CHEMISTRY

BOOKS - MODERN PUBLICATION CHEMISTRY (KANNADA ENGLISH)

MOCK TEST PAPER - 3

Mcqs

1. The lanthanoid contraction refers to :

A. valence electrons

B. densities

C. nuclear masses

D. ionic radii

Answer: B

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2. The coagulation power of an electrolyte for arsenous suphide sol is maximum for :

A. $AlCl_3$

B. Na_3PO_4

C. $K_4\left[Fe(CN)_6\right]$

D. HCl

Answer: A

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3. If N_A is Avogadro's number, then the number of hydrogen atoms in one g-equivalent of hydrogen is :

A. N_A

B. $N_A/2$

C. $N_A/4$

D. $2N_A$

Answer: B

4. For azimuthal quantum number 1 = 2, the maximum number of electrons will be :

A. 2

B. 6

C. 10

D. 14

Answer: C

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5. The total number of isomers for the compound of the formula $C_4H_{10}O$ is :

A. 3

B. 4

C. 6

D. 7

Answer: D

6. Nylon threads are made of :

A. Polyethylene polymer

B. Polyvinyl polymer

C. Polyester polymer

D. Polyamide polymer

Answer: D

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7. The number of lone pairs on S atom in SF_2, SF_4 and SF_6 are respectively :

A. 2, 1 and 0

B. 2, 1 and 1

C. 4, 2 and 0

D. 2,2 and 2

Answer: A

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8. If the electronegativity difference between two atoms is 2.0, the percentage covalent character of the molecule is :

A. 0.5

B. 0.54

C. 0.46

D. 0.08

Answer: C

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9. The electronic configuration of an element is $1s^2 2s^2 2p^6 3s^2$. It is most likely to have a valecy of :

A. $+2$

B. $+3$

C. $+1$

D. $+4$

Answer: A

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10. Which one of the following has the largest bond angle ?

A. NH_3

B. CO_2

C. H_2O

D. SO_3

Answer: B

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11. The main factor of shorter $B-F$ bonds in BF_3 is :

A. large electronegativity of fluorine

B. three-centred two electron bonds in BF_3

C. $p\pi = p\pi$ back bonding

D. $p\pi - d\pi$ back bonding

Answer: C

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12. The complex $CoCl_3.4NH_3$ ionises to give :

A. $1Cl^-$ ion

B. $2Cl^-$ ion

C. $3Cl^-$ ion

D. no Cl^- ion.

Answer: A

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13. The enthalpy of vaporisation for water is 41.2 kJ mol^{-1}, ΔH for the reaction

$2H_2O(g) \rightarrow 2H_2O(l)$

is :

A. $-82.4kJ$

B. $82.4\ \%$

C. $-20.6kJ$

D. $2.57kJ$

Answer: A

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14. Deviations for ideal behaviour will be less if the gas is subjected to :

A. low temperature and high presure

B. high temperature & low pressure

C. low temperature

D. high temperature

Answer: B

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15. The difference between heats of reaction at constant pressure and constant volume for the reaction.

$2C_6H_6(l) + 15O_2(g) \rightarrow 12CO_2(g) + 6H_2O(l)$

at $25^\circ C$ is :

A. $+7.43$

B. $+3.72$

C. -7.43

D. -3.72

Answer: C

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16. How many coulombs of electricity are required for the oxidation of one mol of water to dioxygen ?

A. $1.93 \times 10^5 C$

B. $9.65 \times 10^4 C$

C. $3.86 \times 10^5 C$

D. $4.825 \times 10^4 C$

Answer: A

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17. The difference between heats of reaction at constant pressure and constant volume for the reaction :

$2C_6H_6(l) + 15O_2(g) \rightarrow 12CO_2(g) + 6H_2O(l)$

at $27^\circ C$

A. $-7.48kJ$

B. $3.74kJ$

C. $-3.\ 74kJ$

D. $7.48kJ$

Answer: A

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18. For the cell reaction

$$X(s) + 2Y^{+} \rightarrow X^{2} + 2Y$$

k_c has been found to be 10^{12}. The E°_{Cell} is :

