

रसायन शास्त्र
कक्षा 12वीं

समय 3 घंटे

अधिकतम अंक 75+25 प्रायो.
सैद्धांतिक 75

इकाई	इकाई का नाम	निर्धारित अंक	कालखंड
1.	ठोस प्रावस्था	04	08
2.	विलयन	06	12
3.	विद्युत रसायन	06	12
4.	रासायनिक बलगतिकी	05	10
5.	सतह रसायन	04	10
6.	कुछ धातुओं का निष्कर्षण एवं उनके प्रमुख यौगिकों का अध्ययन	05	15
7.	p ब्लॉक के तत्व I	05	10
8.	p ब्लॉक के तत्व II	05	10
9.	d एवं f ब्लॉक के तत्व	06	12
10.	उपसहसंयोजी रसायन	04	10
11.	हेलो अल्केन एवं हेलो एरीन	04	08
12.	अल्कोहन फिनॉल एवं ईथर	04	12
13.	एल्डीहाइड, कीटोन तथा कार्बोक्सिलिक अम्ल	04	12
14.	नाइट्रोजन युक्त कार्बनिक यौगिक	03	09
15.	जैव अणु	05	15
16.	I दैनिक जीवन में रसायन	05	15
	II भारत के प्राचीन वैज्ञानिक एवं वैज्ञानिक संस्थान		
	पुनरावृत्ति		20
	योग	75	200

bdkbokj dfBu fo"kk'kk dk fu/kkj.k

Chemistry–XII

Unit-1 Bkl ikoLFkk % Solid State

f}foeh; ,o f=foeh; fØLVyk e bdkb ly dh ljpuk, A bdkb ly dh ?kuRo x.kukA ,dd ly e ijek.kvk dh l [;k dk fu/kkj.k] fofHkUu idkj dh Bkl e ifdx $\frac{1}{4}$ l dyu $\frac{1}{2}$ fjfDr; k (Voids), Bkl d fo|rh;] pEcdh; x.kA

Structures: Of unit cell in lattices of Two and Three diamentional Crystals. Density of unit cells determination. Different types of packings in solids. Voids in solids. Electrical and Magnetic properties of solids.

Unit-2 foy;u % Solutions

foy;uk dh lknrk 0;Dr djukA Bkl d nok e foy;uA Bkl feyku ij ok"i nkc e vkif{k d voueuA DoFkukd e mUu;u vkj no.kkd ;k fgekd dk voueuA v.k n0;ekuk dh x.kukA v l keku; v.k n0;ekuA

Expression of concentrations of solutions. Solutions of solids in liquids. Relative lowering of vapour presser, Elevation of Boiling Point., depression in freezing point. Determination of molecular masses. Abnormal molecular mass.

Unit-3 fo|r jlk;u % Electro Chemistry

foy;uk e pkydrk] fof'k"B ,o vkf.od pkydrkA fd l h ly dk fo|r okgd cy] ekud byDVkM foHkoA uLV lehdj.k rFkk bld mi; kx $\frac{1}{4}$ vui; kx $\frac{1}{2}$ b/ku lyA

Conductivity in solutions, specific and molecular conductivity, EMF of a cell, Standard electrode potential, Nernst equation and its applications to chemical cell, Fuel cells.

Unit-4 jklk;fud cyxfrdh % (Chemical Kinetics)

rRdkfyd ,o vklr vfHkfØ;k nj rFkk bl iHkkfor dju oky dkjdA fd l h vfHkfØ;k dh vkf.odrk ,o dkfV] fof'k"V nj fLFkjkdA 'ku; ,o iFke dkfV jklk;fud vfHkfØ;kvk d fy; v/k vk;A nj fLFkjkd dh rki ij fuHkjr[k] vkjghfu; l lehdj.kA lfØ;.k Åtk ,o ngyh ÅtkA

Instantaneous and Average rate of a chemical reation and Factors affecting rate of a chemical reaction, Order and molecularity of a reaction, specific rate constant, Half life for zero and first order reaction, Temperature dependence of

rate constant, Arrhenius equation, Activation Energy & Threshold Energy.

Unit-5 **Irregular Metals** (Surface Chemistry)

Block 5 covers the study of irregular metals and their surface chemistry. It includes the adsorption of gases by solids and factors affecting it. Activity and selectivity. Enzyme catalysis, Emulsions and its types.

Adsorption of gases by solids and factors affecting it. Activity and selectivity. Enzyme catalysis, Emulsions and its types.

Unit-6 **Extraction of some Metals and study of Their important compounds**

(Extraction of some Metals and study of Their important compounds)

Al, Cu, Zn, Fe, and Ag are some of the important metals. Their compounds like CuSO_4 , AgNO_3 , and HgX are also studied.

Occurrence and principles of Extraction of metals, Al, Cu, Zn, Fe and Ag. Preparation Properties and uses of CuSO_4 , AgNO_3 and HgX . Steel, Photography.

Unit-7 **P-Block Elements**

Group 15 elements (N^{7-} , P^{15-} , As^{37-} , Sb^{51-} , Bi^{83-})

by studying the properties and uses of these elements. The compounds like PCl_5 and NCl_5 are also studied.

Group 16 elements (O^{8-} , S^{8-} , Se^{34-} , Te^{52-} , Po^{84-})

by studying the properties and uses of these elements. The compounds like H_2O and H_2S are also studied.

Group-15 Elements

Their electronic configuration, occurrence, oxidation states. Trends in properties, Structure of Nitrogen Oxides, Compounds of Phosphorous, Reason of Not Forming NCl_5 like PCl_5 .

Group-16 Elements

Electronic configuration, occurrence, oxidation states. Trends in properties. Structure of Oxo-Acids of Sulphur, Reason for being H_2S as gas and H_2O as Liquid.

