CHEMISTRY

BOOKS - MHTCET PREVIOUS YEAR PAPERS AND PRACTICE PAPERS

PRACTICE SET 01

Paper 1 Physics Chemistry

1. 250 mL of 0.1 N solution of HCl contains

    A. 0.25 g mole of HCl

    B. 0.025 g mole of HCl

    C. 9.12 g moles of HCl

    D. 0.912 g moles of HCl

Answer: B

2. Which of the following statement (s) is/are correct ?

A. $\left(\dfrac{dH}{dT}\right)_p - \left(\dfrac{dU}{dT}\right)_v = R$

B. $\left(\dfrac{dH}{dT}\right)_p < \left(\dfrac{dU}{dT}\right)_v$

C. $\left(\dfrac{dU}{dV}\right)_T$ for ideal gas is zero

D. All of the above

Answer: A,C

3. 1 L oxygen gas at STP will weigh

A. 1.43 g

B. 2.24 g

C. 11.2 g

D. 22.4 g

Answer: A

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4. The rate constant of zero order reaction has the units

A. per min

B. L/ mol/ min

C. mol/ L / min

D. dimensionless

Answer: C

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5. In crystalline solids, few of the cations moved from their positions into the interstitial position . The defect is called as

    A. Intestitial defect

    B. frenkel defect

    C. schottky defect

    D. Line defect

Answer: B

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6. mark the incorrect statement

    A. Except nitrogen, all the elements of group 15 exist in allotropic

       modification

B. Only at high temperature , greater than 1070 K phosphorus vapours dissociate into P_2 molecules

C. Red P is obtained by heating white phosphours at 540- 570 K in the absence of air for several hours

D. White P is more reactive, but less soluble in CS_2 and other organic solvents than red P

Answer: D

7. The ion which is not tetrahedral in shape is

A. BF_4^-

B. NH_4^+

C. $\left[Cu(NH_3)_4\right]^{2+}$

D. $NiCI_4^{2-}$

Answer: C

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8. The reaction of aqueus $KMnO_4$ with H_2O_2 in acidic conditions gives

    A. Mn^{4+} and O_2

    B. Mn^{2+} and O_2

    C. Mn^{2+} and O_3

    D. Mn^{4+} and MnO_2

Answer: B

9. Which one of the following conformations of cyclohexane is the least stable ?

A. Half - chair

B. Boat

C. Twisted - boat

D. Chair

Answer: A

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10. The units of constants a in van der Waals' equations is

A. $dm^6 \text{atm} mol^{-2}$

B. $dm^3 \text{atm} mol^{-1}$

C. dm and mol^{-1}

D. atm mol^{-1}

Answer: A

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11. Which one of the following gases has the lowest value of Henry law constant ?

A. N_2

B. He

C. CO_2

D. O_2

Answer: C

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12. For the given reaction:

$$H_2(g) + Cl_2(g) \rightarrow 2H^+(aq) + 2Cl^-(aq)$$

$$\Delta G^\circ = -262.4kJ$$

The value of Gibbs free energy of formation (ΔG_r°) for the ion $Cl^-(aq)$ is:

A. -131.2 kJ/mol

B. $+132.2$ KJ/mol

C. -262.4 KJ/mol

D. $+262.4$ KJ/mol

Answer: A

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13. When a concentrated sodium chlorde solution is electriolysed using steel cathode and graphite anode, the products are

A. sodium and chloride

B. hydrogen and oxygen

C. sodium hydroxide solution

D. hydrogen , chlorine and sodium hydroxide solution

Answer: D

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14. In a reaction $A \rightarrow B$ the rate of reaction increases two times on increasing the concentration of the reactant four times, then order of reaction is

A. 0

B. 2

C. $\dfrac{1}{2}$

D. 4

Answer: C

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15. Which one of the following statement is wrong ?

   A. The conducitivity of metals decreases with increases in temperature .

   B. The conducitvity of semiconductor increases with increases in temperature.

   C. There is no superconductor at room temperature

   D. Ionic solids conduct electricity due to presence of ions .

Answer: D

16. The method of zone refining of metals is based on the principle of :

A. Greater mobility of the pure metal than that of the impurity

B. Higher melting point of the impurity than that of the pure metal

C. greater solubility of the impurity in the molten state than in the solid .

D. greater noble character of the solid metal than that of the impurity.

Answer: C

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17. Among the following species, identify the isostuctural pairs

NF_3. NO_3^- , BF_3, H_3O, HN_3

A. $\left[NF_3, NO_3^-\right]$ and $\left[BF_3, H_3O^+\right]$

B. $[NF_{3,HN_3}$ and $[NO_3^-, BF_3]$

C. $[NF_3, H_3O^+]$ and $[NO_3^- BF^3]$

D. $[NF_3. H_3O^{+0}]$ and $[HN_3, BF_3]$

Answer: C

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18. The transition metal ion that has 'spin -only ' magnetic moment value of 5.96 is