A. 0.708 V

B. 1.36 V

C. 0.354 V

D. 1.006 V

Answer: C

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19. The K_c of an acid is 3.2×10^{-5}. The degree of dissociation of the acid at concentration of 0.2 M is :

A. 6.0×10^{-2}

B. 1.26×10^{-2}

C. 4.0×10^{-4}

D. 0.04

Answer: D

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20. Intermediates formed during the reaction of $RCONH_2$ with Br_2 and KOH are :

A. RNHCOBr and RNCO

B. RNHBr and RCONHBr

C. $RCONBr_2$

D. RCONHBr and RNCO

Answer: D

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21. Which of the following solution will have pH = 9 at 298 K ?

A. 1×10^{-9} M HCl solution

B. 1×10^{-5} M NaOH solution

C. 1×10^{-9} M NaOH solution

D. Both (A) and (B)

Answer: B

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22. What is the oxidation state of Cr in CrO_5 and why?

A. $+4$

B. $+5$

C. $+6$

D. $+10$

Answer: C

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23. The IUPAC name of the compound

$(CH_3)_2CHCH = CHCH_2COOH$ is :

A. 5 - Methyl -3- hexenoic acid

B. 4 - Methyl - 2- hexenoic acid

C. 4 - Iopropyl - 3- buttenoic acid

D. 5 - Carboxyl-2-methylpentene.

Answer: A

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24. Propionamide when heated with a mixture of bromine and caustic alkali would give :

A. propylamine

B. propanol

C. propanal

D. ethylamine

Answer: D

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25. Aniline undergoes condensation to form Schiff base on reacting with:

A. acetyl chloride

B. ammonia

C. acetone

D. benzaldehyde

Answer: D

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26. On boiling tin with alkali, the product is :

A. SnO_3^{2-}

B. SnO_2

C. $Sn(OH)_4$

D. $Sn_2O_3^{2-}$

Answer: D

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27. The strength of H_2O_2 (in g/litre) in 15 volume solution of H_2O_2 is :

A. 17

B. 51

C. 34

D. 45

Answer: D

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28. Which of the following alkali metal carbonates is the most stable towards decomposition ?

A. Li_2CO_3

B. Na_2CO_3

C. K_2CO_3

D. Cs_2CO_3

Answer: D

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29. When pure sulphuric acid is electrolysed, the product obtained at anode is :

A. $H_2S_2O_8$

B. $H_2S_4O_6$

C. $H_2S_2O_7$

D. $H_2S_2O_3$

Answer: A

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30. Anhydrous aluminium chloride fumes in air because of :

A. hydration

B. hydrolysis

C. oxidation

D. decomposition

Answer: B

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31. In a photoelectric effect, the energy of the photon striking a metallic surface is $5.6 \times 10^{-19} J$.

The kinetic energy of the ejected electron is $12.0 \times 10^{-20} J$. The work function is

A. $6.4 \times 10^{-19} J$

B. $6.8 \times 10^{-19} J$

C. $4.4 \times 10^{-19} J$

D. $6.4 \times 10^{-24} J$

Answer: C

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32. In diborane (B_2H_6) there are :

A. three $3c-2e^-$ bonds and three $2c-2e^-$ bonds

B. four $3c-2e^-$ bonds and two $2c-2e^-$ bonds

C. two $3c-2e^-$ bonds and four $2c-2e^-$ bonds

D. None of the above

Answer: C

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33. The compound 2-Methyl-1,3 - butadiene has :

A. only sp hybridised carbon atoms

B. only sp^2 hybridized carbon atoms

C. both sp and sp^2 hybridised carbon atoms

D. sp^2 and sp^3 hybridized carbon atoms.

Answer: D

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34. When $K_2Cr_2O_7$ is heated with conc. H_2SO_4 in the presence of a soluble metal chloride, orange red vapours are produced. These are due to :

A. Cr_2O_3

B. $CrOCl_2$

C. CrO_4^{2-}

D. CrO_2Cl_2

Answer: D

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35. The buffer solution contains equal concentration of X^- and HX. The K_b for X^- is 10^{-10}. The pH of the buffer solution is :

A. 4

B. 7

C. 10

D. 14

Answer: A

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36. In 2-butene, which one of the following statements is true ?

