माध्यमिक शिक्षा मण्डल, मध्यप्रदेश, भोपाल 32 पृष्ठीय

केवल परीक्षक द्वारा भरा जावे। प्रश्न क्रमांक के सम्मुख प्राप्तांकों की प्रविष्टी करें।

प्रश्न क्रमांक	पृष्ठ क्रमांक	प्राप्तांक (अंकों में)	प्रश्न क्रमांक	पृष्ठ क्रमांक	प्राप्तांक (अंकों में)
1			17		
2			18		
3			19		
4			20		
5			21		
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परीक्षक एवं उपमुख्य परीक्षक द्वारा भरा जावे ↓

प्रमाणित किया जाता है कि अन्दर के पृष्ठों के अनुरूप मुख्य पृष्ठ पर अंकों की प्रविष्टी एवं अंकों का योग सही है।

निर्धारित मुद्राः नाम, पदनाम, मोबाईल नम्बर, परीक्षक क्रमांक एवं पदांकित संस्था के नाम की मुद्रा लगाएं।

← परीक्षक एवं उपमुख्य परीक्षक द्वारा भरा जावे

उप मुख्य परीक्षक के हस्ताक्षर एवं निर्धारित मुद्रा | परीक्षक के हस्ताक्षर एवं निर्धारित मुद्रा
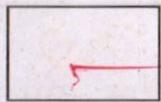
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प्रश्न क्र.

Question no. 1

Answer no. 1	infinite
Answer no. 2	$K_2Cr_2O_7$
Answer no. 3	Ni°
Answer no. 4	$RI > RBr > RCl > RF$
Answer no. 5	Testosterone

B
S
F

Question no. 2

Answer no. 1	ⓐ Solution
Answer no. 2	ⓑ 2
Answer no. 3	ⓒ Titanium
Answer no. 4	ⓒ C_6H_5CHO
Answer no. 5	ⓐ $H_2N - CH_2 - CH_2 - NH_2$
Answer no. 6	ⓒ Hormones

प्रश्न क्र.

Question no. 3

Answer no. 1   molarity

Answer no. 2 sec^{-1}

Answer no. 3   fehling solution B

Answer no. 4   Suffocating (foul

Answer no. 5   stored (polymer

Answer no. 6   Tripeptide.

Question no. 4

Answer no. 1   True

Answer no. 2   false

Answer no. 3   false

Answer no. 4   false

Answer no. 5   True

Answer no. 6   True

प्रश्न क्र.

Question no. 5

1. Silicon — semiconductors
2. $K_4[Fe(CN)_6]$ — counter ion
3. Lucas reagent — Conc. HCl + $ZnCl_2$
4. formic Acid — Red Ant
5. Monosaccharides — Reducing sugar

Answer no. 6

Four main sources of Vitamin A are :-

1. fish liver oil
2. carrot
3. Papaya
4. Green vegetables

प्रश्न क्र.

Answer no. 7

Faradays first law of electrolysis :- The amount of chemical reaction that occurs at the respective electrode is directly proportional to the current (electricity) passing through the electrolyte.

$$M \propto Q$$

$$M_s = Z Q$$

$$\therefore Q = It$$

$$M_s = ZIt$$

$$Z = \frac{M}{n \cdot f}$$

M = molar mass of electrolyte

m_s = mass of substance

$$\boxed{M_s = \frac{M \times It}{n \cdot f}}$$

F = faradays constant.

I = current

t = time.

Answer no. 8

All those chemical reactions that take place in a single step and do not involve formation of intermediate, i.e. product are directly converted from reactant with the formation of transition state.

Example:- SN_2 reactions of alkyl halide is a single step reaction in which strong nucleophile directly replace halogen atom

$$R-X \xrightarrow{Nu} Nu----R----X \rightarrow R-Nu + X^-$$

प्रश्न क्र.

B
S
E
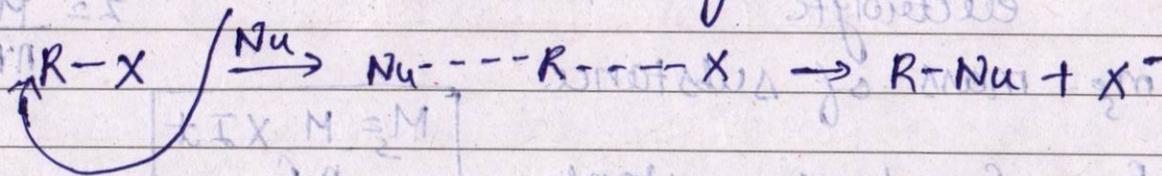
Answer no. 9

Interstitial compounds :- Interstitial compounds are formed when small non-metal atoms like (B, C, H) etc gets trapped between the metallic lattice.

