CHEMISTRY

BOOKS - CBSE COMPLEMENTARY MATERIAL

CHEMISTRY (HINGLISH)

PRACTICE - PAPER

Section A

1. Which is the addition polymer

A. Nylon-66

B. Teflon

C. Polyester

D. PHBV

Answer: B

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2. Polymer used for the insulation of electrical cables is:

A. PVC

B. Glyptal

C. Neoprene

D. All of these

Answer: A

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3. Distillation is used for the refining of:

A. Fe

B. Zn

C. Mn

D. Cu

Answer: B

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4. Which of the following aqueous solution should have the highest boiling point ?

A. $1\ \mathrm{M}\ \mathrm{NaOH}$

B. 1 M Na_2SO_4

C. 1 M NH_4NO_3

D. $1MKNO_3$

Answer: B

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5. 10% solution of urea is isotonic with 6% solution of a non-volatile solute X.What is the molecular mass of solute X ?

A. $6\ \text{g mol}^{-}$

B. $60\ \text{g mol}^{-1}$

C. $36\ \text{g mol}^{-1}$

D. $32\ \text{g mol}^{-1}$

Answer: C

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6. The charge required for reducing 1 mole of MnO_4^- to Mn^{2+} is

A. $1.93 \times 10^5 C$

B. $2.8 \times 10^5 C$

C. $4.3 \times 10^5 C$

D. $4.82 \times 10^5 C$

Answer: D

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7. The unit of rate of reaction and rate of rate constant are same for a :

A. Zero order reaction

B. First order reaction

C. Second order reaction

D. Third order reaction

Answer: A

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8. Match the column I and column II and mark the appropriate choice.

(A) Diastase (i) Proteins $\rightarrow$. peptones

(B) Pepsin (ii) Glucose $\rightarrow$. ethyl alcohol

(C) Ptyalin (iii) Starch $\rightarrow$. Maltose

(D) Zymase (iv) Starch $\rightarrow$. Sugar

A. $A-(iv), B-(ii), C-(i), D-(iii)$

B. $A-(ii), B-(i), C-(iv), D-(iii)$

C. $A-(i), B-(ii), C-(iii), D-(iv)$

D. $A-(iii), B-(i), C-(iv), D-(ii)$

Answer: D

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9. In XeF_2, XeF_4 and XeF_6 the number of lone pair of Xe is _____ respectively.

A. 2, 3, 1

B. 1, 2, 3

C. 3, 2, 1

D. 4, 1, 2

Answer: C

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10. The number of moles of $KMnO_4$ in acidic medium that will be needed to react with one mole of sulphide ion is:

A. $\frac{2}{5}$

B. $\frac{3}{5}$

C. $\frac{4}{5}$

D. $\frac{1}{5}$

Answer: A

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11. Propanone on reaction with alkyl magnesium bromide followed by hydrolysis will not produce.

A. Primary alcohol

B. Secondary alcohol

C. Tertiary alcohol

D. Carboxylic acid

Answer: A::B::D

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12. Assertion: The order of basicity of amnines in the gaseous phase follows the order : 3° amines $> 2^{\circ}$ amines $> 1^{\circ} >$ amines.

Reason: Amines have an unshared pair of electrons on nitrogen atom due to which they behave as lewis abse.

A. If both assertion and reason are true and reason in the correct explanation of assertion

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

C. If assertion is true but reason is false

D. If both assertion and reason are false

Answer:

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13. Why NaCl is used to clear snow from roads?

Liquid A and B on mixing produce a warm solution.

Which type of deviation does this solution show?

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14. Give one example of pseudo first order reaction.

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15. Thermal stability of hydrides of group-16 elements decreases down the group. Why?

Why ICl is more reactive than I_2 ?

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16. Why do Zr and Hf exhibits similar properties?

Why do transition metal show variable oxidation states.

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17. $CuSO_4$ is colourless while $CuSO_45H_2O$ is coloured. Why?

$\left[Ti(H_2O)_6\right]^{3+}$ is coloured while $\left[Sc(H_2O)_6\right]^{3+}$ is colourless, why?

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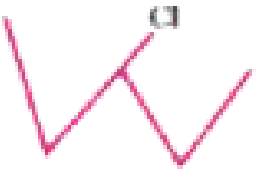
Out of  and 

18. Out of

which undergo SN^1 reaction faster and why?

Why grignard reagent should be prepared under anhydrous conditions?

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19. Why phenol is acidic in nature?

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20. Arrange the following in the order of their incresing reactivity towards HCN:

$CH_3CHO, CH_3COCH_3, HCHO, C_2H_5COCH_3$

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21. What happens when aniline is treated with Br_2 water?

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22. Why is aspirin used in the prevention of heart attacks ?

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Section B

1. Show that time required for $99\,\%$ completionis twice the time required for the completion of $90\,\%$ of reactions for a first order reaction.

The decomposition of hydrocarbon follow the equation

$K = \left(4.5 \times 10^{11} 5^{-1}\right) e^{-28000K/T}$ $\mathrm{Calculate\ Ea.}$

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2. Explain :

(i) Actinoid contraction is greater from element to element than canthanoid contraction. Why?

(ii) The enthalpies of atomisation of the transsition metals are high. Why?

Complete the reactions :

(i) $Fe^{2+} + MnO_4^- + 8H^+ \rightarrow$

(ii) $CuO_4^{2-} + H^+ \rightarrow$

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3. When an oxide of Mn (A) is fused with KOH in the presence of an oxidising agent and dissolved in water, it gives a dark solution of compound (B). Compound (B) disproportionate in neutral or acidic solution to give purple compound (C). Identify A, B, C.

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4. State the role of silica in the metallurgy of copper and crydit in the metallurgy of aluminium.

Differentiate between roasting and calcination.

