माध्यमिक शिक्षा मण्डल, मध्यप्रदेश, भोपाल

24 पृष्ठीय

परीक्षार्थी द्वारा भरा जावे ↓

परीक्षा का विषय	विषय कोड	परीक्षा का माध्यम
chemistry	2 2 0	English medium

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320-0483393

परीक्षार्थी द्वारा भरा जावे

परीक्षार्थी का रोल नम्बर

अंकों में

2	0	1	6	3	7	0	1	9	—

शब्दों में

two	zero	one	six	three	seven	zero	one	nine	—

एक	एक	दो	चार	तीन	नौ	पांच	छः	आठ

केन्द्राध्यक्ष / सहायक केन्द्राध्यक्ष एवं पर्यवेक्षक द्वारा भरा जावे

क :– पूरक उत्तर पुस्तिकाओं की संख्या अंकों में ____ शब्दों में ____

ख :– परीक्षार्थी का कक्ष क्रमांक 01

ग :– परीक्षा का दिनांक 09 06 2020

परीक्षा का नाम एवं परीक्षा केन्द्र क्रमांक की मुद्रा

हायर सेकेण्डरी सर्टिफिकेट परीक्षा केन्द्र क्रमांक 168019

पर्यवेक्षक का नाम एवं हस्ताक्षर	केन्द्राध्यक्ष / सहायक केन्द्राध्यक्ष के हस्ताक्षर
Smt Ramnaleen (signature)	(signature)

परीक्षक एवं उपमुख्य परीक्षक द्वारा भरा जावे ↓

परीक्षक एवं उपमुख्य परीक्षक द्वारा भरा जावे

प्रमाणित किया जाता है कि मूल्यांकन के समय पूरक उत्तर पुस्तिकाओं की संख्या उपरोक्तानुसार सही पाई होलो क्राफ्ट स्टीकर क्षतिग्रस्त नहीं पाया गया तथा 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 नाम की मुद्रा लगाएं।

उप मुख्य परीक्षक के हस्ताक्षर एवं निर्धारित मुद्रा

Dilip Gupta
V.No.9540400

70/70

नोट :- ''हायर सेकेण्डरी परीक्षा में केवल वाणिज्य ... प्रायोगिक विषय को छोड़कर शेष विषयों हेतु नियमित एवं स्वाध्यायी छात्रों ... 100 अंकों का होगा किन्तु नियमित छात्रों को 100 अंक के प्राप्तांक का 80% अधि... एवं स्वाध्यायी छात्रों को 100 अंक के प्राप्तांक ही अंकसूची में प्रदर्शित किये जायेंगे।''

केवल परीक्षक द्वारा भरा जावे।

प्रश्न क्रमांक के सम्मुख प्राप्तांकों की प्रविष्टी

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

प्राप्तांक अंकों में

प्रश्न क्र.

Ques no - 1

Answers

Ans 1 Graphite

Ans 2 1.26×10^{13} s

Ans 3 Butter

Ans 4 Al

Ans 5 2

Ques no - 2

Answers

(1) C (Ascorbic acid)

(2) Liquid

(3) Synthetic

(4) Peptization

(5) +5

Ques no-3

(1) Schottky defect – NaCl

Frankel defect – AgCl

Paramagnetism – O_2

(4) Zinc Blende – ZnS

(5) Cuprite – Cu_2O

Ques no-4

Answers

(1) False (X)

(2) True (✓)

(3) True (✓)

(4) True (✓)

(5) False (X)

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Ques no - 18 [Or]

(A)

Ans Food preservatives are the chemical substances which when added to the food material retards the growth of micro-organisms which deteriorate the food within no time.