Characteristics of interstitial compounds :-

(i) They are non-stoichiometric compound. That are neither ionic nor covalent.

(ii) They retain their thermal conductivity and are harder than normal metal.

Answer no. 10

Homaleptic complexes :- The complexes in which central metal atom or ion is bonded to only one type of ligand (i.e. lone pair donor species) is known as homoleptic complexes.

Example :- $K_2[PdCl_4]$ in this complex central metal atom/ion Pd is bound to 4 chlorido ligand.

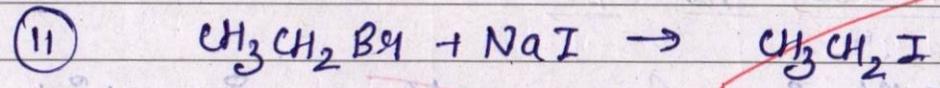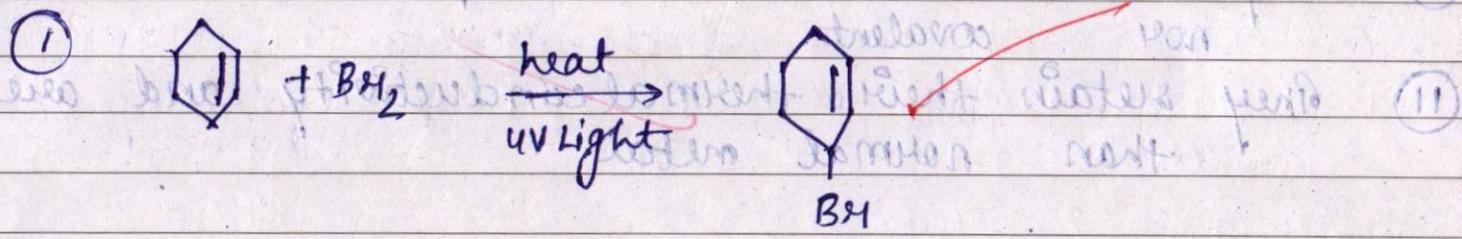(ii) $[Zn(NH_3)_4]Cl_2$

प्रश्न क्र.

Answer no. 11

Potassium tetracyanidonickelate (II)

① $K_2[Ni(CN)_4]$

② $[Co(NH_3)_5 CO_3] Cl$ — Pentaammine carbonato cobalt (III) chloride

Answer no. 12

① $+ BH_2$ → heat / UV Light → (with BH product)
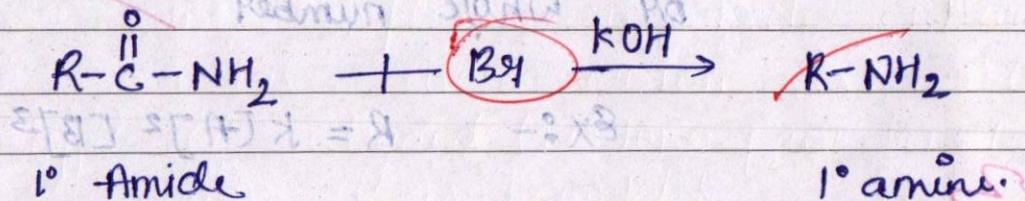
② $CH_3 CH_2 BH + NaI \rightarrow CH_3 CH_2 I$
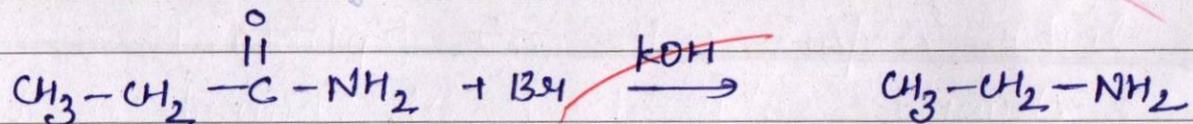
प्रश्न क्र.

