



CHEMISTRY

AAKASH INSTITUTE ENGLISH

MOCK TEST 8

Example

1. At room temperature F_2 and Cl_2 are gases Br_2 is a liquid and I_2 is solid. This is because

- A. Dipole-induced dipole interaction increases with molecular size
- B. Dipole-dipole interactions increases with molecular size
- C. Dispersion (London) interaction increases with molecular size
- D. Dispersion (London) interactions decreases with molecular size and polarity increases with molecular size

Answer: C



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2. One of the reasons that solid $CuSO_4$ dissolves in water is

- A. The ion-dipole forces between the ions and water molecules
- B. The electrostatic force of attraction between Cu^{2+} and the SO_4^{2-} ions
- C. Instantaneous dipole-induced dipole forces (dispersion or London forces) between the Cu^{2+} and SO_4^{2-} ions
- D. The hydrogen bonding between the water molecules

Answer: A



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3. The intermolecular interaction that is dependent on the inverse cube of distance between the molecule is :

- A. Ion-ion interaction
- B. Ion-dipole interaction
- C. London forces
- D. Dipole-dipole forces

Answer: D



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4. Which of the following is true about gaseous state of matter?

- A. Thermal energy is equal to molecular force of attraction
- B. Molecular forces of attraction are higher in gases than those in liquids
- C. Thermal energy is lower than molecular forces of attraction

D. Thermal energy is highly greater than molecular forces of attraction

Answer: D

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5. The boiling point of water ,ethyl alcohol and diethyl ether are 100°C , 78.5°C and 34.6°C respectively. Intermolecular forces will be in order of

A. Water gt Ethyl alcohol gt Diethyl ether

B. Ethyl alcohol gt Water gt Diethyl ether

C. Diethyl ether gt Ethyl alcohol gt Water

D. Diethyl ether gt Water gt Ethyl alcohol

Answer: A

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6. Among the following order of energies of molecular orbitals of O_2 choose the correct one

A. $E(\pi 2p_x) = E(\pi 2p_y) < E(\sigma 2p_z) < (E\pi^* 2p_x) = E(\pi^* 2p_y)$

B. $E(\pi 2p_x) = E(\pi 2p_y) > E(\sigma 2p_z) > (E\pi^* 2p_x) = E(\pi^* 2p_y)$

C. $E(\pi 2p_x) = E(\pi 2p_y) < E(\sigma 2p_z) > (E\pi^* 2p_x) = E(\pi^* 2p_y)$

D. $E(\pi 2p_x) = E(\pi 2p_y) > E(\sigma 2p_z) < (E\pi^* 2p_x) = E(\pi^* 2p_y)$

Answer: D



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7. Which of the following statements is not correct from the viewpoint of molecular orbital theory?

A. Be_2 is not a stable molecule

B. He_2 is not stable but He_2^+ is expected to exist

C. Bond strength of N_2 is maximum amongst the homonuclear diatomic molecules

D. The order of energies of molecular orbitals in F_2 molecule is

$$E(\sigma 2s) < E(\sigma^* 2s) < E(2\pi p_x) = E(\pi 2p_y) < E(\sigma 2p_z) < E(\pi^* 2p_x)$$

Answer: D

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8. Among the following the paramagnetic compound is

A. Na_2O_2

B. O_3

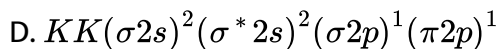
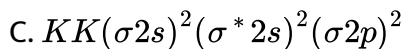
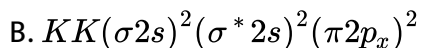
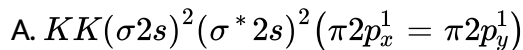
C. N_2O

D. KO_2

Answer: D

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9. The molecular electronic configuration of B_2 is



Answer: A



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10. Among the following molecular orbitals how many have at least one nodal plane? $\sigma^* 1s, \sigma 2s, \sigma^* 2p_z, \pi 2p_x, \pi^* 2p_y, \sigma 2p_z$

A. 4

B. 5

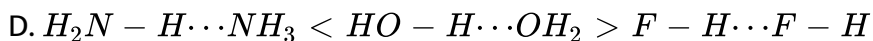
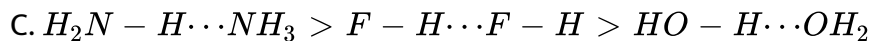
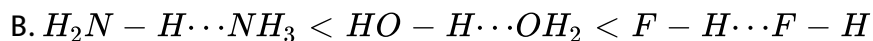
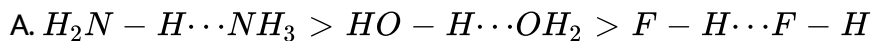
C. 2

D. 6

Answer: B

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11. The order of strength of hydrogen bonds is



Answer: B

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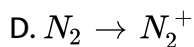
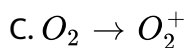
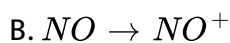
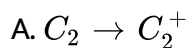
12. o-nitrophenol is more volatile than p-nitrophenol it is due to

- A. Intermolecular hydrogen bonding in o-nitrophenol
- B. Intramolecular hydrogen bonding in o-nitrophenol
- C. Intramolecular hydrogen bonding in p-nitrophenol
- D. More resonating structure of p-nitrophenol

Answer: B

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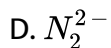
13. In which of the following ionisation processes, the bond order has increased and the magnetic behaviour has changed?



Answer: B

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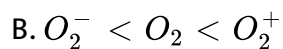
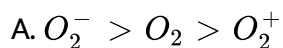
14. Which of the following species has shortest Bond length?



Answer: B

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15. Out of the following bond order of oxygen species identify the correct answer



C. $O_2^- > O_2 < O_2^+$

D. $O_2^- < O_2 > O_2^+$

Answer: B



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16. Which of the following curve does not represent Boyle's law?

A. 

B. 

C. 

D. 

Answer: D



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17. If the pressure of a gas contained in a closed vessel is increased by 0.4 % when heated by 1°C then its initial temperature must be

- A. 250 K
- B. 250°C
- C. 25°C
- D. 25 K

Answer: A



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18. An open flask contains air at 27°C . To what temperature it must be heated to expel one-fourth of the air?

- A. 127°C
- B. 65°C
- C. 927°C

D. 460°C

Answer: A



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19. The temperature, at which the volume of a given gas at 25°C becomes thrice when pressure of the system is kept constant

A. 75°C

B. 894 K

C. 440°C

D. 350 K

Answer: B




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20. Equal volumes of all gases under similar conditions of temperature and pressure contain equal number of atoms.

- A. Moles
- B. Atoms
- C. Electrons
- D. Radicals

Answer: A

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21. V vs T curves at constant pressure P_1 and P_2 for an ideal gas are shown in the figure. Which of the following is correct? 

- A. $P_1 > P_2$
- B. $P_1 < P_2$
- C. $P_1 = P_2$

D. P_1 and P_2 cannot be related

Answer: A

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22. One gram mole of a gas at STP occupies 22.4 L. This fact is derived from

A. Avogadro's law

B. Charles law

C. Dalton's law

D. Boyle's law

Answer: A

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