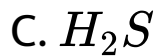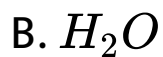# CHEMISTRY

BOOKS - MODERN PUBLICATION CHEMISTRY (KANNADA ENGLISH)

MOCK TEST PAPER 5

Question

1. Which of the following substance has highest proton affinity ?
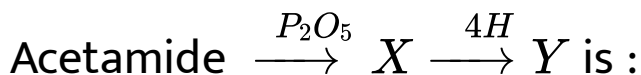
A. PH_3

B. H_2O

C. H_2S

D. NH_3

Answer: D

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2. The end product in the reaction :

Acetamide $\xrightarrow{P_2O_5} X \xrightarrow{4H} Y$ is :

A. Methylamine

B. Ethylamine

C. Methylcyanide

D. Ammonium acetate

Answer: B

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3. Which of the following reacts fastest with Lucas reagent ?

A. 1- Butanol

B. 2- Butanol

C. 2-Methyl propan-2-ol

D. 2- Methyl propanol .

Answer: D

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4. Which of the following has largest number of atoms ?

A. 6.02×10^{23} molecules of NH_3

B. 32 grams of O_2

C. 100 g of $CaCO_3$

D. 127 g of iodine .

Answer: C

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5. The maximum probability of finding electron in the d_{yz} orbital is :

A. Along the y-axis

B. Along the z-axis

C. At an angle of $45°$ from the y and z axis

D. At an angle of $90°$ from the x and y axis.

Answer: C

▶ **Watch Video Solution**

6. An acid solution of pH 6 is diluted 100 times

. The pH of solution .

A. increases by 2

B. decreases by 2

C. increases by about 0.96

D. decreases by 1 .

Answer: C

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7. Which of the following is correct ?

A. Radius of $Ca^{2+} < Cl^- < S^{2-}$

B. Radius of $Cl^- < S^{2-} < Ca^{2+}$

C. Radius of $S^{2-} = Cl^- = Ca^{2+}$

D. Radius of $S^{2-} < Cl^- < Ca^{2+}$

Answer: A

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8. The pair of species with the same bond order is

A. O_2^2- , B_2

B. O_2^+ , NO^+

C. NO, CO

D. N_2, O_2

Answer: A

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9. When MnO_2 is fused with KOH , a coloured

compound is formed . The product and its

colour is :

A. $KMnO_4$, purple

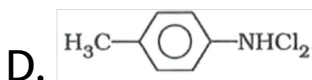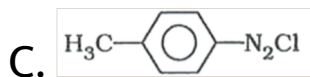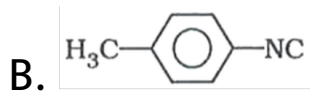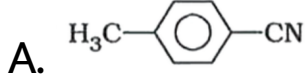B. Mn_2O_3 , brown

C. K_2MnO_4 , purple green

D. Mn_2O_4 , black

Answer: C

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10. The reaction of chloroform with alcoholic

KOH and p-toluidine forms :

A. H_3C—⬡—CN

B. H_3C—⬡—NC

C. H_3C—⬡—N_2Cl

D. H_3C—⬡—$NHCl_2$

Answer: B

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11. A mixture contains 64 g of dioxygen and 60 g of neon at a total pressure of 10 bar . The partial pressure in bar of dioxygen and neon

are respectively (atomic masses O = 16 , Ne = 20) ,

A. 4 and 6

B. 6 and 4

C. 5 and 5

D. 8 and 2

Answer: A

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12. ΔH and ΔS for a reaction are $+30.558$ kJ mol^{-1} and $0.066 kJmol^{-1}$ at 1 atm pressure . The temperature at which free energy is equal to zero and the nature of the reaction below this temperature are :

A. 483 K , spontaneous

B. 443 K , non-spontaneous

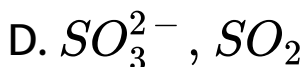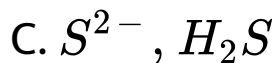C. 443 K , spontaneous

D. 463 K , non-spontaneous

Answer: D
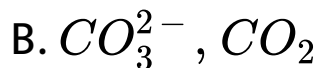
13. $[X] + H_2SO_4 \rightarrow [Y]$ a colourless gas with irritating smell.