Answer no. 13

Hoffman Bromamide degradation reaction :- This reaction is used for preperation of aliphatic and aromatic 1° amine. When 1° amide reacts with Br_2 in presence of alkali KOH the amide is degraded to give 1° amine.

(ii) The amine so formed contains only one carbon less as the carbonyl ($\overset{O}{\overset{||}{C}}$) is degraded in basic medium to give an amine containing 1 carbon less than original reactant

chemical equation :-

$$R-\overset{O}{\overset{||}{C}}-NH_2 \quad + \quad Br_2 \xrightarrow{KOH} R-NH_2$$

1° Amide   1° amine.

Ex:-

$$CH_3-CH_2-\overset{O}{\overset{||}{C}}-NH_2 + Br_2 \xrightarrow{KOH} CH_3-CH_2-NH_2$$

B
S
E

प्रश्न क्र.

Answer no. 14

Characteristics of order of reaction :-

B
S
E

① The sum of the power raised over the concentration of reactant in rate law expression is known as order of reaction.

(II) It is an experimental quantity, and determine the dependence of rate of reaction on concentration of reactant species. and the effect of change in concentration of reactant on rate of reaction.

(III) Order can be +ve, -ve, zero, or fraction value or whole number

$$Ex:- \quad R = k[A]^2 [B]^3$$
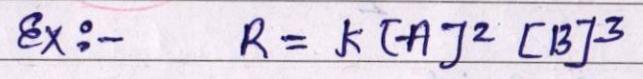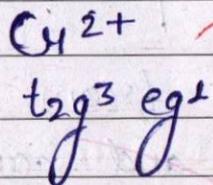
$$order\ of\ reaction\ n = 2+3 = 5.$$

प्रश्न क्र.

Answer no. 15

Both Cr^{+2} and Mn^{3+} have d^4 configuration. Still Cr^{2+} is reducing agent as by losing gaining 1 electron it will gain d^3 d^3 half filled t_2g^3 configuration and hence become stable.

$$Cr^{2+} \qquad\qquad Cr^{+3}$$
$$t_2g^3 \, eg^1 \qquad\qquad t_2g^3 \, eg^0 \; (half\ filled\ stable)$$
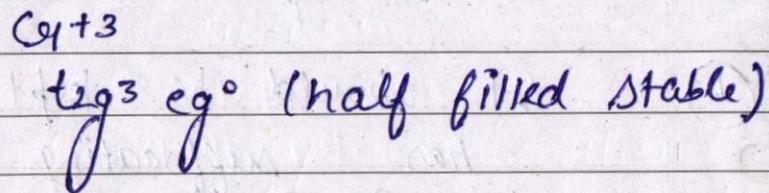
Mn^{+3} is an oxidising agent since by gaining 1 electron it will attain d^5 half filled stable configuration. (Mn^{+2})

$$Mn^{3+} \qquad\qquad Mn^{+2}$$
$$d^4 \qquad\qquad\qquad d^5$$

| ↑ | ↑ | ↑ | ↑ | |

| ↑ | ↑ | ↑ | ↑ | ↑ | (half filled stable
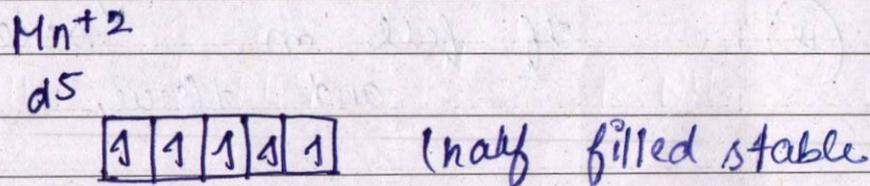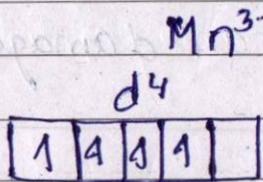
Hence, we can say that Cr^{+2} is reducing while Mn^{+3} is oxidising agent.

प्रश्न क्र.

Answer no. 16

Three two effects of dichloromethane on human:-

(I) Prolonged exposure of dichloromethane on human eye can cause permanent blindness.

(II) It should be kept away from nause nose as it has suffocating odour and can lead to hallucination.

(III) Consumption of dichloromethane can lead to malfunctioning of internal organs.

(IV) If fell on screen skin can damage cell and tissue, skin burn.

