CHEMISTRY

BOOKS - MTG CHEMISTRY (HINGLISH)

PRACTICE PAPER 2

Practice Paper 2

1. The root mean square velocity of an ideal gas at constant pressure varies with density d as

A. d^2

B. d

C. $\sqrt{d}$

D. $1/\sqrt{d}$

Answer: D

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2. Which of the following does not have a linear structure?

A. $BeCl_2$

B. SO_2

C. C_2H_2

D. $HgCl_2$

Answer: B

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3. Which of the following arrangements represent increasingg oxidation number of the central atom?

A. $CrO_2^-, ClO_3^-, CrO_4^{2-}, MnO_4^-$

B. $ClO_3^-, CrO_4^{2-}, MnO_4^-, CrO_2^-$

C. $CrO_2^-, ClO_3^-, MnO_4^-, CrO_4^{2-}$

D. $CrO_4^{2-}, MnO_4^-, CrO_2^-, ClO_3^-$

Answer: A

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4. Gas deviates from ideal gas bahaviour because molecules

A. are colourless

B. attract each other

C. contain covalent bond

D. show brownian movement

Answer: B

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5. In which one of the following reactions H_2 is liberated?

A. $NaH + H_2O \rightarrow$

B. $NaCl + H_2O \rightarrow$

C. $Na_2O + H_2O \rightarrow$

D. $NaOH + H_2O \rightarrow$

Answer: A

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6. In the following question, a statement of assertion is followed by a statement of reason, mark the correct choice.

Assertion: When $Q_c = K_c$, reaction is at equilibrium.

Reason: At equilibrium, ΔG° is 0.

A. both assertion and reason are true and reason is the correct explanationn of assertion

B. both assertionn and reason are true but reason is not the correct explanation of assertion

C. Assertionis true but reason is false.

D. both assertion and reason are false.

Answer: B

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7. According to Bohr's theory, the angular momentum for an electron of 5^{th} orbit is

A. $2.5h / \pi$

B. $5h / \pi$

C. $25h / \pi$

D. $6h / 2\pi$

Answer: A

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8. Consider the equation $Z = \frac{PV}{nRT}$, which of the following statements is correct?

A. When Zgt1, real gases are easier to compress than the ideal gas.

B. When Z-1, real gases get compressed easily

C. When Zgt1, real gases are difficult to compress.

D. When Z=1, real gases are difficult to compress

Answer: C

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9. Carbon-60 contains____pentagons and ____hexagons.

A. 20,12

B. 12,20

C. 30,30

D. 24,36

Answer: B

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10. SF_4 has _____shape.

A. T-shape

B. Bent

C. Octahedral

D. see saw

Answer: D

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11. The shape of CIF_3 according to VSEPR model is

A. planar triangle

B. T-shape

C. tetrahedral

D. square planar

Answer: B

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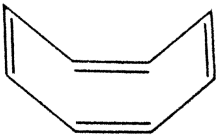
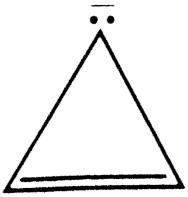
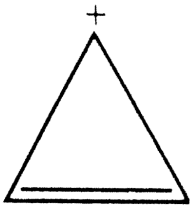
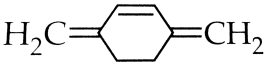
12. Which of the following is aromatic in nature?

A. 

B. 

C. 

D. 

Answer: C

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13. Which among CH_4, SiH_4, GeH_4 and SnH_4 is the most volatile ?

A. CH_4

B. SiH_4

C. GeH_4

D. SnH_4

Answer: A

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14. For which of the following reaction $K_p = K_c$?

A. $N_{2(g)} + 3H_{2(g)} \Leftrightarrow 2NH_{3(g)}$

B. $2NOCl((g)) \Leftrightarrow 2NO_{(g)} + Cl_{2(g)}$

C. $H_{2(g)} + I_{2(g)} \Leftrightarrow 2HI_{(g)}$

D. $CO_{2(g)} + C_{(s)} \Leftrightarrow 2CO_{(g)}$

Answer: C

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15. In the following question, a statement of assertionn is followed by a statement of reason. Mark the correct choice.

Assertion: Greater the value of van der waals constant 'a' easier is the liquifaction of a gas.

Reason: 'a' indirectly measures the magnitude of attractive forces between the molecules.

A. both assertion and reason are true and reason is the correct explanationn of assertion

B. both assertionn and reason are true but reason is not the correct explanation of assertion

C. Assertionis true but reason is false.

D. both assertion and reason are false.

Answer: A

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16. Which of the bicarbonate does not exist in solid state?