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5. Complete the following reactions:

(i) $CH_3 - CH_2 - O - \underset{\displaystyle CH_3}{\overset{\displaystyle CH_3}{\overset{|}{\underset{|}{C}}}} - CH_3 - HI \xrightarrow{\text{Heat}}$

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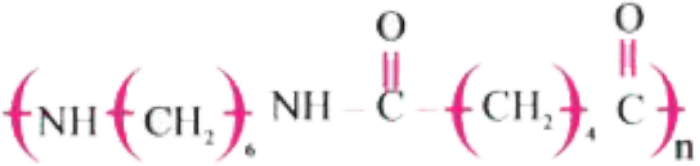
6. Write the names of monomers of the following polymers:

(i)



(ii)

$$\left(- \; - CH_2 - CH = CH - CH_2 - CH_2 - \underset{\underset{CN}{|}}{CH} - \; - \right)_n$$

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7. How do antiseptics differ from disinfectants ? Give one example of each.

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Section C

1. 2 g of benzoic acid (C_6H_5COOH) dissolved in 25 g of benzene shows a depressionc in freezing point equal to 1.62

K. Molal depression constant for benzene is $4.9\ \mathrm{K\ kg\ mol^{-1}}$.

What is the percentage association of acid if it forms dinner in solution?

How many mL of $0.1\ \mathrm{M\ HCl}$ are required to react completely with 1 g mixture of Na_2CO_3 and $NaHCO_3$ containing equimolar amounts of both?

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2. The following data were obtained during the first order thermal decomposition of N_2O_5 at constant volume :

$2N_2O_5 \rightarrow 2N_2O_4 + O_2$

$2N_2O_5 \rightarrow 2N_2O_4 + O_2$

S. No.	Time per second	Total pressure (atm)
1	0	0.5
2	100	0.512

Calculate rate constant.

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3. Explain what is observed?

(i) When a beam of light is passed through a colloidel sol.

(ii) An electrolyte, NaCl is added to the hydrated ferric oxide sol.

(iii) Electric current is passed through a colloidal sol.

(iv)Describe Freundlich adsorption isotherm.

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4. Draw the figure to show the splitting of d-orbitals in an octahedral crystal field. How does the magnitude of Δ_0 decide the actual configuration of d-orbitals in a

coordination entity?

(i) Write IUPAC Name of the complen $\left[Co(en)_3\right]^{3+}$

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5. Carry out the following conversions:

(i) Aniline to chlorobenzene

(ii) Benzene to diphenyl

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6. Write short on the following :

(i) Carbylamine reaction

(ii) Hofmann's bromamide reaction

(iii) Gabriel phthalimide synthesis.

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Section D

1. (i) Write the important structural and functional differences between DNA and RNA.

(ii) Write the hydrolysis products of sucrose.

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2. (i) Calculate ΔG° and $\log K_c$ for the following reaction at 298 K :

$$2Al(s) + 3Cu^{2+}(aq) \rightarrow 2Al^{3+}(aq) + 3Cu(s)$$

Given : $E^{\circ}_{\text{cell}} = 2.02V$

(ii) Using the E° values of A and B, predict which is better

for coating the surface of iron $\left[E^{\circ}\left(Fe^{2+}/Fe\right) = -0.44V\right]$ to prevent corrosion and why?

Given : $E^{\circ}\left(A^{2+}/A\right) = -2.37V : E^{\circ}\left(B^{2+}/B\right) = -0.14V$

The conductivity of $0.001\ \text{mol}\ \text{L}^{-1}$ solution of CH_3COOH is $3.905 \times 10^{-5}\ \text{S}\ \text{cm}^{-1}$. Calculate its molar conductivity and degree of dissociation (α).

Given $\lambda^{\circ}\left(H^{+}\right) = 349.6\ \text{S}\ \text{cm}^2\text{mol}^{-1}$ and $\lambda^{\circ}\left(CH_3COO^{-}\right) = 40.9\ \text{S}\ \text{cm}^2\text{mol}^{-1}$

What type of battery is dry cell? Write the overall reaction occurring in dry cell.

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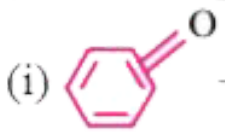
3. (a) Write the product(s) in the following reactions :

(i)  + HCN ⟶ ?

(ii)  + NaOH $\xrightarrow[\Delta]{CaO}$?

(i)

(iii) $CH_3 - CH = CH - CN \xrightarrow[(b)\ H_2O]{(a)\ \text{DIBAL - H}}$?

(b) Give simple chemical tests to distinguish between the following pairs of compounds:

(i) Butanal and Butan-2-one

(ii) Benzoic acid and Phenol

Or

(a) Write the reactions involved in the following :

(i) Etard reaction

(ii) Stephen reduction

(b) How will you convert the following in not more than two

steps:

(i) Benzoic acid to Benzaldehyde

(ii) Acetophenone to Benzoic acid

(iii) Ethanoic acid to 2-Hydroxyethanoic acid

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4. (a) Account for the following:

(i) Ozone is thermodynamically unstable.

(ii) Solid PCl_5 is ionic in nature.

(iii) Fluorine forms only one oxoacid HOF.

(b) Draw the structure of

(i) BrF_5

(ii) XeF_4

(i) Compare the oxidizing action of F_2 and Cl_2 by considering parameters such as bond dissociation enthalpy,

electron gain enthalpy and hydration enthalpy.

(ii) Write the conditions to maximize the yield of H_2SO_4 by contact process.

(iii) Arrange the following in the increasing order of property mentioned :

(a) H_3PO_3, H_3PO_4, H_3PO_2 (Reducing character)

(b) NH_3, $PH_3 mAsH_3$, SbH_3, BiH_3 (Base strength)

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