प्रश्न क्र.

Answer no. 17

(i) Gatterman-koch reaction :- This reaction is used for preperation of Benzaldehyde.

One treating Benzene with CO in the presence of HCl and lewis acid anhydrous $AlCl_3$ it undergoes nucleophilic electrophilic substitution reaction and form Benzaldehyde.

chemical equation

Benzene $\xrightarrow[\text{Anhy. } AlCl_3]{CO + HCl}$ Benzaldehyde.
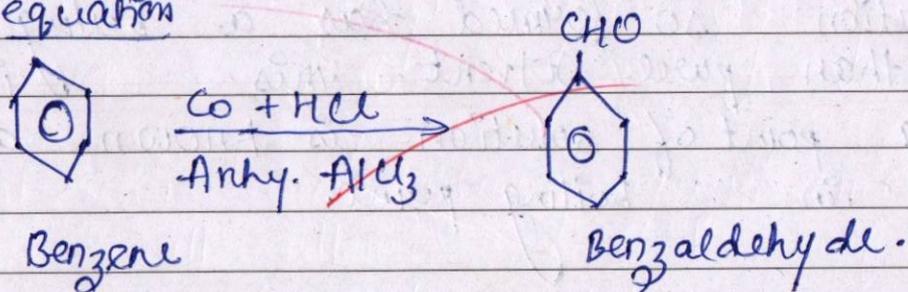
(ii) Etard Reaction :- This reaction is used for preperation of benzaldehyde from toulene (methyl benzene)

toulene on reaction with CrO_2Cl_2 (chromyl chloride) given benzaldehyde.

chemical equation :-


$+ \; CrO_2Cl_2 \longrightarrow$
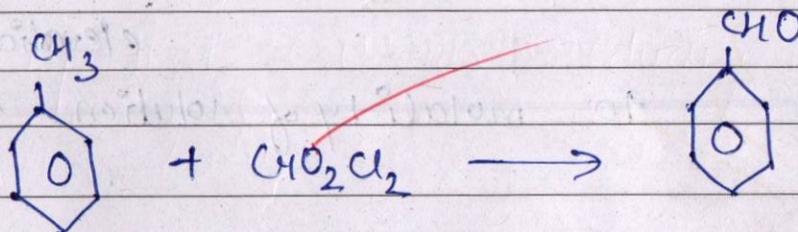
प्रश्न क्र.

Answer no. 18

B S E

Elevation in boiling point :— The difference in boiling point between that of solution and pure solvent is known as elevation in boiling point. When a non-volatile solute is added to a pure solvent. the solution so formed has a boiling point greater than pure solvent. This increase in boiling point of solution is known as elevation in boiling point.
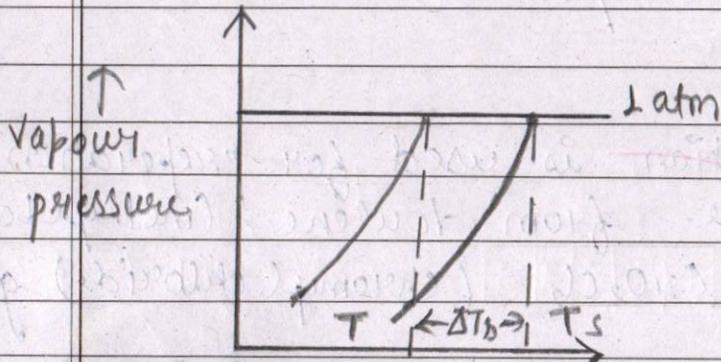
$T_s =$ boiling point of solution

$T =$ boiling point of solvent

$\Delta T_b =$ elevation in boiling point

$\Delta T_b = T_s - T$

elevation in boiling point is proportional to molality of solution. $\Delta T_b \propto m$

$(\because m = \text{molality})$

$$\Delta T_b = K_b \times m$$

We know that

K_b = molal constant for elevation in boiling point

k_b = ebuillioscopic constant

$$\text{molality} = \frac{\text{no. of moles of solute} \times 1000}{\text{molar mass of solvent (in g)}}$$

$$\Delta T_b = K_b \times \frac{n}{w_1} \times 1000$$

w_1 = Given mass of solvent

$$n = \frac{w_2}{M_2}$$

w_2 = mass of solute

M_2 = molar mass of solute

$$\Delta T_b = k_b \times \frac{w_2}{M_2} \times \frac{1000}{w_1}$$

$$\boxed{M_2 = \frac{K_b \times w_2 \times 1000}{\Delta T_b \times w_1}}$$

Hence, molar mass of solute.