Unit-8 **P-Block d rRo (Element of P-Block)**

leg 17 d rRo & (F - Cl- Br- I- At)

byDVkfud foU;k l] vkD lhdj.k voLFkk,] ikflr LFkku] x.kk e ØfedrkA bUVj gyktu ;kfxd rFkk bud cuu d dkj.kA

Electronic configuration, Oxidation states, Occurrence trends in Properties, Inter halogen compounds and reason for their formation.

leg 18 d rRo & ($\text{He}^2 - \text{Ne}^{10} - \text{Ar}^{18} - \text{Kr}^{36} - \text{Xe}^{54} - \text{Rn}^{86}$)

byDVkfud foU;k l] ikflr LFkku] x.kk e Øfedrk] tuu ¶ykjkbM l

(Electronic configuration, occurrence, trends in properties, fluorides of xenon).

Unit-9 **d- rFkk f- Cykd d rRo (d and f Block Elements)**

leg 3 l 12 d rRo rFkk yUFkukbM l ,o ,DVhukbM l

byDVkfud foU;k l] ikflr LFkku] lØe.k $\frac{1}{2}$ vk th'ku $\frac{1}{2}$ /kkrvk dh fo'k'krk,] iFke ifDr d lØe.k rRok d x.kk e lkeU; ØfedrkA ?kkfRod x.k] vk;kukbt'ku ,UFkYih] vkD lhdj.k voLFkk,] vk;fud f=T;k,] jx] mRijdh; x.k] pEc dh; x.k] vUrjkd'kh; ;kfxd] feJ /kk r fuek.kA

yUFkukbM l & byDVkfud foU;k l] vkD lhdj.k voLFkk,] jk l k;fud fØ;k'khyrk] yUFkukbM l dpuA

,DVhukbM l & byDVkfud foU;k l] vkD lhdj.k voLFkk,A

(Group 3 to 12 elements, Lanthanides and Actinides)

Electronic configuration, occurrence, characteristics of Transitional metals, general trends in first row Transitional elements (metallic properties, Ionization enthalpy, oxidation states, Ionic Radie, colour, catalytic properties, magnetic properties, interstitial compounds, Alloy's formation.

Lanthnides- Electronic configuration, Oxidation states, Chemical reactivity, Lanthanide contraction.

Actinides- Electronic configuration, oxidation states.

Unit-10 **mi lgl;k th jlk;u (Co-ordination Chemistry)**

lyXuh $\frac{1}{2}$ fy tUM l $\frac{1}{2}$ mi lgl;k th l [;k] jx] pEc dh; x.k ,o vkdfr;k] ,d&ukfhkdh; mi lgl;k th ;kfxdk dk IUPAC ukedj.k] vkc/ku] leko;ork] bu ;kfxdk dk egRo@x.kkRed fo'y" k.k] ?kkfRod 'kk/ku vkj tfod iØek e $\frac{1}{2}$ dk ?kkfRod ;kfxdA

(Co-ordination Compounds)— Ligands,

Co-ordination number, colour, magnetic properties and shapes. IUPAC Nomenclature of mono-nuclear co-ordination compounds, Bonding, Isomerism, Importance of co-ordination compounds (In qualitative analysis, extraction of metals and Biological systems), Organo metallic compounds.

Unit-11 gyk ,YdU l rFkk gyk,jhU l

gyk,YdU l & ukedj.k] C-x cU/k dh idfr] Hkkfrd ,o j l k;fud x.k] ifrLFkkiu fØ;kvk dh fØ;kfof/kA

gyk,jhU l & ukedj.k] C-X cU/k dh idfr] ifrLFkkiu fØ;k, rFkk ,dy ifrLFkkiu ;kfxdk e gyktuk dk nf'kd iHkkoA MkbDykjk] VkbDykjk rFkk VVkdYkjk eFku] vk;kMkQke] Ýhvu] DDT, rFkk BHC d i;kx l i;kfoj.kh; iHkkoA

Halo Alkanes– Nature of C-X bond, physical and chemical properties, mechanism of substitution reactions.

Haloarenes– Nomenclature, Nature of C–X bond, substitution reactions and directive influence of halogen for mono substituted compounds only. environmental effects of dichloromethane, tri chloromethane & Tetra Chloromethane, Iodoform, Freons, DDT, BHC.

bdkb &12 ,Ydkgy fQuky rFkk bFkj

,Ydkgy & ukedj.k] ikFkfed f}rh;d ,o r rh;d vYdkgy dh igpku] futyhdj.k dh fØ;kfof/kA

fQuky & ukedj.k] vEyh; idfr dk dkj.k] byDVk fQfyd ifrLFkkiu fØ;k,A bFkj & ukedj.k

Alcohols, Phenols and Ether's

1. Nomenclature of Alcohols, distinction among Primary, Secondary and Tertiary Alcohols, mechanism of dehydration of Alcohols.
2. Nomenclature of phenols and reason for its Acedic nature, electrophillic substitution reactors.
3. Nomenclature of Ethers.

bdkb &13 ,YMhgkbM l dhVku l rFkk dkckfD lfyd vEY

vYMhgkbM rFkk dhVku l & dkckukby leg dh idfr vYMhgkbM l e vYQk gkbMk t u dh fØ;k'khyrk] U;fDyv kfQfyd ;kx'khy fØ;kvk dh fØ;kfof/kA

dkckfD lfyd vEY & ukedj.k] vEyh; idfr dk dkj.k]

Aldehydes and Ketones– Nature of –COOH group, reactivity of α-H atom in Aldehydes. Mechanism of Nucleophilic Addition reactions.

Carboxylic Acids- Nomenclature, Reason for Acidic nature.

bdkb &14 ukbV_ktu ;Dr dkcud ;kfxd
ukbV_k ;kfxd & idkj] egRo_i.k jk l_k;fud fØ;k,
vehU l & oxhdj.k] ukedj.k] ljpuk] ikFked f}rh;d rFkk r rh;d vehuk dh igpkuA

lkbukbM l rFkk vkb l k lkbukbM l & jk l_k;fud vfHkfØ;k,A
Mk;k tkfu;e yo.k & dkcud l'y["]k.k e budk egRoA

Organic compounds containing Nitrogen – (Nitro Compounds)
 Types, Important chemical properties.