Thus, food preservatives are the chemicals which interfere with the cell membrane of bacteria or other micro-organisms and destroy their enz genetics mechanism

Some commonly used food preservatives are as follows -

(1) Sodium benzoate ($C_6H_5COO-Na$)

(2) Vinegar (CH_3-COOH)

(3) Salt (NaCl) etc

B S]

(B)

Ans Soaps are less soluble in water & forms rich foam with soft water. But they cannot produce

foam with hard water because calcium & magnesium salt present in hard water react with soap & precipitate out as insoluble salt therefore, soap does …t work in hardwater

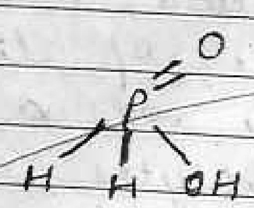
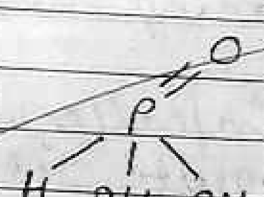
$R\text{-}COO\text{-}Na + Ca(OH)_2 \longrightarrow (R\text{-}COO)_2Ca + 2NaOH$

soap — calcium hydroxide — calcium salt

Thus, it is better to add sodium carbonate in soap so that it react with ~~two~~ hard water & convert it into soft water

B
S
E

Ques no. - 17 [Or]

	Name	formula	structure
(1)	Hypophosphorus acid	H_3PO_2	
(2)	Phosphorus acid	H_3PO_3	

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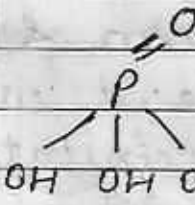
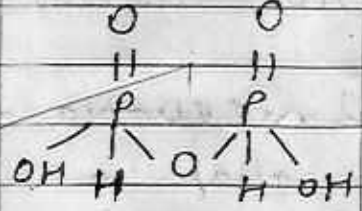
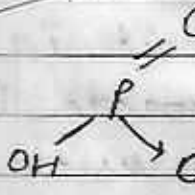
(3)	Phosphoric acid	H_3PO_4	
(4)	Pyrophosphorus acid	$H_4P_2O_5$	
(5)	Metaphosphoric acid	HPO_3	

Ques no-16

"KOLHALASCH LAW"

In 1886, Kolharasch calculated the value of limiting molar conductivity of a no. of strong electrolytes.

According to Kolharasch law-

At infinite dilution, when the electrolyte is completely dessociated and the interionic attraction is

also very negligible then each & every ion of the solution make a certain definite contribution to the eq conductivity of the solution irrespective of the nature of the ion with which it is associated.

At infinite dilution, the molar conductivity of solution is equal to the ionic conductivity of all cations & anions at infinite dilution.

Thus,

$$\Lambda_m^\infty = x\lambda_{m}^{\infty} + y\lambda_{m}^{\infty}$$

where, x and y are the no. of cations & anions respectively

Application of Kolharasch law -

(i) Kolharasch law is used for determining ~~no~~ degree of dissociation(α) of weak electrolyte

α = molar conductivity at given concentration / molar conductivity at infinite dilution

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(2) It is used for determining ionisation constant or dessociation constant (K_d) of weak electrolyte

$$K_d = \frac{\alpha^2 c}{1-\alpha}$$

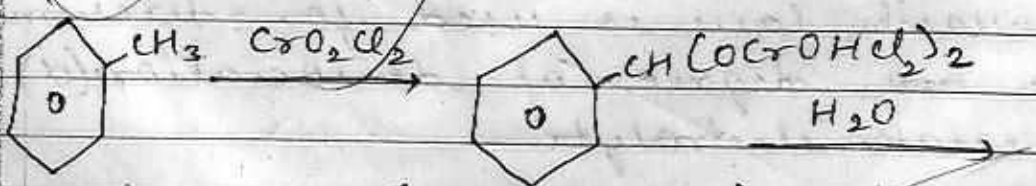
[where, c is concentration]

B S E

Ques no. - 15

(A) **Etards reaction**

When toluene dissolved in CCl_4 react with chromyl chloride (CrO_2Cl_2) then a brown precipitate is formed which when react with water gives benzaldehyde



Toluene (Intermediate) C_6H_5-CHO benzaldehyde

(B) Gatterman-Koch reaction

When benzene react with carbon monoxide and HCl at high pressure then benzaldehyde is formed.

$$C_6H_5-H + CO + HCl \xrightarrow{ATM} C_6H_5-CHO + HCl$$

Benzene → benzaldehyde + HCl

(C) Aldol condensation

Two molecules of aldehyde & ketone having atleast one α hydrogen atom condense in the presence of dil. NaOH to form β-hydroxy butanal and β-hydroxy ketone