$[Y] + K_2Cr_2O_7 + H_2SO_4 \rightarrow$ Green solution

[X] and [Y] are :

A. Cl^-, HCl

B. CO_3^{2-}, CO_2

C. S^{2-}, H_2S

D. SO_3^{2-}, SO_2
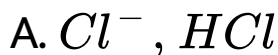
Answer: D

14. How many unit cells are present in a cube shaped ideal crystal of NaCl of mass 1.0 g ?

    A. 5.14×10^{23}

    B. 2.57×10^{21}

    C. 1.71×10^{21}

    D. 1.28×10^{21}

Answer: B

15. In the reaction ,

$$CH_3COOH \xrightarrow{Ca(OH)_2} A \xrightarrow{\text{Heat}} B \xrightarrow{NH_2OH} C, \text{ C, C}$$

is :

A. $CH_3CH_2NH_2$

B. $(CH_3)_2C = NOH$

C. CH_3CONH_2

D. $CH_3CH = NOH$
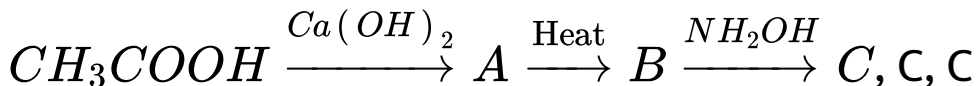
Answer: B

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16. The ozonolysis of an alkene X followed by hydrolysis gives ethanal and propanone . X is

A. 2 - Butene

B. 2-Methyl- 2- butene

C. 2- Methyl- 3- butene

D. 2- Pentene

Answer: B

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17. PH value of a saturated solution $Ba(OH)_2$ is 12. Calculate solubility product $K_{sp} f$ or $Ba(OH)_2$ `(3+2

    A. 3.3×10^{-7}

    B. 5.0×10^{-7}

C. 4.0×10^{-6}

D. 5.0×10^{-6}

Answer: B

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18. Select the compound in which chlorine shows highest oxidation state :
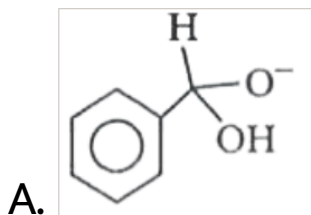
A. $HClO_4$

B. $HClO_3$

C. $HClO_2$

D. $HClO$
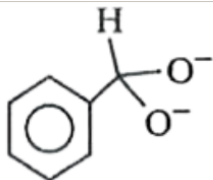
Answer: A
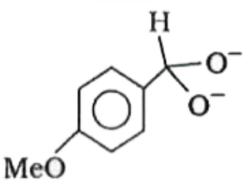
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19. In a Cannizzaro's reaction , the intermediate which is best hydride donor is :

A.

B.

C.

D.
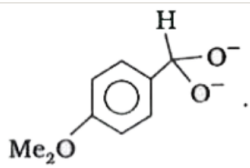
Answer: D

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20. Oxidation of propylbenzene in the presence of oxidsing agent like potassium permanganatge gives :

A.

B.

C.

D.

Answer: B

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21. Positive deviations from ideal behaviour take place because of :

    A. molecular interactions between atoms

       and PV/nRT < 1

    B. molecular interactions between atoms

       and PV/nRT > 1.

    C. finite size of atoms and PV/nRT > 1

    D. finite size of atoms and PV/nRT < 1

Answer: B

22. The IUPAC name of the compound :

$(CH_3)_3 C - CH = CH_2$ is
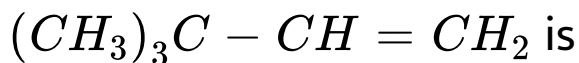
A. 3 ,3 , 3-Trimethyl -1- propene

B. 1 , 1 , 1 - Trimethyl -3-propene

C. 3,3-Dimethyl -1-butene

D. 1,1-Dimethyl-3-butene.

Answer: C

23. The volume strength of 1.5 NH_2O solution is

A. 4.8

B. 8.4

C. 3.0

D. 8.0

Answer: B

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24. Alkali metals have negative reduction potential and hence they behave as :

    A. oxidising agents

    B. Lewis bases

    C. reducing agents

    D. electrolytes.

Answer: C

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25. In which of the following neutralisation reaction, the heat of neutralisation will be highest ?