Amines – Classification, Nomenclature, Structure, distinction of primary, secondary and tertiary Amines.

Cynides and Iso-cynides - Important chemical reactions

Diazonium salts - Importance in Organic syntheses .

bdkb &15 ck;k ek y_hD;Y l ¼ to v.k½
dkckgkbM l & ekuk l dVkbM l ¼X ydk t] ÝDVk t ½
vkyhxk l dVkbM l & ¼ l Øk t] yDVk t] ekYVk t ½
iky_h l dVkbM l & ¼LVkp] lY;ykt ½] egRo

ikVhU l & vYQk] vehuk vEy] vko';d vehuk vEy] iIVkbM cU/k] iky_h iIVkbM l]
ikVhU l dh ikFked f}rh;d] r rh;d ,o pr"dh; ljpuk ¼doy x.kkRed Kku½
foVkeU l & jk l_k;fud uke ,o l= rFkk oxhdj.k
U;fDybd vEy & D N A rFkk R N A

bdkb&16 nfud thou e j l_k;u & vk["]kf/k;k e j l_k;u & nn fuokjd] i'kkrd]
ifrjk/kh] jkxk.kuk'kh] thok.k uk'kh] mojrjkj/kh nok,] ifr tfod] vEyrkj/kh] ,UVh
fgLVekbU l A
lkcU rFkk viekt d & vrj] fØ;kfok/k] dhV ifrd"khA

Chemistry in Daily life –

Chemicals in medicines - Analgesics, Tranquilizers, Antiseptics, disinfectants, Anti microbials, Antifertility drugs, Antibiotics, Antacids and Anti Histamines.
 Soap and Detergents- Difference, cleansing action, insect repellents.

dfBu v'k i<ku d lEc/k e dN l>ko

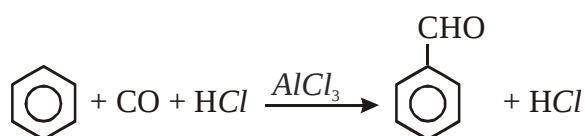
pfd Nk= gkb Ldy mRrh.k gkdj d{kk 11 oh e tc foKku ldk; e io'k yr
g rc gkbLdy Lrj dh foKku dh ryuk e ikB;Øe e tehu vkleku dk vrj ikdj
?kcjku yxr gA fo'k"kdj j l k; u'kkL= e vf/kdk'k ckr Lefr $\frac{1}{2}$ Vuh $\frac{1}{2}$ e j[kuh gkrh g
D; kfd fo'k"k n'kkvk e gh fd l h j l k; fud vfHkfØ; k }kjk fo'k"k inkFkk dk fuek.k
l EHko gkrk g vr $\frac{1}{2}$ bu n'kkvk dk ;kn j[ku d vfrfjDr vkj dkb mik; ugh gA , l h
fLFkfr e Nk=k dk d{kk 11oh d{kk e io'k yu mijr loiFke vkor l kj.kh dh ogn
pkV d }kjk leg , o vkor e x.kk dh lekurk , o bu x.kk e Øferk crku d l kFk
gh bud byfDVkfud foU; k l vo'; cryk; tku pkfg; A bu byfDVkfud foU; k l d
vk/kkj ij ijek.k vkdkj e o' f) s, p, d, f vkfoVy dh mifLFkfr d vk/kkj ij s,
p, d rFkk f Cykdk e foHkk tu dk Hkyh Hkkfr le> k; k tkuk pkfg; A mnk- d fy; 15
o leg d N }kjk ijek.k vkdkj NkVk gku dh otg l doy NCl_3 gh curk g tcfd
bl h leg e vxy rRo P-QkLQkj l }kjk PCl_3 rk curk gh g ; g vkdkj e N dh
ryuk e cMk gku d dkj.k PCl_5 Hkh vk l kuh l cuuk yrk gA nljk dkj.k P d i k l
d&d{k d dh mifLFfrr Hkh crykb tkuk pkfg; A bl fjDr d&vkjfoVy dk s vkjfoVy
l byfDVku feyu ij 5 vk; fXer byfDVku iklr gkuk gA 16 o leg e O rFkk s d
x.kk e Hkh Øfed vrj vkrk g H d l kFk O ty $\frac{1}{2}$ H₂O $\frac{1}{2}$ cukrk g vkj s $\frac{1}{2}$ x/kd $\frac{1}{2}$ H
d l kFk H₂S cukrk gA H₂O $\frac{1}{4}$ ty $\frac{1}{2}$ no voLFkk e gkrk g ijUr mUgh n'kkvk e H₂S
xl gkrh gA dkj.k O dk ijek.k vkdkj s dh ryuk e NkVk gkuk Li"V dj Nk=k e
fo'k; d ifr :fp ink dh tku dk i; k l gkuk pkfg; A vkdkj NkVk gku ij HClU/k
vk l kuh l cuuk no voLFkk d fy; ftEenkj gk tkrk gA s dk cMk vkdkj gku l
H ClU/k ugh cu ikrk rFkk v.k nj&nj jgu d dkj.k vki l h vkd" k cy de gk tku
l ; g xl : i y yr gA

vkor l kj.kh d rRok d byfDVkfud foU; k l le>kr le; d{kdk e v/kifjr
rFkk i.k : i l Hkj g, byfDVkuk d LFkfr; Ro d ckj e Hkh fo'k"k : i l Nk=k dk /; ku
vkdf"kr fd; k tkuk pkfg; A l Øe.k rRok d ckj e d&d{k d d byfDVkuk dk Å t k
iku ij vU; vxy d{kdk e io'k gku d dkj.k ifjorh l ; k t drk n'kku l c/kh dkj.k