प्रश्न क्र.

B
S
E

Answer no. 19

Given :-

Solution of $CuSO_4$

Amount of current passed through it = 1.8A

Duration of passing current = 10 minutes = 10×60 = 600 sec.

molar mass of $CuSO_4$ = 58

faradays constant f = 96500

mass of Cu deposited = M

$n = 2$

$$m = \frac{M}{nf} \times It$$
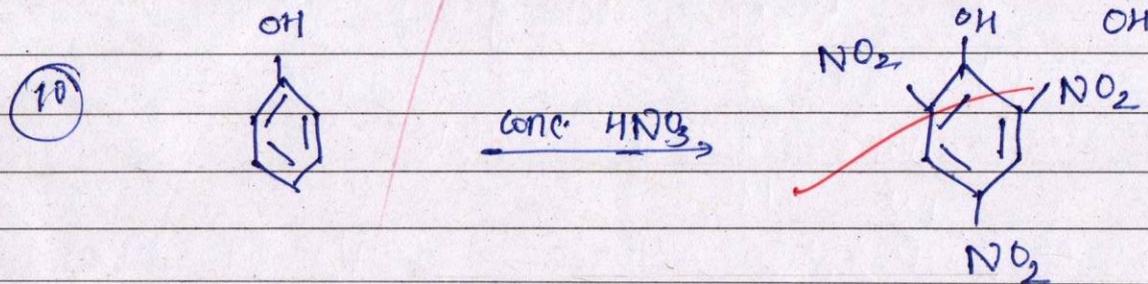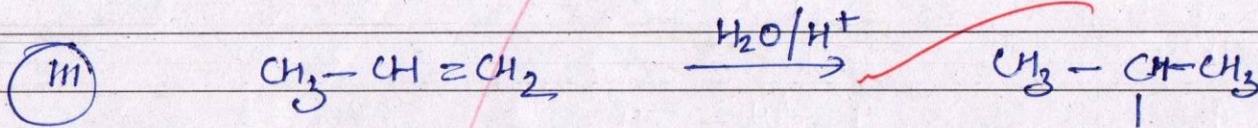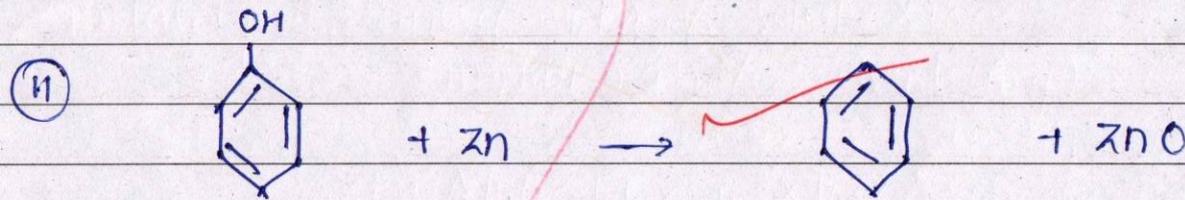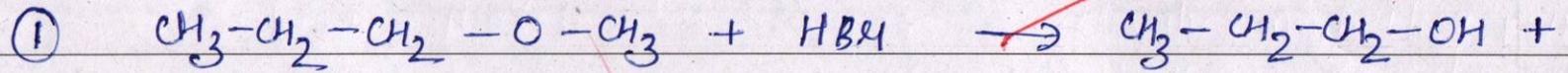
$$m = \frac{58}{2 \times 96500} \times 1.5 \times 600$$

$$\boxed{m = 0.27 \, g}$$

Answer no. 20

(I) $CH_3 - CH_2 - CH_2 - O - CH_3 + HBr \longrightarrow CH_3 - CH_2 - CH_2 - OH +$

$$CH_3 - Br$$

(II)

$+ Zn \longrightarrow$

$+ ZnO$

(III) $CH_3 - CH = CH_2 \xrightarrow{\;H_2O/H^+\;} CH_3 - CH - CH_3$

$$\overset{|}{OH}$$

(IV)

$\xrightarrow{\;conc.\; HNO_3\;}$