A. HCl and NH_4OH

B. CH_3COOH and NH_4OH

C. HCl and NaOH

D. NaOH and CH_3COOH

Answer: C

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26. In an irreversible process taking place at constant T and P and in which only pressure volume work is being done , the change in Gibbs free energy (dG) and the change in entropy (dS) , satisfy the criteria :

A. $(dS)_{V,E} = 0, (dG)_{T,P} = 0$

B. $(dS)_{V,E} = 0, (dG)_{T.P} > 0$

C. $(dS)_{V.E} < 0, (dG)_{T.P} < 0$

D. $(dS)_{V.E} > 0, (dG)_{T.P} < 0$

Answer: D

27. The basic structural unit of silicates is :

A. SiO_3^{2-}

B. SiO_4^{2-}

C. SiO^-

D. SiO_4^{4-}

Answer: D

28. What characteristic is at best common to both cis-2-butene , and trans-2-butene ?

    A. boiling point

    B. dipole moment

    C. heat of hydrogenation

    D. product of hydrogenation

Answer: D

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29. The solubility product of a compound MX is 2.5×10^{-9} at $25°C$. Its solubility at $25°C$ is :

    A. 2.5×10^{-5}

    B. 5×10^{-5}

    C. 5×10^{-4}

    D. 2.5×10^{-6}

Answer: B

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30. If a 0.1 M solution of HCN is 0.01 % ionised , the K_a for HCN is :

A. 10^{-9}

B. 10^{-7}

C. 10^{-5}

D. 10^{-3}

Answer: A

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31. In a vessel containing SO_3, SO_2 and O_2 at equilibrium , some He gas is introduced so that total pressure increases while temperature and volume remain constant . According to Le Chatelier's principle , the dissociation of SO_3 :

A. increases
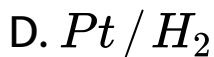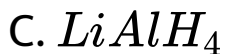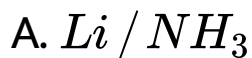
B. decreases

C. does not change

D. changes unpredictably

Answer: C

32. 2-Hexyne gives trans-2-hexene on treatment with :

A. Li/NH_3

B. Pd/ $BaSO_4$

C. $LiAlH_4$

D. Pt/H_2

Answer: A

33. Which one of the following statement regarding photochemical smog is not correct.

    A. Carbon monoxide does not play any role in photochemical smog formation

    B. Photochemical smog is an oxidising agent in character .

C. Photochemical smog is formed through photochemical reaction involving solar energy

D. Photochemical smog does not cause irritation in eyes and throat.

Answer: D

34. Benzene on heating with fuming H_2SO_4 to $200^\circ C$ gives :

A. benzene

B. toluene

C. m-benzene disulphonic acid

D. p-benzene disulphonic acid

Answer: C

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35. The value of Planck's constant is 6.63×10^{-34} Js. The velocity of light is $3.0 \times 10^8 ms^{-1}$. Which value is closest to the wave length in nanometers of a quantum of light with frequency $8 \times 10^{15} s^{-1}$?

A. 2×10^{-25}

B. 5×10^{-18}

C. 3×10^7

D. 40.

Answer: D

36. Equal weights of SO_2 and O_2 are mixed in an empty container at 300 K . The total pressure exerted by the gaseous mixture is 1 atm . The partial pressure of SO_2 gas in the mixture is

A. 0.33 atm

B. 0.20 atm

C. 0.67 atm

D. 0.50 atm

Answer: A

37. Excess of KI reacts with $CuSO_4$ solution and then $Na_2S_2O_3$ solution is added to it . Which of the statements is incorrect for this reaction ?

A. $Na_2S_2O_3$ is oxidised

B. CuI_2 is formed

C. Cu_2I_2 is formed

D. Evolved I_2 is reduced .

Answer: B

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38. The resistance of 0.1 N solution of acetic acid is 250 ohm , when measured in cell of cell constant $1.15 cm^{-1}$. The equivalent conductance (in $ohm^{-1}cm^2 equiv^{-1}$) of 0.1 N acetic acid is :

A. 46

B. 9.2

C. 18.4

D. 0.023

Answer: A

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39. CsCl crystalises in body centred cubic lattice. If 'a' is its edge length then which of the following expression is correct ?