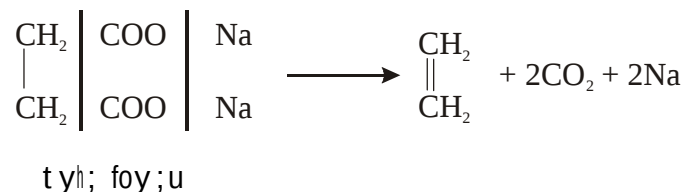
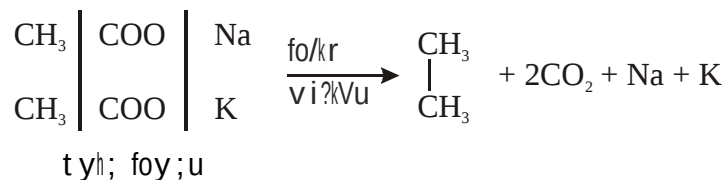
Hkh Li"V fd;k tkuk pkfg;] l kFk gh v/k ifjr d{k d gku ij LFkfk;Ro xg.k dj yu d dkj.k bu rRok }kjk l [;k e dN de ifjorh l ;k t drk, n'kku dk dkj.k le>k;k tk l drk gA

dkcfud jlk;u dk vkjHk djr le; c dh c d l kFk Hkh vf/kd cu/krk gku l yEch&yEch J[kyk oky vkj [kyh rFkk cn J[kyk oky ;kfxdk dk fuek.k dj lokf/kd ;kfxdk dk cukuk ,d dkj.k gA bl Nk=k dk Li"V : i l le>k;k tk,A

tc dkcfud jlk;u i<k;k tk; rc bl d ey e=k t l ;kfxdk e c dh l [;k c<kuk] ?kVkuk] ,Yduk e -OH, -CHO, -COOH, -NH₂, -CO.NH₂, -CN , -N≡C vkj NO₂, -HSO₃ vkfn legk dk yku fo"kd lkekU; fØ;kvk l voxr djku dk vH;k l dj;k;k tk; rk Nk= jlk;u d lkekU; ink l ifjfpr gkdj ie[k : i l iN tku oky egRoi.k ifjoruk dk i.k dju e vkRe fo'okl yk l dx vkj bl l dkcfud jlk;u jkpd cuxhA , l gh dN iØek e i;Dr inkFkk d }kjk fØ;k, l EHko gb] ftu jlk;uKk u ; n'kk, Kkr dh mud uke l mu iØek dk tkuk tku yxk mnk- Pd rFkk BaSO₄ dh mifLFkfr e H₂ d }kjk fd;k x;k vip;u **jk tue.M vfHkfØ;k**] KOH rFkk Br₂ }kjk& CO-NH₂ leg dk -NH₂ leg e ifjoru **gkQeu ckekbM vfHkfØ;k**] veyxeVM ft d rFkk l kUn HCl }kjk iklr H-H l >C=O leg dk CH₃ e ifjo fr r djuk **DyheU lu vip;u**] fut y AlCl₃ dh mifLFkfr e cu thu fjx e ,Ydkby vFkok , l kby leg dk io'k djuk **ÝhMyØk¶V vfHkfØ;k**;k d uke l tkuh tkrh g bl fof/ k }kjk mPp gkbMkdcuk dk fuek.k fd;k tk l drk gA bl h idkj cu thu fjx l tMh ik'o J[kyk dk vkf'kd vkD l hdj.k bVKM vfHkfØ;k; dg ykrk gA Zn /kkr dh mifLFkfr e nk ,Ydkby gdkbMk d legk dk l ;kx dj k mPp lrlr gkbMkdkcu cukuk **Ýdy.M vfHkfØ;k**;k dg yk;kA ÝhMyØk¶V vfHkfØ;k; dk foLrkj djr g, **xVjeu&dkp** u AlCl₃ dh mifLFkfr e cu thu fjx e -CHO leg tkM fn;k bl xVjeu&dkp vfHkfØ;k; d uke l tkuk x;kA mnk-

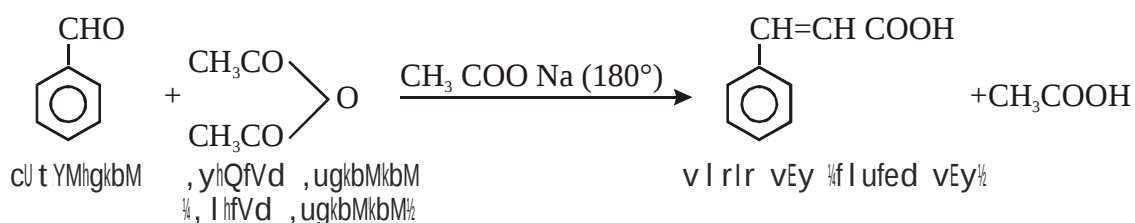


dkYc u dkcfud vEyk d l'kfM;e vFkok ikVf'k;e yo.kk d tyh; foy;u dk fo|r vi?kVu dj l'Lrlr vFkok vlrlr l'xr gkbMkdkcuk dk l'y"k.k l'Hko cuk;k blfy; mlh d uke ij bl **dkYc l'y"k.k** dgk tku yxkA mnk-



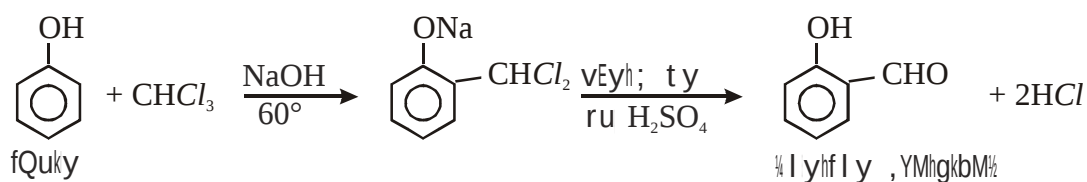
tyh; foy;u gku l' K, Na /kkrl fØ;kdj KOH ;k NaOH dk fuek.k dj yrh gA

fd l'h , jkefVd vYMHgkbM dh fd l'h , l' , yQfVd vEyk , ugkbMM l' ft le nk vYQk gkbMktu ije.k.k gkr gk mlh , yhQfVd vEyk d l'kfM;e yo.k dh mifLFkfr e vfHkfØ;k djku ij vlrlr vEyk iklr gkrk gA ;g i;kx ijfdu oKkfud u fd;k blfy; bl vfHkfØ;k dk **ijfdu l' vfHkfØ;k** uke fn;k x;kA mnk-