A. Mn^{2+}

B. Fe^{2+}

C. V^{2+}

D. Cu^{2+}

Answer: A

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19. Addition of cold concentrated H_2SO_4 with alkene is an example of

A. electrophilic subsitution reaction

B. nucleophilic substitution reaction

C. electrophilic addition reaction

D. nucleopilic addition reaction

Answer: C

20. But -2 -ene on ozonolysis gives

A. butanoic acid

B. propanone + methanal

C. propanone

D. ethanal

Answer: D

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21. Oxidation number if iodine in IO_3^-, IO_4^-, KI and I_2 respectively are

A. $-1,\ -1,\ 0,\ +1$

B. $+3,\ +5,\ +7,\ 0$

C. $+5,\ +7,\ -1,\ 0$

D. $-1,\ -5,\ -1,\ 0$

Answer: C

22. Work done equivalent to 1 J and 1 cal, 1 L atm are in order

A. 1 L atm > 1 J > 1 cal

B. 1 L atm > 1cal > 1 J

C. 1 cal > 1 J > 1 L atm

D. 1 J > 1 cal > 1 L atm

Answer: B

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23. A solution containing one mole per litre of each $Cu(NO_3)_2$, $AgNO_3$, $Hg_2(NO_3)_2$ is being electrolysed by using inert electrodes. The values of standard electrode potentials in volts (reduction potentials) are

$Ag^+ / Ag = +0.80V, HG_2^{2+} / Hg = +0.79V$

$Cu^+ / Cu = +0.34V, Mg^{2+} / Mg = -2.37V$
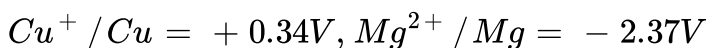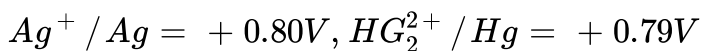
With increasing valtage, the sequence of deposition of metals on the cathode will be

A. Mg,Ag, Cu

B. Mg, Cu, Ag

C. Ag, Hg, Cu

D. Cu,Hg,Ag

Answer: C

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24. If $3A \rightarrow 2B$, then the rate of reaction of $+\dfrac{dB}{dt}$ is equal to

A. $\dfrac{-3}{2}\dfrac{d[A]}{dt}$

B. $-\dfrac{2}{3}\dfrac{d[A]}{dt}$

C. $\dfrac{-1}{3}, \dfrac{d[A]}{dt}$

D. $+2\dfrac{d[A]}{dt}$

Answer: B

25. Which of the following method is not used for the concentration of

bauxite ore

    A. Seock's method

    B. Baeyer's method

    C. Hoope's method

    D. Hall's method

Answer: C

26. The radioactive element belonging to group -16 is

A. Te

B. Po

C. Se

D. Ra

Answer: B

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27. The decreasing order of hydration enthalpies of earth metal ions is

A. $Be^{2+} > Ba^{2+} > Ca^{2+} > Sr^{2+}$

B. $Ba^{2+} > Sr^{2+} > Ca^{2+} > Mg^{2+} > Be^{2+}$

C. $Be^{2+} > Ca^{2+} > Mg^{2+} > Ba(2+)$

D. $Be^{2+} > Mg^{2+} > Ca^{2+} Sr^{2+} > Ba^{2+}$
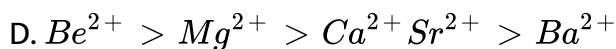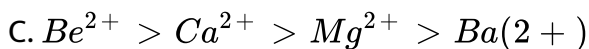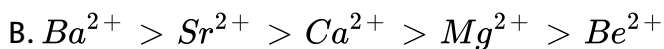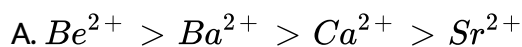
Answer: D

28. Which of the following has abnormally low value of third ionisation enthalpy ?

A. lanthanum

B. Gadolimium

C. Luteium

D. All of these

Answer: D

29. The compound which reacts with HBr obeying Markownikoff's rule is

A. $CH_2 = CH_2$

B. cis but-2-ene

C. trans-2-but -2-ene

D. $(CH_3)_2C = CH_2$

Answer: D

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30. The reaction

$2HCO + NaOH \rightarrow HCOONa + CH_3OH$ is

A. Rosenmund's reaction

B. Aldol condensation

C. Cannizaro 's reaction

D. Kolbe's reaction

Answer: C

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31. Permono sulphuric acid is known as

A. marshall's acid

B. caro's acid

C. sulphuric acid

D. None of these

Answer: B

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32. Which of the following is vector quantity?