A. $r_{Cs} + r_{Cl^-} = \sqrt{3}a$

B. $r_{Cs} + r_{Cl^-} = 3a$

C. $r_{Cs^+} + r_{Cl^-} = \dfrac{3a}{2}$

D. $r_{Cs^+} + r_{Cl^-} = \dfrac{\sqrt{3}}{2}a$

Answer: D

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40. K_f for water is 1.86 K kg mol^{-1}. If your automobile radiator holds 1.0 kg of water, how many grams of ethylene glycol $(C_2H_6O_6)$

must you add to get the freezing point of the solution lowered to $-2.8°C$?
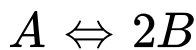
A. 93 g

B. 39 g

C. 27 g

D. 72 g

Answer: A

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41. The equilibrium constant, K_p for the reaction :

$$A \Leftrightarrow 2B$$

is related to degree of dissociation α of A and total pressure P as :

A. $\dfrac{4\alpha^2 P}{1 - \alpha^2}$

B. $\dfrac{4\alpha^2 p^2}{1 - \alpha^2}$

C. $\dfrac{4\alpha^2 p^2}{1 - \alpha}$

D. $\dfrac{4\alpha^2 p}{1 - \alpha}$

Answer: A

42. At $25° C$ molar conductance of 0.1 molar aqueous solution of ammonium hydroxide is $9.54 ohm^{-1}cm^2 mol^{-1}$ and at infinite dilution its molar conductance is $238 ohm^{-1}cm^2 mol^{-1}$. The degree of ionisation of ammonium hydroxide at the same concentration and temperature is :

A. 4.008 %

B. 40.800 %

C. 2.080 %

D. 20.800 %

Answer: A

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43. Acid catalysed hydrolysis of ethyl acetate follows a pseudo-first order kinetics with respect to ester . If the reaction is carried out with large excess of ester , the order with respect to ester will be :

A. 1.5

B. 0

C. 2

D. 1

Answer: B

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44. The rate of decomposition of ammonia is found to depend upon the concentration of ammonia as :

$$-\frac{d[NH_3]}{dt} = \frac{k_1[NH_3]}{1 + k_2[NH_3]}$$

which of the following statement is correct ?

A. The reaction is zero order at very low as

well as very high NH_3 concentration

B. The reaction is first order at very low as

well as very high NH_3 concentration .

C. The reaction is zero order at very low

concentration of NH_3 and is of first

order at very high concentration of NH_3

.

D. The reaction is first order at very low

NH_3 concentration and is of zero order

at very high NH_3 concentration .

Answer: D

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45. A 1% (wt/ wt) solution of KCl (I) , NaCl(II) ,

$BaCl_2$ (III) and urea (IV) have their osmotic

pressures at the same temperature in the

ascending order (molar masses of NaCl , KCl ,

$BaCl_2$ and urea are 58.5 , 74.5 , 208.4 and 60 g mol^{-1}) assuming 100 % ionisation of the electrolytes at this temperature :

A. $I < III < II < IV$

B. $III < I < II < IV$

C. $I < II < III < IV$

D. $III < IV < I < II$

Answer: D

46. The protecting power of lyophilic colloidal sol is expressed in terms of :

A. coagulation value

B. gold number

C. critical miscelle concentration

D. oxidation number .

Answer: B

47. Identify the alloy containing a non - metal as a constituent in it.

A. Invar

B. Steel

C. Bell metal

D. Bronze.

Answer: B

48. Which of the following is not correct ?

A. The compound prepared by mixing XeO_3 and $XeOF_4$ at $-78°C$ and having sp^3d hybridisation of Xe is Xe O_2F_2 .

B. Fluorine forms only HOF_2 and not HOF

C. Electron affinity decreases as $F < Cl > Br > I$

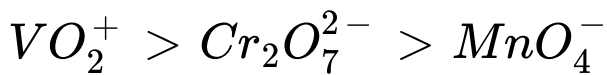D. The acidic character follows the order :