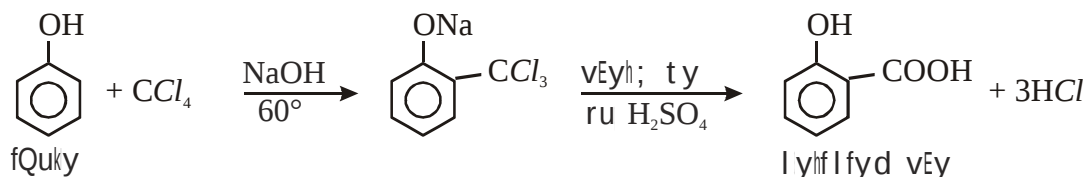


jhej&Vheu

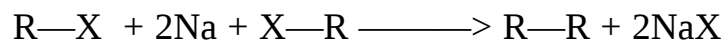
bu jlk;uKk u fQuky d {kkjh; fo;u dh DykjKQke l' fØ;k 60° rki ij djkd iklr inkFk dk vEyh; ty d l'kfM vi?kVu fd;k ft l' l' yhflyd , YMHgkbM iklr gvka bl vfHkfØ;k dk mUgh d uke l' tkuk x;k mnk-



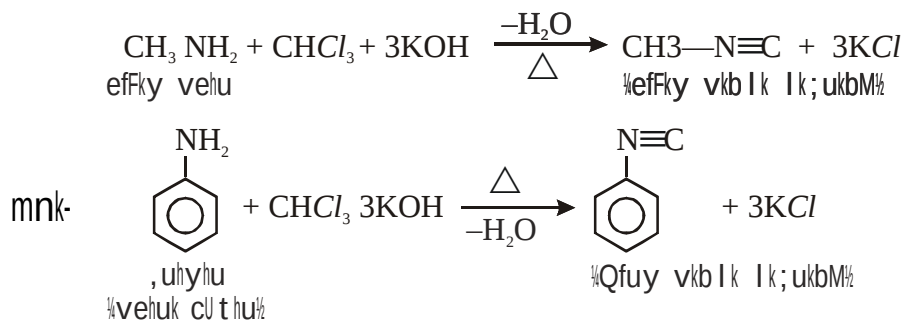
t c DykjQke (CHCl_3) d LFkku ij dku VVkdYkjkbM (CCl_4) dk mi ;kx fd ;k x ;k rc lyh IYMHgkbM d LFkku ij lyhflyd vEy ikr gvKA



oVt }kjk lkfM;e /kkr d lkFk ,Ydkby gykbM l dk bFkj;h; foy;u xe fd ;k x ;k rk mPp ,Ydu %lrlr gkbMdkcu% ikr g,A bl oVt vfHkfØ;k uke fn ;k x ;kA

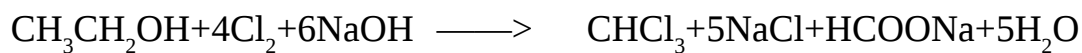


dN ,l mnkgj.k g tk oKkfud d uke l ugh tku tkdj cu inkFk d uke l tku tkr gA mnk- dkckby vehu vfHkfØ;kA bl vfHkfØ;k e %DykjQke% dh dN cn ,uhyhu e feykdy vYdkgyh KOH d lkFk xe dju ij cncnkj vkb l k lkbu kbM %dkckby vehu% curk gA doy ikFkfed vehu gh ;g vfHkfØ;k n'kkr g blfy; ikFkfed vehu dh igpku gr ;g egroi.k vfHkfØ;k ekuh xb gA



gykQke vfHkfØ;k&

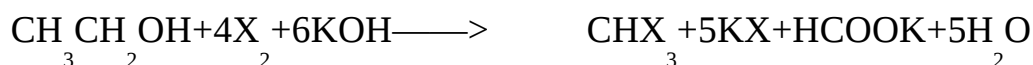
,l vYdkgy ftue 2C oky ($\text{CH}_3\text{-CH-Hkkx}$) vFkok nk dku oky dkckukby ;kfxd ($\text{CH}_3\text{-CO-Hkkx}$) tc fd l h {kkj dh mifLFkfr e gyk tuk (Cl_2 , Br_2 , I_2) d lkFk xe fd, tkr g rk cuu oky DykjQke] ckekQke vFkok vk ;kMkQke lfefyr : i l gykQke dg tkr g vkj bl lkekU; vfHkfØ;k dk gykQke vfHkfØ;k d uke l tkuk tkrk gA