A. Mass

B. Distance

C. Displacement

D. Weight

Answer: C

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33. Low spin complex of d^6-cation in an octahedral field will have the following energy:

A. $\dfrac{-12}{5}\Delta_0 + P$

B. $\dfrac{-12}{5}\Delta_0 + 3P$

C. $\dfrac{-2}{5}\Delta_0 + 2P$

D. $\dfrac{-2}{5}(\Delta_0 + P)$

Answer: B

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34. Order of stability of vinyl , allyl, teriary radicals is

A. tertiary , vinyl, allyl

B. vinyl,tertiary,allyl

C. tertiary ,allyl,vinyl

D. allyl,tertiary,vinyl

Answer: D

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35. $CH_3COOC_2H_5 + H_2O \xrightarrow{H^+} C_2H_5OH + CH_3COOH$
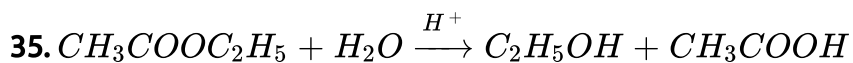
The reaction is know as

A. esterificartion

B. saponification

C. hydrolysis

D. protonolysis

Answer: C

36. Product (B) of the following reaction is

A.
(a)

B.
(b)

C.
(b)

D.
(c)

Answer: B

C≡N

+ CH₃MgBr $\xrightarrow{H_3O^+}$ P

OCH₃
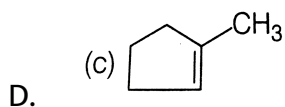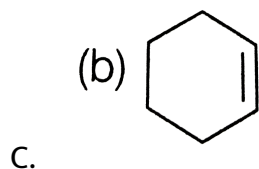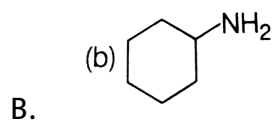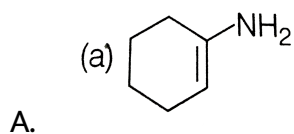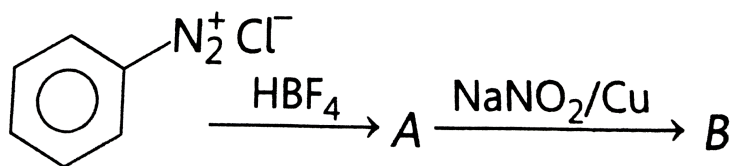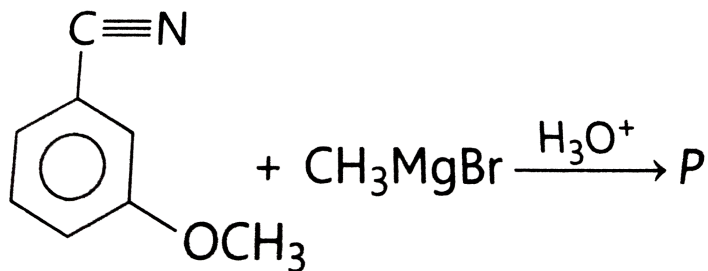
37.

Product P in the above reaction is

A.

(a)

OH

CH—CH₃

OCH₃

B.

(b)

O

C—CH₃

OCH₃

(c)

CHO

OCH$_3$

C.

(d)

COOH

OCH$_3$
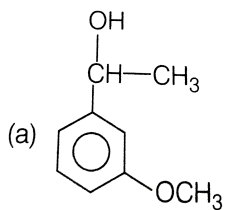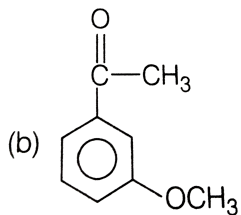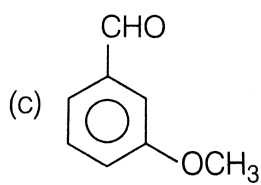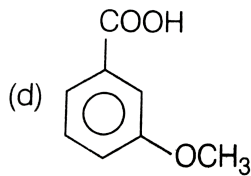
D.

Answer: B

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38. Non-protein part of enzyme is called

A. functional group

B. Characteristic group

C. Prosthetic group

D. enolic group

Answer: C

39. In which of the following polymer preparation , no initiator is required ?

A. Polypropene

B. Teflon

C. Polyacylonitrile

D. Melamine - formaldehyde polymer

Answer: D

40. Which among the following statement is flase ?

A. The adsorption may be monolayered or multilayered

B. Particle size of adsorbent will not affect the amount of adsorption

C. Increase of pressure increases amount of adsorption

D. All of the above

Answer: B

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41. How many isomers are possible in $[Co(en)_2Cl_2]$?