• Two molecules of aldehyde condense in the presence of dil. NaOH to form β-hydroxy butanal

$$CH_3-\overset{H}{\underset{\oplus}{C}}=\underset{\ominus}{O} + \overset{\oplus}{H}-\overset{\ominus}{C}H_2-CHO \xrightarrow{dil.\,NaOH} CH_3-\overset{OH}{\underset{H}{C}}-CH_2-CHO$$

Aldehyde → β-hydroxy butanal

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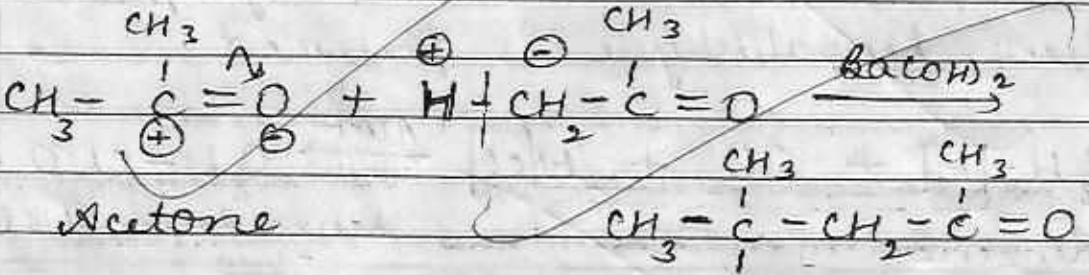
- Two molecules of ketone condense in the presence of $Ba(OH)_2$ to forms diketone alcohol



B S E

Ques no - 14 [or]

	Property	Phenol (C_6H_5-OH)	Alcohol ($R-OH$)
(1)	Smell	~~sweet~~ / specific phenolic smell	sweet alcoholic smell
(2)	Reaction with formaldehyde ($HCHO$)	~~does not~~ gives bakelite polymer	does not react

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(3)	Coupling reaction	azo dye is formed	does not give
(4)	Reaction with $FeCl_3$	violet colour is formed due to the formation of complex	does not give

B S E

Ques no - ~~14~~ 13

(A) FREONS $[CF_2Cl_2]$

Chloro - fluoro derivatives of methane are called freons.
Dichlorodifluoro methane is an important freon. Freons are prepared by reacting carbon tetrachloride ~~the the presence of~~ with antimony trifluoride in the presence of antimony pintafluoride as catalyst

$$3CCl_4 + 2SbF_3 \xrightarrow{SbF_5} 3CF_2Cl_2 + 2SbCl_3$$

carbon tetrachloride — antimony trifluoride — chlorofluoro carbon — antimony trichloride

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☆ Properties of freon →

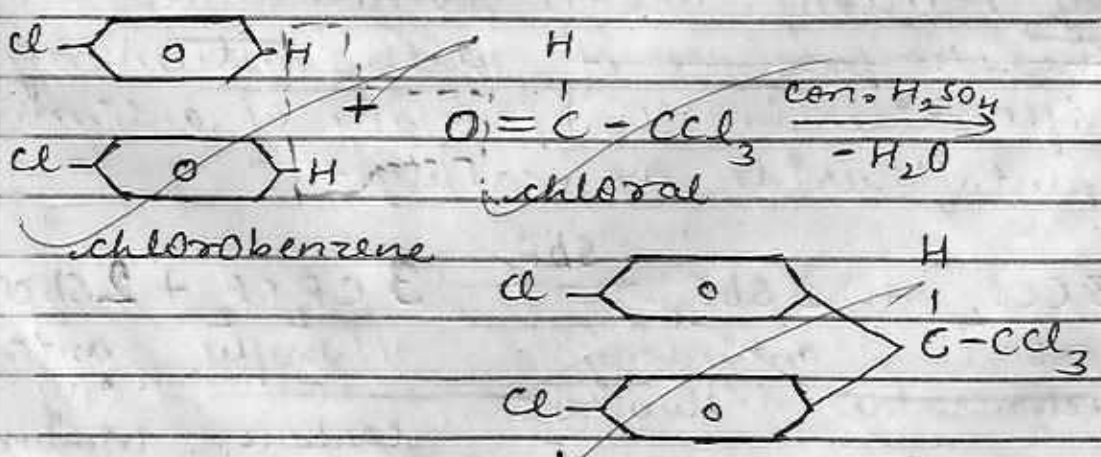
☆ Freon is colourless & non-inflammable gas.

