केवल मूल्यांकनकर्ता के उपयोग हेतु!

माध्यमिक शिक्षा मण्डल, मध्यप्रदेश, भोपाल 32 पृष्ठीय

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

प्रश्न क्रमांक	पृष्ठ क्रमांक		प्रश्न क्रमांक	पृष्ठ क्रमांक	प्राप्त
1			17		
2			18		
3			19		
4			20		
5			21		
6			22		
7			23		
8			24		
9			25		
10			26		
11			27		
12			28		
13					
14					
15					
16					

परीक्षक एवं उपमुख्य परीक्षक द्वारा भरा जावे ↓

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 मुद्रा : नाम, पदनाम, मोबाईल नम्बर, परीक्षक क्रमांक एवं पदांकित संस्था के

उप मुख्य परीक्षक के हस्ताक्षर एवं निर्धारित मुद्रा

P.K. Sahu (U.M.T.)
Govt. Ex. HSS Shahpura
Mob. No. 9424712624
Reg. No. 010574

परीक्षक के हस्ताक्षर एवं निर्धारित मुद्रा

O. P. [illegible] (U.M.T.)
Govt. Model HSS Menadwani
Reg. No. 010755
Mob. No. 9424704161

प्रश्न क्र.

Answer of Que. no. 01.

Choose and write correct options :-

Ans-(i) (a) 8 minutes.

Ans-(ii) (c) - Maltase

Ans-(iii) (a) Acidic.

Ans-(iv) (a) 0.5 M

Ans-(v) (b) cm^{-1}

Ans-(vi) (d) Ionisation isomerism.

प्रश्न क्र.

Answer of Que no. 02.

Fill in the blanks :-

Ans-(i) Hexadentate ligand

Ans-(ii) Picric acid

Ans-(iii) NH_3

Ans-(iv) more

Ans-(v) Henry's law

Ans-(vi) 96500 coulomb.

प्रश्न क्र.

Answer of Que. no. 03.

Write True or False :-

Ans-(i) True.

Ans-(ii) False.

Ans-(iii) False.

Ans-(iv) True.

Ans-(v) False.

Ans-(vi) True.

Answer of Que. no. 04

Match the pairs correctly :-

Column 'A'	'Answers'
(i) Vitamin "D"	(d) Rickets
(ii) Diazonium salts	(e) $C_6H_5N_2Cl$
(iii) Hinsberg's reagent	(a) $C_6H_5SO_2Cl$
(iv) Vitamin "B_{12}"	(f) Cobalt
(v) Protein	(b) Keratin

प्रश्न क्र.

Answer of Que: no. 05

Answer in one word / sentence :-

Ans-(I) $ohm^{-1} cm^2 eq^{-1}$

Ans-(II) $(n-2)f^{1-14}(n-1)d^{0-1}ns^2$

Ans-(III) Alfred Werner.

Ans-(IV) Formalin is a solution of 56% H_2O (water), 40% HCHO (formaldehyde) and 4% CH_3OH (methyl alcohol)

Ans-(V) The number of moles of solute dissolved in 1 Kg solvent is known as molality.

प्रश्न क्र.

Answer of Que no. 06 (OR)

Ionisation isomerism :-

This type of isomerism is shown by the complex compounds which have same composition but they liberate different ions in solutions or aqueous state.

Example :- 1. $[Co(NH_3)_5Cl]SO_4$ & $[Co(NH_3)_5(SO_4)]Cl$.

2. $[Co(NH_3)_5Br]SO_4$ & $[Co(NH_3)_5(SO_4)]Br$.

This type of isomers have different arrangements of ions inside and outside the square bracket.

Answer of Que no. 07 (OR)

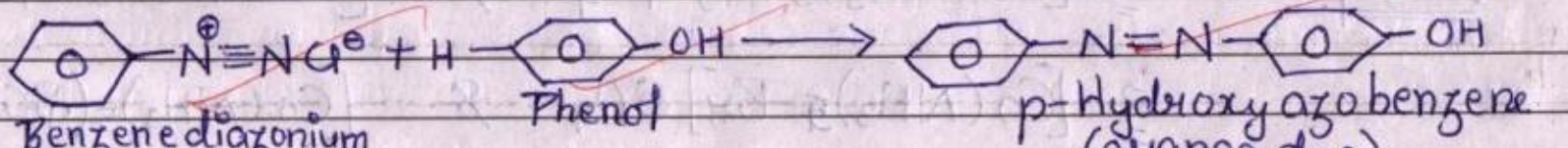
Following are the two uses of carbon tetrachloride :-