A. $NaHCO_3$

B. $KHCO_3$

C. $Ca(HCO_3)_2$

D. $RbHCO_3$

Answer: C

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17. Which of the following statements is incorrect?

A. One gram atom of carbon contains avogadro's number of atoms.

B. One mole of oxygen gas contains avogadro's number of molecules.

C. One mole of hydrogen gas contains avogadro's number of atoms.

D. One mole of electrons stands for 6.02×10^{23} electrons.

Answer: C

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18. Which of the following reactions is said to be entropy driven?

A. Endothermic reaction with positive entropy change and high temperature

B. Endothermic reactio with negative entropy change and low temperature

C. Exothermic reaction with positive entropy change and high temperature

D. Exothermic reaction with negative entropy change and low temperature

Answer: A

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19. Ultraviolet radiation is absorbed by

A. exosphere

B. ionosphere

C. ozonosphere

D. stratosphere

Answer: D

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20. Which has maximum number of molecules?

A. 7 g N_2

B. 2g H_2

C. 16 g NO_2

D. 16 g O_2

Answer: B

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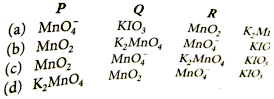
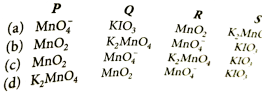
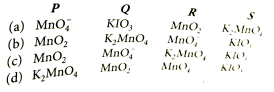
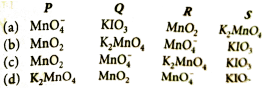
21. p-p overlapping is diagrammatically represented as

A. 

B. 

C. 

D. 

Answer: B

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22. Which of the following is incorect?

A. HydrogengtDeuteriumgtTritium, (%relative abundance)

B. Hydrogen $<$ Deuterium $<$ Tritium,(density/g L^{-1})

C. Hydrogen $<$ deuterium $<$ tritium,(boiling ponit/K)

D. HydreogengtDeuteriumgttritium,(melting point/K)

Answer: D

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23. Which of the following has +R (resonance) effect?

A. $-CN$

B. $-CHO$

C. $-NH_2$

D. $-NO_2$

Answer: C

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24. $Be_2C + 4H_2O \rightarrow 2X + CH_4$

$X + 2OH^- \rightarrow Y$

(X) and (Y) formed in the above two reactions is

A. $BeCO_3$ and $Be(OH)_2$ respectively

B. $Be(OH)_2$ and $BeCl_2$ respectively

C. $Be(OH)_2$ and $\left[Be(OH)_4\right]^{2-}$ respectively

D. $\left[Be(OH)_4\right]^{2-}$ and $BeCl_2$ respectively

Answer: C

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25. The bond order of a molecule is given by

A. the difference between the number of electrons in bonding and antibonding orbitals.

B. total number of electrons in bonding and antibonding orbitals.

C. Twice the difference between the number of electrons in bonding and antibonding orbitals.

D. Half the difference between umbe of electrons in bonding and antibonding orbitals.

Answer: D

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26. Permanent hardness is due to presence of soluble salts of Mg and Ca in the form of chlorides and sulphates in H_2O. It can be removed by

A. boiling

B. Clark's method

C. treatment with Na_2CO_3

D. all of these

Answer: C

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27. Mark out the correct increasing order of radius.

A. $As^{3-} < Br^{-} < K^{+} < Mg^{2+}$

B. $Mg^{2+} < K^{+} < Br^{-} < As^{3-}$

C. $Mg^{2+} < K^{+} < As^{3-} < Br^{-}$

D. $K^{+} < Mg^{2+} < Br^{-} < As^{3-}$

Answer: B

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28. $\Delta H_{\text{neutralisation}}$ is always

A. positive

B. negative

C. zero

D. positive or negative

Answer: B

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29. The pH of blood is

A. < 7

B. > 7 but < 8

C. > 8 but < 9

D. > 10

Answer: B

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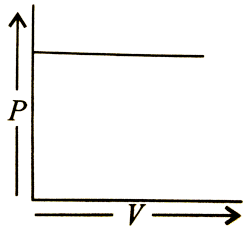
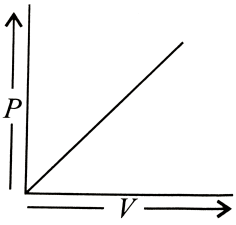
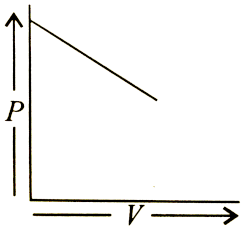
30. Which of the following is according to Boyle's law?