$HCl > HBrO > HIO$

Answer: B

49. Which of the following statements are not correct ?

(I) Both Cr^{2+} and V^{2+} can liberate H_2 from a dilute acid

(II) Mn_2O_7 is more acidic than MnO_2 and Mn_3O_4

(III) Oxidising power follows the sequence :

$$VO_2^+ > Cr_2O_7^{2-} > MnO_4^-$$

(IV) $Lu(OH)_3$ is more basic than $La(OH)_3$

    A. I , IV

    B. III , IV

    C. II , IV

    D. II , III

Answer: B

50. Which of the following contains P-O-P bond ?

A. Hypophosphorous acid
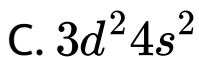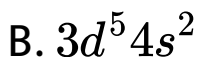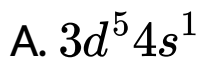
B. Phosphorus acid

C. Pyrophosphoric acid

D. Orthophosphoric acid

Answer: C

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51. Which one of the elements with the following outer orbital configuration may exhibit the largest number of oxidation states ?
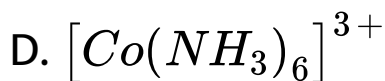
A. $3d^5 4s^1$

B. $3d^5 4s^2$

C. $3d^2 4s^2$

D. $3d^3 4s^2$
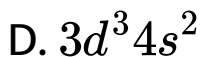
Answer: B

52. Which one of the following is an outer orbital complex and exhibits paramagnetic behaviour ?

A. $[Ni(NH_3)_6]^{2+}$

B. $[Zn^* NH_3)_6]^{2+}$
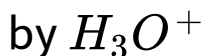
C. $[Cr(NH_3)_6]^{3+}$

D. $[Co(NH_3)_6]^{3+}$

Answer: D

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53. Reaction by which benzaldehyde cannot be prepared :

A. + CO + HCl in p in presence of anhydrous $AlCl_3$

B. + Zn/ + Zn/Hg and conc. HCl

C. + CrO$_2$Cl$_2$ + CrO_2Cl_2 in CS_2 followed by H_3O^+

D. $+ H_2$ in presence of

$Pd \cdot BaSO_4$.
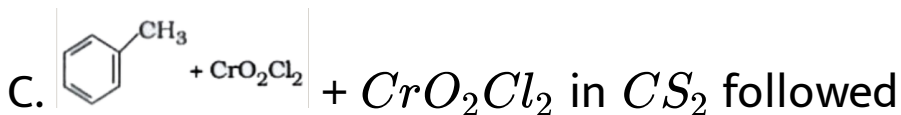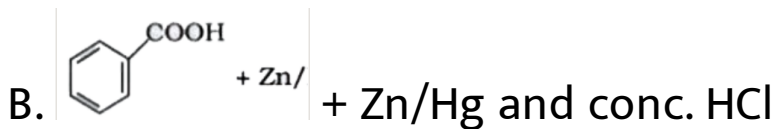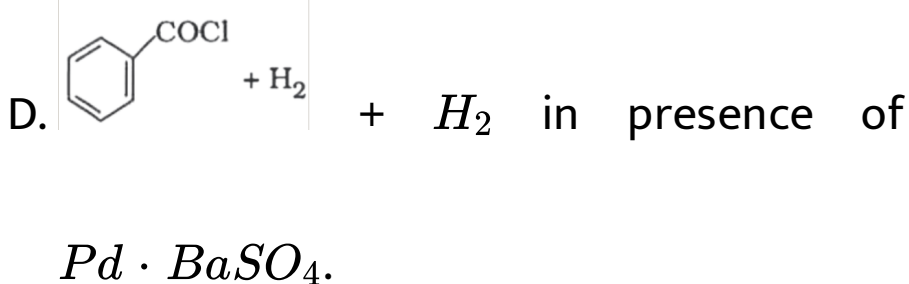
Answer: B

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54. A compound with molecular mass 180 is acylated with CH_3COCl to get a compound with molecular mass 390. The number of amino groups present per molecule of the former compound is :

A. 6

B. 2

C. 5

D. 4

Answer: C

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55. How many monosaccharides are obtained

by hydrolysis of sucrose ?

A. 1

B. 2

C. 3

D. 4

Answer: B

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56. Neoprene is the polymer of :

A. cis-isoprene

B. butadiene

C. chloroprene

D. trans-isoprene .

Answer: C

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57. Which one of the following is not used as a filler in laundry soaps?

A. Sodium silicate

B. Glycerol

C. Sodium rosinate

D. Borax.

Answer: B

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