A. $C_1 - C_2$ bond is a $sp^3 - sp^3\sigma$- bond

B. $C_2 - C_3$ bond is a $sp^3 - sp^2\sigma$- bond

C. $C_1 - C_2$ bond is a $sp^3 - sp^2\sigma$-bond

D. $C_1 - C_2$ bond is a $sp^2 - sp^2\sigma$- bond

Answer: C

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37. The gas respondible for depleting ozone layer is :

A. CO

B. NO

C. SO_2

D. O_2

Answer: B

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38. For the reaction :

$2A(g) + B(g) \Leftrightarrow 3C(g) + D(g)$

Two moles each of A and B are taken in a 2L flask.

The following must always be true at equilibrium

:

A. $[A] = [B]$

B. $[A] < [B]$

C. $[B] - [D]$

D. $[A] > [B]$

Answer: B

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39. Identify Z in the following reaction :

$$CH_3CH=CH_2 \xrightarrow[\text{Peroxide}]{HBr} X \xrightarrow[\text{Ether}]{Mg} Y \xrightarrow[(ii)\,H_2O]{(i)\,CO_2} Z$$

A. $(CH_3)_2CHCOOH$

B. $CH_3CH_2COCH_3$

C. $CH_3CH_2CH_2COOH$

D. $CH_3CH_2COOCH_3$

Answer: C

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40. The number of octahedral void(s) per atom present in a cubic close -packed structure is :

A. 1

B. 3

C. 2

D. 4

Answer: A

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41. Components, A and B, respectively of an ideal binary solution. If X_A represents the mole fraction of component A, the total pressure of the solution will be :

A. $p_A + x_A(p_B - p_A)$

B. $p_A + x_A(p_A - p_B)$

C. $p_B + x_A(p_B - p_A)$

D. $p_B + x_A(p_A - p_B)$

Answer: D

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42. An element (atomic mass = 60) having fcc structure has density of 6.23 g cm^{-3}. The edge length of its unit cell is :

A. 400 pm

B. 276 pm

C. 126 pm

D. 470 pm

Answer: A

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43. The product Z in the following series of reaction is :

$$CH_3CH_2-\overset{\overset{CH_3}{|}}{C}=CH_2 \xrightarrow[(ii)\,NaBH_4]{(i)\,Hg(OAc)_2} Y \xrightarrow[(ii)\,CH_3Br]{(i)\,Na} Z$$

A. $CH_3CH_2-\overset{\overset{CH_3}{|}}{\underset{\underset{OCH_3}{|}}{C}}-CH_3$

B. $CH_3CH_2-\underset{\underset{CH_3}{|}}{C}\,HCH_2OCH_3$

C. $CH_3-\underset{\underset{CH_3}{|}}{C}\,H-\underset{\underset{OCH_3}{|}}{CH}-CH_3$

D. $CH_3-\overset{\overset{CH_3}{|}}{\underset{\underset{CH_3}{|}}{C}}-\underset{\underset{OCH_3}{|}}{C}\,H-CH_3$

Answer: A

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44. Equivalent conductivity at infinite dilution for sodium-potassium oxalate $\left((COO^-)_2 Na^+ K^+ \right)$ will be [given, molar conductivities of oxalate, K^+ and Na^+ ions at infinite dilution are $148.2, 50.1, 73.5 Scm^2 mol^{-2}$, respectively] .

A. $271.8 Scm^2 eq^{-1}$

B. $67.95 Scm^2 eq^{-1}$

C. $543.6 Scm^2 eq^{-1}$

D. $135.9 Scm^2 eq^{-1}$

Answer: A

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45. A first order reaction is 60% complete in 20 minutes . How long will the reaction take to be 84% complete ?