DykjkQke



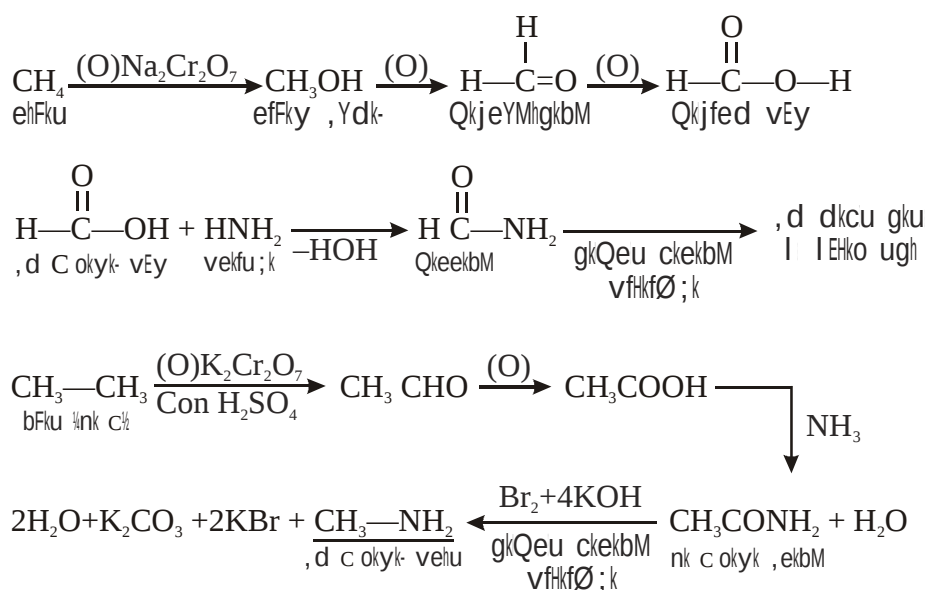
vk; kMkQke



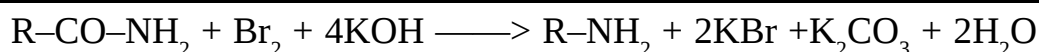
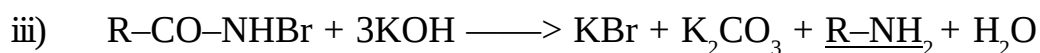
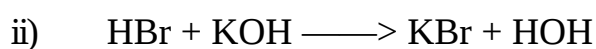
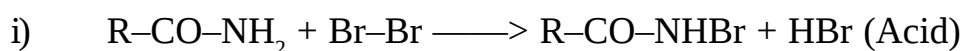
gykQke

egROI.k ifjoru yku gr ;fDr;k

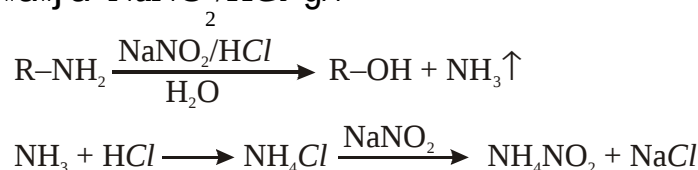
1- ,d dkcu oky ,Ydu l vYdkgy] vYMHgkbM] dkckfD lfyd] vEy] vehu vkfn cuku gr fuEu rduhd viukb tk ldrh gA



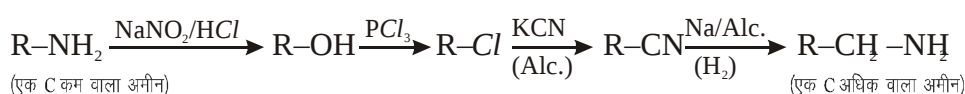
gkQeu ckekbM vfhkfØ;k d viuku l cuu oky ;kfxd e ,d dkcu dh deh gk tkrh g vr% t gk Hkh >CO leg dk gVkuk gk ;g fØ;k djkb tk ldxhA bl ink e bl idkj n'kk;k tkuk Nk=k dk crk;k tk;



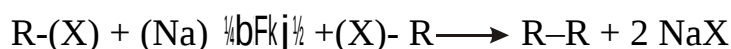
2- ;fn $-\text{NH}_2$ leg dk vYdkgyh ($-\text{OH}$) leg e cnyuk gk rk bl d fy; en vkDlhdj.k djuk gkrk g vU; Fkk vYdkgy d lkFk dN ek=k vYMHgkbM dh Hkh cuxhA en vkDlhdjkd NaNO_2/HCl gA



3- tc C dh l [; k fd l h ; kfxd e c<kb tkuh gk rk fuEu rduhd viukb tk l drh gA

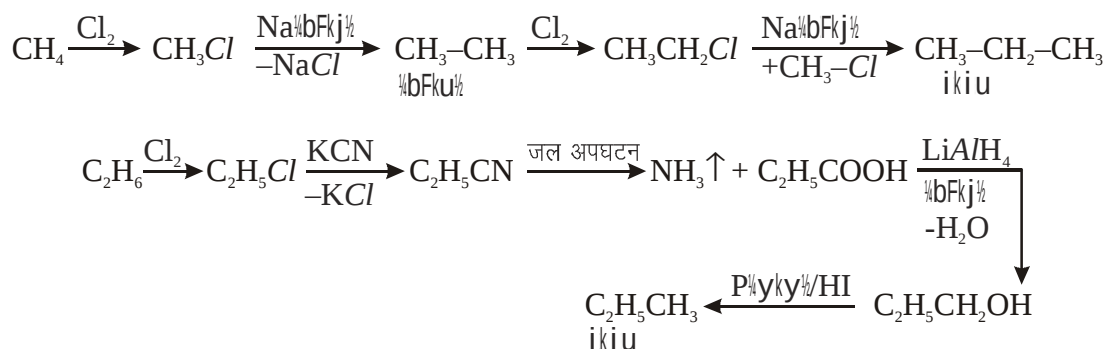


4- dkcU l [; k c<ku dh nljh fof/k oVt vfHkfØ; k Hkh g ble fd l h , Ydu d ekuk gykbM cukdj bFkj e lkFm; e d lkFk ; gykbM feyku ij gykbMk d nk v.k feydj vf/kd dkcU oky gkbMkdkcU e cny tkr gA mnk-

