

B. $2p_z + 2p_z$ rightarrow $\sigma 2p_z$

C. $2p_x + 2p_x \rightarrow \pi 2p_x$

D. $1s + 2p_y \rightarrow \pi\left(1s - 2p_y\right)$

Answer: D

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27. Which is the correct order of bond length ?

A. 

B. 

Answer: B

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28. Which of the following species contain only sigma bond?

A. $SiCl_4$

B. NO_3^-

C. HNC

D. SO_3^{2-}

Answer: A

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29. Discuss the formation of H2 molecule on the basis of Valence-bond theory.

A. net force of attraction equals tof of force repulsion

B. most stable state of H_2 is achieved

C. system aquires minimum energy

D. All of these

Answer: D

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30. In which of the following molecules, central atom is not sp^2 hybridize

A. $BeCl_2$

B. BCl_3

C. NH_3

D. ClF_3

Answer: B

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31. In which of the following molecules, central atom is not sp^3 hybridized?

A. NH_3

B. CH_4

C. H_2O

D. CO_2

Answer: D

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32. On hybridization of one s and one p orbital we get

A. Three orbitals in plane

B. Four orbitals in plane

C. Two mutually perpendicular orbitals

D. Two orbitals at 180 degree

Answer: D

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33. In Xe O_2F_2, Xe has hybridization

A. sp^2

B. sp

C. sp^3d^2

D. sp^3d

Answer: D

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34. Which of the following molecule is planar?

A. CH_4

B. C_2H_4

C. NH_3

D. SiCl_4`

Answer: B

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35. The number of nonbonding electron pairs in O_2 molecule is

A. 2

B. 6

C. 4

D. 8

Answer: C

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36. The species in which the central atom uses sp2? hybrid orbitals in its bonding is

A. SO_2

B. PH_3

C. NH_3

D. SbH_3

Answer: A

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37. Which of the following molecules/ions has pyramidal shape?

A. SO_3

B. NH_4^+

C. PCl_3

D. H_2O

Answer: C

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38. When two atomic orbitals linearly combine, they form

A. One molecular orbital

B. Two molecular orbitals

C. Three molecular orbitals

D. Four Molecular orbitals

Answer: B

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39. Find the incorrect statement regarding the conditions for the combination of atomic orbitals.

A. The combining atomic orbitals must have the same or nearly the same energy

B. The combining atomic orbitals must have the same symmetry about the molecular axis

C. The combining atomic orbitals must have different symmetry about the molecular axis

D. The combining atomic orbitals must overlap to maximum extent

Answer: C

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40. Among the following species, identify the isostructural pairs $NF_3, NO_3^-, BF_3, H_3O^+$,

A. $[NF_3, NO_3^-]$ and, $[BF_3, H_3O^{\square}]$

B. $[NF_3, HN_3]$ and $\left[NO_3^{-B}F_3\right]$

C. $[NF_3, H_3O^+]$ and $[NO_3^-, BF_3]$

D. $[NF_3, H_3O^+]$ and $[BF_3, HN_3]$

Answer: C

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41. Number of sp hybridised carbon atoms in But-2-yne is

A. 2

B. 4

C. 5

D. 6

Answer: B

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42. Which one of the following compounds is not planar?

A. $CH_2 = C = CH_2$

B. $CH_2 = CH_2$

C. $CH_2 = CH - CH = CH_2$

D. $CH_2 = CH - CH =_C H$

Answer: A

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