☆ Use - Freons are used in air conditioners & refridgerators

B S E

(B) D.D.T

When two molecules of chlorobenzene react with chloral in the presence of conc. H_2SO_4 then dichloro diphenyl trichloro ethane is formed (DDT).



P-P' dichloro diphenyl trichloro ethane

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★ Property - DDT is highly toxic in nature

★ Uses - It is used as insecticide.

Ques-12 [or]

Ans

	LANTHANIDES	ACTINIDES
B S E (1)	Lanthanide series is present in 6th period in periodic table	(1) Actinide series is present in 7th period in periodic table
(2)	The oxidation state of these elements is +3 but +2 & +4 oxidation state is shown by some elements	(2) They show +4, +5 & +6 oxidation state in addition to +3 oxidation state
(3)	Lanthanide series is also known as 4f series as the last electron of these element enter in 4f orbital	(3) Actinide series is also known as 5f series as last electron of these element enter in 5f orbital

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(4) They have poor tendency to form complexes.	(4) They have high tendency to form complexes.

Ques no. - 11

HALF LIFE - The time period in which the ~~the~~ concentration of reactant decreases half or time in which the reaction gets completed exactly half, is called half life

B S E

- Expression for half life period of first order reaction

We know that the equation for rate constant of ~~a~~ first order reaction is

$$K = \frac{2.303}{t} \log_{10}\left(\frac{a}{a-x}\right)$$

Or

$$t = \frac{2.303}{K} \log_{10}\left(\frac{a}{a-x}\right)$$

For half life - $t = t_{1/2}$ and $x = a/2$

do,

$$t_{1/2} = \frac{2.303}{K} \log_{10} \frac{a}{\left(a - \frac{a}{2}\right)}$$

$$t_{1/2} = \frac{2.303}{K} \log_{10} \left(\frac{a}{a/2}\right)$$

$$t_{1/2} = \frac{2.303}{K} \log_{10} 2$$

[∵ since $\log_{10} 2 = 0.3010$]

$$t_{1/2} = \frac{2.303 \times 0.3010}{K}$$

$$\boxed{t_{1/2} = \frac{0.693}{K}}$$

Thus, half life of first order reaction is constant i.e. it does not depend on initial concentration of reactant.

Ques no - 10

~~Name~~

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Ques - 10

	Name of vitamin	source	Deficiency disease
(1)	Vitamin A	carrot, green leafy vegetables, spinach etc	night blindness, xerophthalmia
(2)	Vitamin C	Amla, citrous fruits etc	scurvy, gum bleeding
(3)	Vitamin D	sunlight, milk yeast etc.	Rickets, osteomalacia

USE

Ques no - 9 [Or]