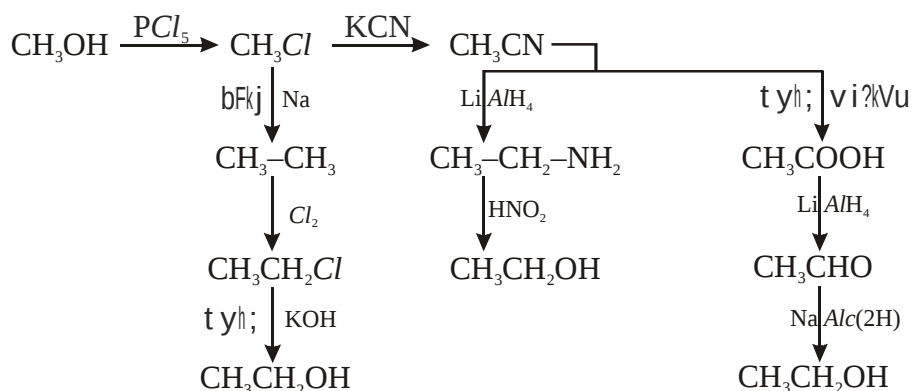


bl fof/k l ehFku dk bFku e bFku dk ikiu e cnyuk vklku gk tkrk gA mnk-

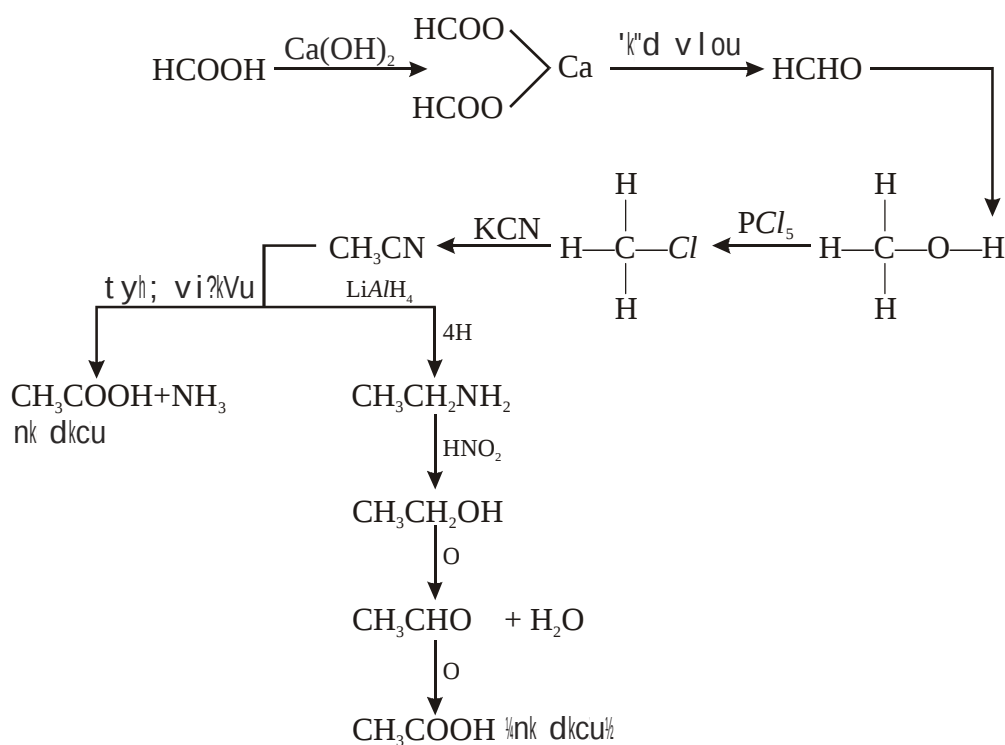
5- tc C dh l [; k fd l h ; kfxd e de dh tkuh gk rk igy ml inkFk l vekbM ($\text{R}-\text{CONH}_2$) cukuk gkxk vkj vekbM ij gkQeu ckekbM vfHkfØ; k djkd bl $\text{R}-\text{NH}_2$ $\frac{1}{2}$ vehu $\frac{1}{2}$ e cny fy; k tk; xk ble , d dkcU de jgxkA vc bl vehu l $\frac{1}{2}$ vkx pkg vulkj vYdkgy ; k vYMHgkbM ; k vEy ; k vEy DykjkbM ; k vEy , ugbMkbM vkfn bPNkulkj cuk; tk l drh gA



6- de dkcū oky vYdkgy l vf/kd dkcū oky vYdkgy e ifjoru dju d fy; fuEu ifø;k viukb tk ldxhA



;fn vEyk e dh l [;k c<kuh gk rc fuEu ifø;k dk viuk;k tk ldrk gA



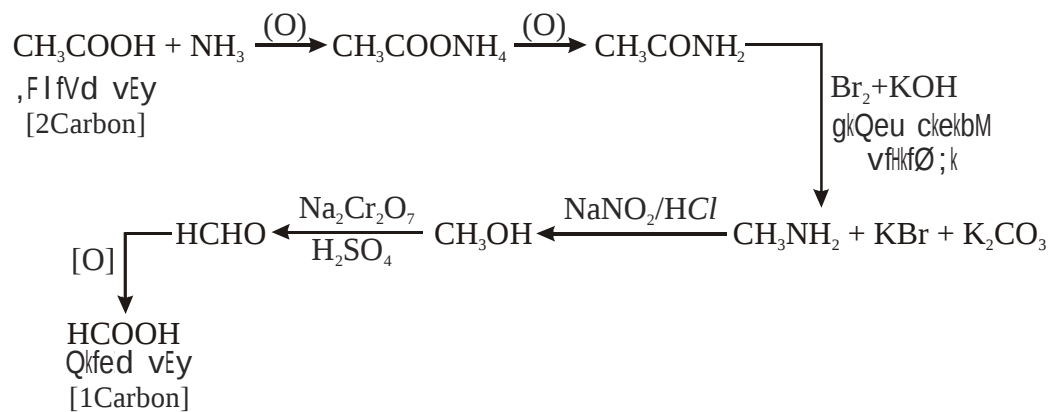
7- ,flfVyhū l fuEu inkFkk d cuku gr viukb tku okyh ;fDr;kA

ukV& ;kn j[kk tk, fd tc Hkh $-\text{NH}_2$ leg dk $-\text{OH}$ e cnyuk gk NaNO_2 rFkk HCl l fø;k djka