1. As fire extinguisher.
2. In the production of Freon.

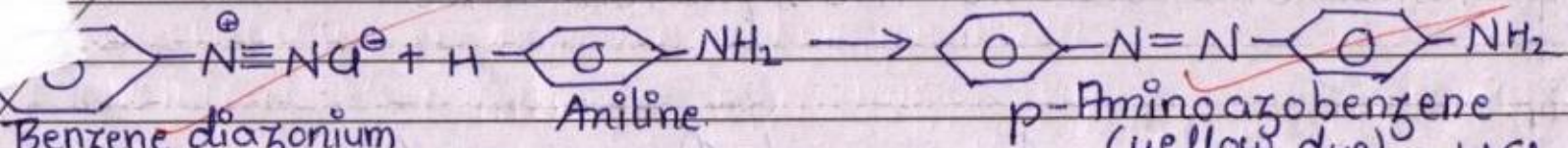
प्रश्न क्र.

Answer of Que. no. 08 (OR)

Coupling Reaction :- In this reaction, diazonium salt combines with phenol or aniline to form p-hydroxyazo-benzene (orange dye) or p-Aminoazobenzene (yellow dye respectively.



Benzene diazonium chloride. Phenol p-Hydroxy azobenzene (orange dye) + HCl.



Benzene diazonium Chloride. Aniline. p-Aminoazobenzene (yellow dye) + HCl.

This is called Coupling Reaction.

B S E

प्रश्न क्र.

Answer of Que. no. 09.

Resistivity :-

Resistivity of a conductor is defined as the resistance offered by the conductor of length 1 cm and area of cross-section of $1 cm^2$.

If l is the length of conductor and A is the area of cross section, then we know that

$$R \propto l$$

$$R \propto \frac{1}{A}.$$

Combining the above conditions we get,

$$R \propto \frac{l}{A}.$$

$$R = \rho \frac{l}{A}$$

[where, ρ = proportionality constant called resistivity of the conductor.]

$$\boxed{\rho = \frac{RA}{l}}.$$

BSE

प्रश्न क्र.

Unit of resistivity :- ohm cm.

Answer of Que. no. 10. (OR)

~~Molecula~~ Molecularity :-

The number of reacting species (atoms, ions or molecules) taking part in an elementary reaction which must collide simultaneously in order to bring about a chemical reaction is called 'molecularity of chemical reaction'.

- It can never be negative or zero.
- It is always a positive whole number.
- A chemical reaction can be unimolecular, bimolecular, etc.

Example :- 1. $2HCl \longrightarrow H_2 + Cl_2$ (Bimolecular).

2. $NH_4NO_2 \longrightarrow N_2 + 2H_2O$ (Unimolecular)

प्रश्न क्र.

Answer of Que. no. 11. (OR)

Transition metals form ~~cout~~ coloured ions or compounds because of d-d transition. The unpaired electrons in the d-sub-shell of transition metals absorb radiations and become excited in d-orbitals of higher energy. This is called d-d transition.

It is because of this d-d transition that transition metals form coloured ions or compounds.

B S E

Answer of Que. no. 12.

IUPAC name :-

~~1. $K_2[Hg(I_4)]$~~

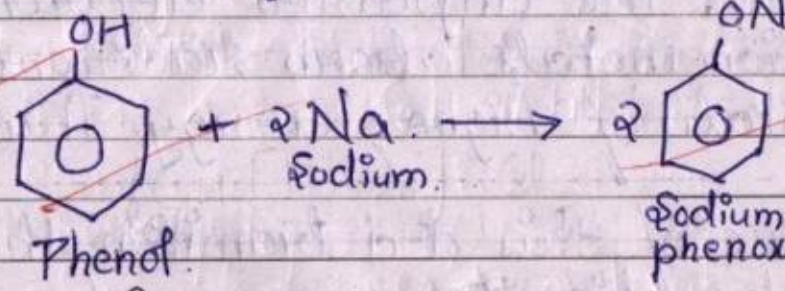
1. $K_2[Hg(I)_4]$ → Potassium tetraiodomercurate (II)

2. $[Cr(H_2O)_6]Cl_3$ → Hexaaquachromium (III) chloride.