A. 2

B. 4

C. 6

D. 1

Answer: B

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42. Which one of the following anionc is the strongest Bronsted base ?

A. CIO^-

B. CIO_2^-

C. CIO_3^-

D. CIO_4^-

Answer: A

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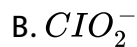
43. Which one of the following is an outer orbital complex and exhibits paramagnetic behaviour ?

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

B. $\left[Zn(NH_3)_6\right]^{2+}$

C. $\left[Cr(NH_3)_6\right]^{3+}$

D. $\left[Co(NH_3)_6\right]^{3+}$
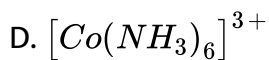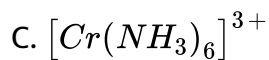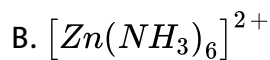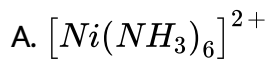
Answer: A

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44. Phenol when nitrated with conc. HNO_3 in presence of conc. H_2SO_4 forms

A. o-nitrophenol

B. m-nitrophenol

C. p-nitrophenol

D. picric acid

Answer: D

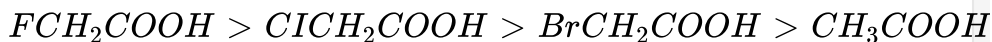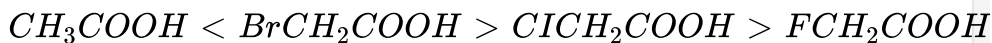**45.** Which of the following represents the correct of the acidity in the given compounds ?

A.

$$FCH_2COOH > CH_3COOH > BrCH_2COOH > CICH_2COOH$$

B.

$$BrCH_2COOH < CICH_2COOH < FCH_2COOH < CH_3COOH$$

C.

$$FCH_2COOH > CICH_2COOH > BrCH_2COOH > CH_3COOH$$
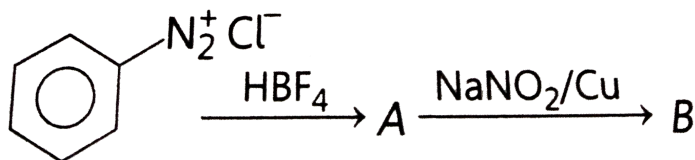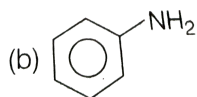
D.

$$CH_3COOH < BrCH_2COOH > CICH_2COOH > FCH_2COOH$$
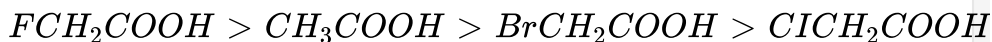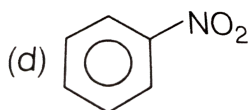
Answer: C

46. Product of the following reaction is
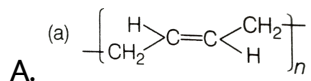

A.

(a)
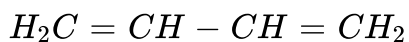OH

B.

(b)
NH$_2$

C.

(c)
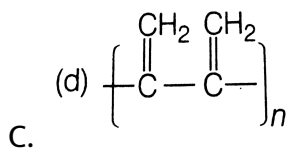NC

D.

(d)
NO$_2$
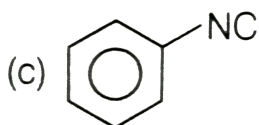
Answer: D

47. The disaccharide present in milk is

A. sucrose

B. Lactose

C. Maltose

D. Cellobiose

Answer: B

48. Mark out the most unlike form of polymerization of

$$H_2C = CH - CH = CH_2$$

A. (a)

B. $\left(-CH_2 \underset{H}{\overset{H}{>}}C=C\underset{CH_2}{\overset{H}{<}}\right)_n$ (b)

C. (d) $\left(\begin{matrix} CH_2 & CH_2 \\ \| & \| \\ C & -C \end{matrix}\right)_n$

D. (d) $\left(\begin{matrix} CH_2 & CH_2 \\ \| & \| \\ C & -C \end{matrix}\right)_n$
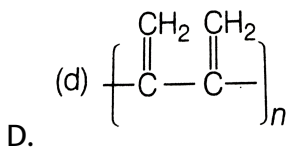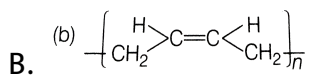
Answer: D

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49. The functional groups present in 'salol' are

A. $-NH_2$ and $-OR$

B. $-Oh$ and $-COR$

C. $-NH_2$ and $-COOH$

D. $-OH$ and $-COOR$

Answer: D

50. The formation of aldehyde from alkyl cyanide is related with the name

A. stephen

B. Rosenmund

C. Wurtz

D. HVZ reaction

Answer: A