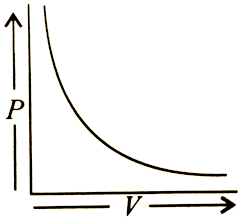
A. 

B. 

C.



D.



Answer: D

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31. pH of a 1.0×10^{-8} M solution of HCl is

A. 7.02

B. 6.958

C. 7.4

D. 6.8

Answer: B

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32. The substance used as a adsorbentt in the column

A. Na_2O

B. Na_2SO_4

C. Al_2O_3

D. alum.

Answer: C

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33. Elements of group 14 exhibit oxidation state of

A. $+4$ only

B. $+2$ and $+4$ only

C. $+1$ and $+3 only$

D. $+2$ only

Answer: B

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34. With rise in temperature, viscosity of a liquid

A. increases

B. decreases

C. remains constant

D. may increase or decrease

Answer: B

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35. Air contains 21% of oxygen by volume. The number of moles of O_2 present in 5L of air at STP conditions

A. 2.23×10^{-1}

B. 4.68×10^{-4}

C. 4.68×10^{-2}

D. 0.0234

Answer: C

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36. The ratio of average speed of an oxygen molcule to the RMS speed of a nitrogen molecule at the same temperature is

A. $\left(\frac{3\pi}{7}\right)^{1/2}$

B. $\left(\frac{7}{3\pi}\right)^{1/2}$

C. $\left(\frac{3}{7\pi}\right)^{1/2}$

D. $\left(\frac{7\pi}{3}\right)^{1/2}$

Answer: B

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37. The kinetic enerrgy of 4 mole sof nitrogen gas at $127^\circ C$ is $\left(R = 2 \text{ cal } mol^{-1}K^{-1}\right)$

A. 4400 cal

B. 3200 cal

C. 4800 cal

D. 1524 cal

Answer: C

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38. Out off $N_2O, SO_2, I_3^+, I_3^-, H_2O, NO_2^-, N_3^-$, the linear species are:

A. NO_2^-, I_3^+, H_2O

B. N_2O, I_3^+, N_3^-

C. N_2O, I_3^-, N_3^-

D. N_3^-, I_3^-, NO_2^-

Answer: C

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

A. $N_2 \rightarrow N_2^+$

B. $C_2 \rightarrow C_2^+$

C. $NO \rightarrow NO^+$

D. $O_2 \rightarrow O_2^+$

Answer: C

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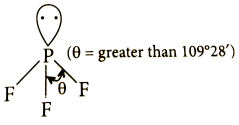
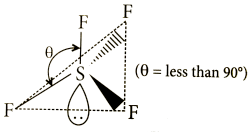
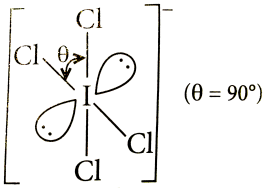
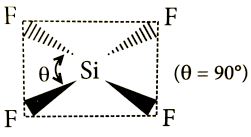
40. Which of the following structure is correctly drawn according to fundamental idea of VSEPR theory?

A. 

B. 

C. 

D. 

Answer: C

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41. Back bonding in BF_3 does not afect

A. planarity, lewis acidic strength and bond angle

B. bond length, hybridisation and bond strength

C. bond angle, planarity, geometry

D. Lewis acidity, bond length, bond order (B-F)

Answer: C

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42. Ammonium carbamate when heated tto $200^\circ C$ gives a mixture of NH_3 and CO_2 vapour with a density of 13. what is the degree of dissociation of ammonium carbamate?

A. $\frac{3}{2}$

B. $\frac{1}{2}$

C. 2

D. 1

Answer: D

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43. For the reaction, $A_{(g)} + 2B_{(g)} \Leftrightarrow 3C_{(g)} + 3_{(g)}, K_p = 0.05 \text{ atm at } 1000K$. The value of K_c is represented by

A. $5 \times 10^{-4}R$

B. $\frac{5 \times 10^{-4}}{R}$

C. $5 \times 10^{-5} R$

D. $\frac{5 \times 10^{-5}}{R}$

Answer: D

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44. Consider the following reaction,

(i) $CO_3^{2-} + H_2O \Leftrightarrow HCO_3^- + OH^-$

(ii) $CO_2 + H_2O \Leftrightarrow H_2CO_3$

(iii) $NH_3 + H_2O \Leftrightarrow NH_4OH$

(iv) $HCl + H_2O \Leftrightarrow Cl^- + H_3O^+$

Which of the pairs of reaction proves that water is amphoteric in character?

A. (i) and (ii)

B. (ii) and (iii)

C. (iii) and (iv)

D. (i) and (iii)

Answer: C

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