प्रश्न क्र.

Answer of Que no. 13.

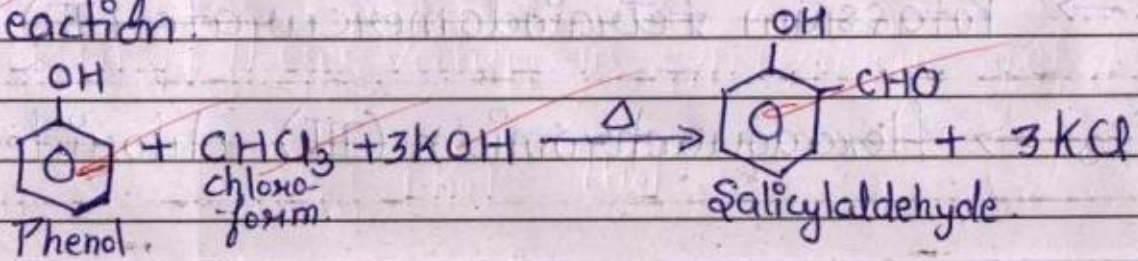
1. Reaction of phenols with sodium (acidic nature) :-



Phenols react with sodium to form sodium phenoxide and hydrogen gas is evolved. This shows the acidic nature of phenol.

2. Reimer-Tiemann reaction :-

On ~~heating~~ mixing phenol with chloroform and solution of potassium hydroxide, salicylaldeh-yde is formed. This reaction is called Reimer-Tiemann reaction.



B S E

प्रश्न क्र.

Answer of Que no. 14 (OR).

★ **Essential Aminoacids :-**

The aminoacids which are not synthesized in our body and must be taken through diet are called 'essential aminoacids'.

Example :- Methionine and Phenyl alanine

B
S
E

Non-Essential Amino acids :-

The amino acids which are synthesized in our body are known as 'non-essential amino acids'.

Example :- Alanine and Glycine.

Answer of Que no. 15 (OR)

For a zero order reaction, the expression for rate constant is given as :-

$$K = \frac{[R_0] - [R]}{t} \quad \text{——— (1)}$$

where,

K = rate constant.

$[R_0]$ = initial concentration of reactants.

$[R]$ = concentration of reactants after time t.

t = ~~Life~~ Time taken

Half life of a reaction is the time at which concentration of reactions becomes half of the initial concentration.

$\therefore$ at $t = t_{1/2}$, $[R] = \frac{[R_0]}{2}$.

Putting these values in eqn (1), we get :-

$$K = \frac{[R_0] - \frac{[R_0]}{2}}{t_{1/2}}$$

प्रश्न क्र.

$$K = \frac{\frac{2[R_0] - [R_0]}{2}}{t_{1/2}}$$

$$K = \frac{[R_0]}{2t_{1/2}}$$

or

$$\boxed{t_{1/2} = \frac{[R_0]}{2K}} \quad \text{——— (2)}.$$

Thus, the half life value of a zero order reaction is directly proportional to the ~~initial~~ initial concentration of reactants.

Eqn (2) is the required expression.

योग पूर्व पृष्ठ | पृष्ठ 16 के अंक | कुल अंक

प्रश्न क्र.

Answer of Que no. 16.

d-block elements :-

The elements in which the last electron enters in the d-subshell and have incomplete n and (n-1) subshells are known as d-block elements. These elements are also known as transition elements because their properties are transitional between s-block and p-block elements. ✓ General Electronic configuration ⇒ $(n-1)d^{1-10}\ ns^{1-2}$

Two characters of d-block elements :-

1. These elements are known for their catalytic properties because they show variable oxidation states and can form a variety of unstable intermediates. They also provide large surface area so that the reactants can come close to each other and facilitates the reaction.
   Example :- Ni, Pd, Pt etc.
2. ~~These elements can form alloys easily.~~

2. ~~These elements~~

प्रश्न क्र.

Q. Most of these elements can form coloured compounds because of the presence of unpaired electrons and d-d transition. The unpaired electrons in the d-subshell of transition elements absorb radiations and become excited in d orbitals of higher energy. This is called d-d transition. It is the reason for the formation of coloured ions & coloured compounds.

Example :- Ni^{2+} → green.
Mn^{2+} → pink.