(A) Ethyl amine react with nitrous acid

$$CH_3-CH_2-NH-\boxed{H + OH}-N=O \longrightarrow$$

ethyl amine — nitrous acid

$$CH_3-CH_2-OH + N_2 + H_2O$$

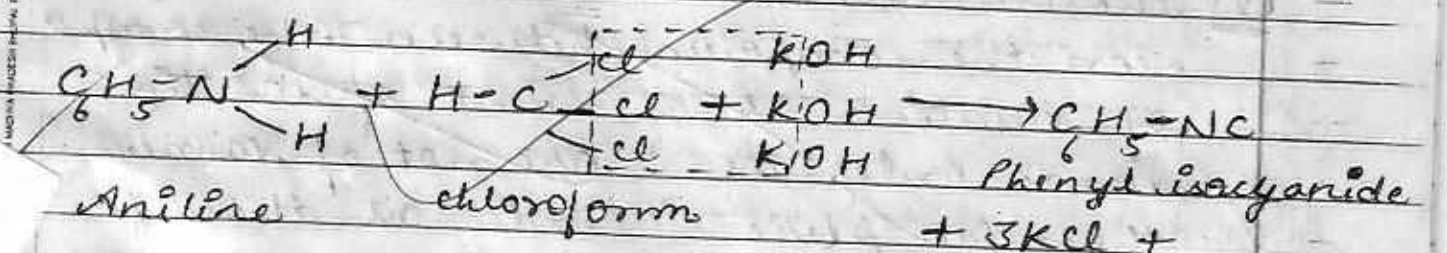
ethanol

(B) ~~Aniline react with bromine water~~

Ques no - 9

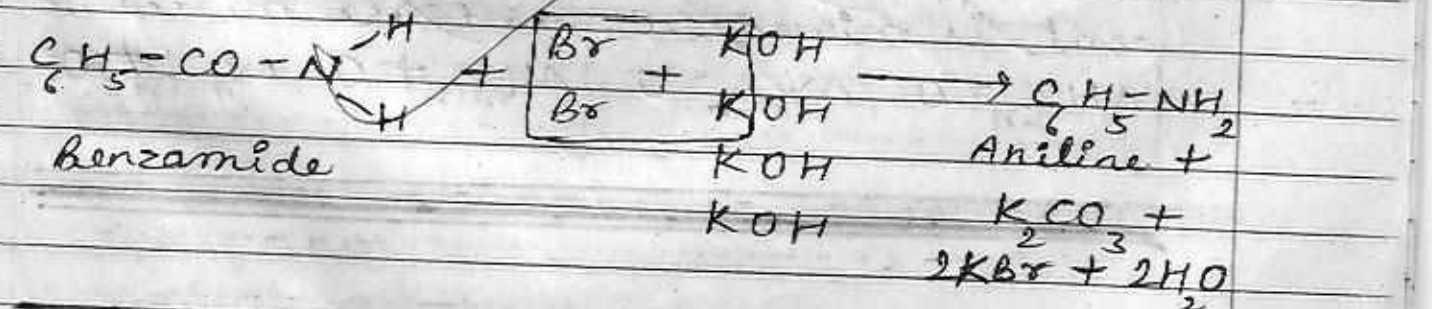
(a) **Carbylamine reaction** -

On treating chloroform with primary aromatic amine (aniline) with alcholic KOH then a pungent smelling substance isocyanide is formed



(b) **Hofmann bromide reaction**

Aniline is formed by the action of bromine & KOH over benzamide



Ques no. - 8

Ans	Ideal solution	non-ideal solution
(1)	(1) Ideal solutions obey raoult's law at all temperature and concentration	(1) Non ideal solution does not obey raoult's law at all temperature & concentration
(2)	(2) The interaction between the component of solution are of same order as those for pure component	(2) The interaction between the component of solution are not of same order as those for pure component
(3)	(3) There is neither enthalpy change nor volume change when pure component is mixed i.e. $\Delta H_{mix} = 0$, $\Delta V_{mix} = 0$	(3) There is definite enthalpy change & volume change when pure component are mixed i.e. $\Delta H_{mix} \neq 0$, $\Delta V_{mix} \neq 0$

Ques no. -7

(A) **LIGAND**

Neutral atom or negative ions that form co-ordinate bond with central metal atom or ion against normal valency rule in co-ordination sphere are called ligands.

In $K_4[Fe(CN)_6]$, CN^- is the ligand

(B) **CO-ORDINATION NO.**

The total no. of ligands attach with central metal atom or ion in co-ordination sphere is called co-ordination no.

Ex In $K_4[Fe(CN)_6]$, co-ordination no. of central atom is 6

Ques - 6 [05]

PEPTIZATION -

Peptization is the process of conversion of freshly prepared ~~colloidal solution~~ precipitate into colloidal solution by adding electrolyte. The electrolyte

PTO

used for peptization is called peptizing agent.

Peptization is the reverse of coag-ulation.

Ques no - 5 [Or]

MOLARITY -

Molarity is defined as the no. of moles of solute dissolved in 1 litre of solution. It is represented by 'M'

$$\text{Molarity} = \frac{\text{no. of moles of solute}}{\text{volume of solution (l)}}$$

$$\text{no. of moles of solute} = \frac{\text{mass of solute}}{\text{molecular mass of solute}}$$

Thus,

$$\text{Molarity} = \frac{\text{mass of solute} \times 1000}{\text{molecular mass} \times \text{volume of solution (ml)}}$$

योग पूर्व पृष्ठ + पृष्ठ 21 के अंक = कुल अंक

प्रश्न क्र. It is expressed in mole/l.