A. 54 mins

B. 68 mins

C. 40 mins

D. 76 mins

Answer: C

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46. The Henry's law constant for the solubility of nitrogen gas in water at 298 K is $1.0 \times 10^5 atm$. The mole fraction of N_2 in air is 0.8. The number of moles of N_2 from air dissolved in 10 moles fo water at 298 K and 5 atm. Pressure is :

A. 4.0×10^{-4}

B. 4.0×10^{-5}

C. 5.0×10^{-4}

D. 4.0×10^{-6}

Answer: A

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47. Which of the following statements are correct ?

(I) Among the species

CO, CO_2, CO_3^{2-} and $HCHO, CO_3^{2-}$ has the weakest carbon-oxygen bond.

(II) Both Sphalerite and galena ores can be concentrated by froth floatation process.

(III) Bosch process involves the process of coke at 1273 K.

(IV) Heavy water differs only slightly from ordinary water in its chemical properties through the reaction of D_2O are slightly faster than those of H_2O.

A. I, II, IV

B. II, III

C. I,III

D. I,II,III

Answer: D

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48. Milk is an example for

A. w/o type of emulsion

B. o/w type of emulsion

C. w/w type emulsion

D. o/o type of emulsion

Answer: B

49. Duralumin is used in aircraft industry for its light weight and high strength . It is an alloy of

A. Al, Cu, Mg and Mn

B. Al, Zn, Fe and Sn

C. Al, Tl, Ce and Fe

D. Al, Fe, Zn and Sn.

Answer: A

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50. The number of P-OH bonds in diphosphoric acid, orthophosphoric acid, pyrophosphorous acid and phophorous acid are respectively :

A. 4, 3, 4, 2

B. 4, 3, 2, 2

C. 4, 2, 3, 2

D. 4, 2, 4, 2

Answer: B

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51. The number of acidic protons in H_3PO_3 are :

A. 0

B. 1

C. 2

D. 3

Answer: C

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52. The equivalent weight of $K_2Cr_2O_7$ in acidic medium is expressed in terms of its molecular weight (M) as :

A. M/3

B. M/4

C. M/6

D. M/7

Answer: C

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53. The metal-carbon bond in metal carbonyls prossesses :

A. only s character

B. only p character

C. both s and p character

D. only d character

Answer: C

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54. A solution of (-) -1-chloro-1-phenylethane in toluene racemises slowly in the presence of a small amount of $SbCl_5$, due to the formation of :

A. carbonion

B. carbene

C. free-radical

D. carbocation.

Answer: D

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55. Ortho- nitrophenol is less soluble in water than p-and m-nitrophenols because :

A. o-nitrophenol showns intramolecular H bonding

B. o-nitrophenol shows intermolecular H - bonding

C. melting point of o-nitrophenol is lower than those of m-and p-isomers

D. o-nitrophenol is morevolatile in steam than those of m-and p-isomers.

Answer: A

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56. Conversion of benzene to acetophenone can be brought by

A. Wurtz reaction

B. Wurtz-Fittig's reaction

C. Friedel Crafts alkylation

D. Friedel Crafts acylation.

Answer: D

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57. Nitrobenzene on reaction with conc. HNO_3 / H_2SO_4 at $80 - 100^\circ C$ forms which one of the following products ?

A. 1, 4- Dinitrobenzene

B. 1, 2, 4 - Trinitrobenzene

C. 1, 2 - Dinitrobenzene

D. 1, 3 - Dinitrobenzene

Answer: D

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58. The repeating unit present in Nylon 6 is :

A. $-\left[NH(CH_2)_5NHCO(CH_2)_4CO\right]-$

B. $-\left[CO(CH_2)_5NH\right]-$

C. $-\left[CO(CH_2)_4NH\right]-$

D. $-\left[NH(CH_2)_4NHCO(CH_2)_6CO\right]-$

Answer: B

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59. Polysaccharides have ... linkages.

A. glycosidic

B. anomeric

C. epimeric

D. polymorphic

Answer: A

60. The first antibiotic produced is :

A. streptomycin

B. penicillin

C. chloramphenical

D. tetracycline

Answer: B

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