B S E

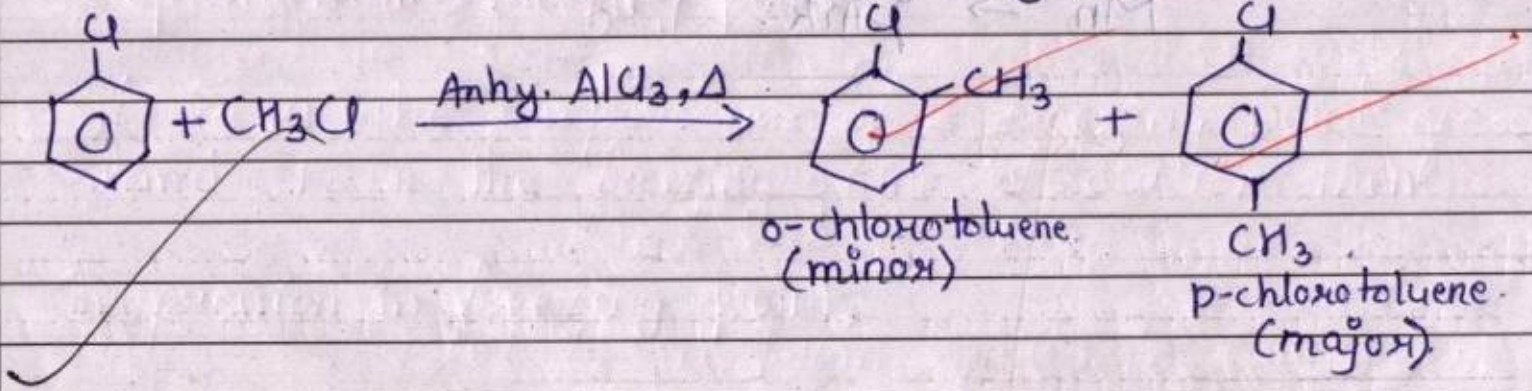
प्रश्न क्र.

Answer of Que. no. 17 (OR)

Complete the following reactions :-

1. $CH_3CH_2Br + KCN \xrightarrow{\text{aq. ethanol}} CH_3CH_2CN + KBr$
   Propanenitrile.

2. $C_2H_5Cl + C_2H_5ONa \longrightarrow C_2H_5OC_2H_5 + NaCl$
   Ethoxy ethane.

3. 

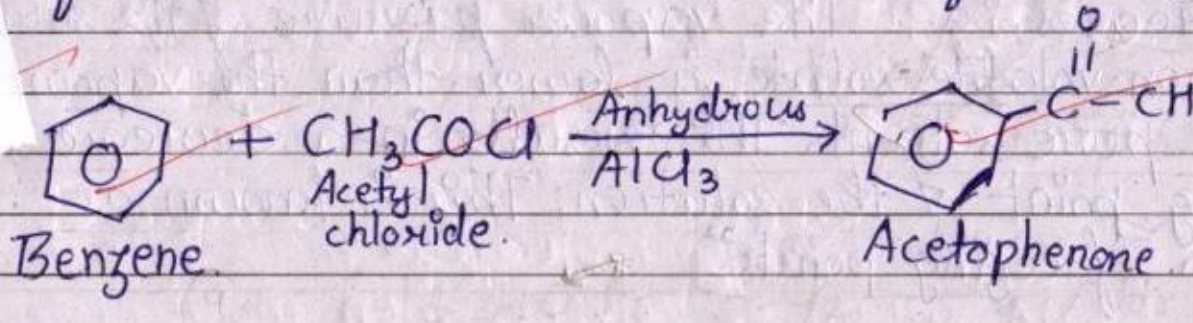
4. ~~CH_3CH_2OH~~

4. $CH_3CH_2OH + SOCl_2 \longrightarrow CH_3CH_2Cl + SO_2 + HCl$
   1-Chloroethane.

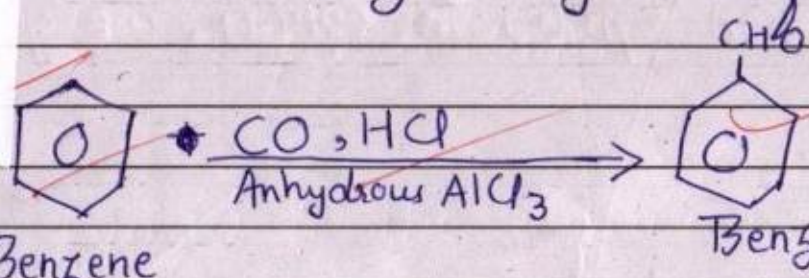
प्रश्न क्र.

Answer of Que. no. 18. (OR)

(i) When benzene reacts with acetyl chloride in the presence of anhydrous Aluminium chloride, then acetophenone is formed. This is Friedal Craft's acylation reaction.



(ii) When benzene is heated with carbon monoxide and hydrogen chloride gas in the presence of anhydrous aluminium chloride, benzaldehyde is formed. This is Gatterman-Koch reaction.



प्रश्न क्र.

Answer of Que. no. 19 (OR)

Depression in Freezing Point :- When a non-volatile solute is added to a solvent, then vapour pressure of the solvent decreases, i.e., The vapour pressure of the solution containing non-volatile solute is lower than the vapour pressure of pure solvent. This results in a decrease in the freezing point of the solution. This is known as "depression in freezing point."

If T_1 is the ~~temperature of~~ freezing point of pure solvent and T_2 is the freezing point of solution, then

Depression in freezing point,

$$\boxed{\Delta T_f = T_1 - T_2}$$

प्रश्न क्र.

Expression for molecular mass of solute :-

It is found experimentally that,

~~$\Delta T_f \propto m$~~ $\Delta T_f \propto m$.

~~or~~ or

~~$\Delta T_f = K m$~~ $\Delta T_f = K_f \cdot m$ — (1).

where, m = molality of solution.

K_f = proportionality constant called 'molal depression constant' or 'Cryoscopic constant'

If W_B is the mass of solute having molecular mass M_B is dissolved in ~~V ml~~ W_A g of ~~solution~~, then molality of solution,

$$m = \frac{W_B \times 1000}{M_B \times W_A} \quad \text{— (2)}.$$

कुल अंक

प्रश्न क्र.

Putting the value of m from eqn ② in eqn ①, we get :-

$$\Delta T_f = K_f \times \frac{W_B \times 1000}{M_B}$$

प्रश्न क्र.

Answer of Que. no. 19 (OR).

Depression in Freezing Point :-

When a non-volatile solute is dissolved in a solvent, then the vapour pressure of the solution is always less than the vapour pressure of pure solvent. This results in a decrease in the freezing point of the solution. This is known as "Depression in Freezing Point"

If T_1 is the freezing point of pure solvent and T_2 is the freezing point of solution, then

Depression in freezing point,

$$\boxed{\Delta T_f = T_1 - T_2}$$

Expression for molecular mass of Solute :-

It is found experimentally that,

$$\Delta T_f \propto m$$

प्रश्न क्र.

OR

$$\Delta T_f = K_f \times m \quad \text{——} \quad (1)$$

where,

ΔT_f = Depression in freezing point.

K_f = proportionality constant called "Cryoscopic constant" or "Freezing Point Depression Constant"

m = molality of the solution.

B
S
E

If W_B gram of solute having molecular mass M_B is dissolved in W_A gram of solvent, then molality of solution,

$$m = \frac{W_B \times 1000}{M_B \times W_A} \quad \text{——} \quad (2)$$

Putting the value of m from eqn (2) in eqn (1), we get :-

$$\Delta T_f = K_f \times \frac{W_B \times 1000}{M_B \times W_A}$$

or

$$\boxed{M_B = \frac{K_f \times W_B \times 1000}{\Delta T_f \times W_A}}$$

प्रश्न क्र.

This is the required expression for the determination of molar mass of solute.

Answer of Que. no. 20. (OR)

Difference between Galvanic cells and electrolytic cells :-

Galvanic cell.	Electrolytic cell.
1. It converts chemical energy into electric energy.	1. It converts electric energy into chemical energy.
2. Anode is negative and cathode is positive.	2. Anode is positive and cathode is negative.
Salt bridge is used in galvanic cell.	3. Salt bridge is not used in electrolytic cell.
4. Maximum work is obtained from the system	4. Maximum work is done on the system.

BSE

प्रश्न क्र.	
5. Electrodes are placed in two different electrolytes in two containers. Ex. :- Daniel cell.	5. Electrodes are placed in same electrolyte in the same container. Ex. Lead Storage battery.