2 v- ,d dkcū oky dkckfDIfyd vEyk l 2 dkcū okyk vEyk cukuk mnkgj.k

Qkfed vEy (HCOOH) l CH₃COOH vEy

2 c- nk dkcu oky dkckfDI fyd vEy l ,d dkcu okyk vEy cukuk ¼v- dk
foijhr½



i'u&i= CyfiUV
BLUE PRINT OF QUESTION PAPER
i j h { k k % g k ; j l d . M j h

d { k k % XII
fo " k ; % j l k ; u ' k k L =

i . k k d % 75
l e ; % 3 ? k . V

I-Ø.	bdkb	bdkb ij vkofVr vd	vdokj i'uk dh l [; k			dy i'u
			oLrfu"V 1 vd	4 vd	5 vd	
1	Bk l voLFkk	04	1\$1\$1\$1	&	&	&
2	fo y ; u	06	1	&	1	1
3	fo r j l k ; u	06	1	&	1	1
4	j k l k ; f u d c y x f r d h	05	1	1	&	1
5	l r g j l k ; u	04	1\$1\$1\$1	&	&	&
6	dN / k k r v k d k f u " d " k . k , o m u d i e [k ; k f x d k d k v / ; ; u	05	1	1	&	1
7	P & C y k d d r R o I	05	1	1	&	1
8	P & C y k d d r R o II	05	1	1	&	1
9	d , o f & C y k d d r R o	06	1	&	1	1
10	m i l g l ; k t h j l k ; u	04	&	1	&	1
11	g y k , Y d u , o g y k , j h u	04	&	1	&	1
12	v Y d k g y f Q u k y , o b F k j	04	&	1	&	1
13	v Y M h g k b M] d h V k u r F k k d k c k f D l f y d v E y	04	&	1	&	1
14	u k b V k t u ; D r d k c f u d ; k f x d	03	1\$1\$1	&	&	&
15	t o v . k	05	1	1	&	1
16	I n f u d t h o u e j l k ; u II H k k j r d i k p h u o K k f u d , o o K k f u d l L F k k u	05	1	1	&	1
	; k x %	75	%20% 4	10	3	13\$4%17

ukV& , l vud CyfiV gk ldr gA ftu bdkb; k l oLrfu"V iN x; gA vU;
CyfiV e l vU; bdkb; k l Hkh iN tk ldr gA bl idkj fd l h Hkh
bdkb l oLrfu"V i'u iN tk ldr gA

ikn'k i'ui=

le; § 3 ?k.V

i.kkd § 75

i'u&1 cgfodYih i'u

v t h j k d f You i j v f / k d k ' k v k ; f u d f Ø L V y k e m i f L F k r g k r k g A **5 vd**

(a) Ý U d y n k " k

(b) ' k k V d h n k " k

(c) / k k r v k f / k D ; n k " k

(d) d k b n k " k u g h

c i k v f ' k ; e b c c p k y d e f Ø L V y h d r g k r k g j v r § i k v f ' k ; e / k k r e K d h
l e U ; o ; u l [; k g k x h A

(a) 4

(b) 3

(c) 8

(d) 0

l l d j h u D ; k g

(a) i f j j { k d

(b) f e B k l i n k d j u o k y k i n k F k

(c) i ' k k U r d

(d) n n f u o k j d

n f j d V l g f M M ; k d k j k x f d l f o V k f e u d h d e h l g k r k g A

(a) f o V k f e u D

(b) f o V k f e u K

(c) f o V k f e u C

(d) f o V k f e u A

b t c v f H k f Ø ; k A + B ⇌ A B e A d h l k U n r k n x u h d j u t k ; r c v f H k f Ø ; k
d k o x g k x k A

(a) p k x u k

(b) n x u k

(c) v i f j o f r r

(d) v k / k k

i'u&2 f j D r L F k k u d h i f r d j k A

5 vd

(a) d k p , d ----- B k l g A

(b) r k i c < k u i j v / k p k y d k d h p k y d r k ----- g k r h g A

(c) l k M k o k V j ----- f o y ; u g A

(d) e k u d g k b M k t u d k b y D V k M f o H k o ----- g k r k g A

(e) f V . M y i H k k o d k y k ; M h d . k k d i d k ' k e ----- } k j k g k r k g A

i'u&3 t k M h c u k v k A

5 vd

(a) i k ; l

(a) v k ; j u

(b) f o " k e k x r U =

(b) f e j c u d k r y

(c) g e V k b V

(c) n x U / k ; D r o k " i ' k h y n o

(d) u k b V k c U t h u

(d) d k y k b M h f o y ; u

(e) v k b l k l k b u k b M

(e) t y e r y

- i'u&4 ,d 'kCn e mRrj nhft ;A **5 vd**
 (a) vo{k i dk dkyk; Mh foy; u e ifjoru dgykrk gA
 (b) PCl_3 dh vk—fr gkrh gA
 (c) jfM;k, fDVo gyktu dk uke crkb;A
 (d) no voLFkk e ik; tku oky lØe.k /kk r dk uke crkvkA
 (e) fd l vfHkfØ;k d vfre mRiku e dku J[kyk e ,d dku ije.k de gkrk gA
- i'u&5 vfHkfØ;k dk v) vk; dky l D;k le>r gkA iFke dkfV vfHkfØ;k d **4 vd**
 v) vk; dky d fy; l = 0; RiUu dhft ;A
 vFkok
 idk'k jklk; fud vfHkfØ;k vk d pkj mi; kx fy[kA
- i'u&6 QKVxxkQh D;k g] bl fuEu fcUnvk d vk/kkj ijk le>kb;A **4 vd**
 1 lxxrh lyV dk fuek.k 2 Moyfix
 vFkok
 feJ /kk r l D;k le>r gk] dkij dh rhu feJ /kkrvk dk l?kVu u mi; kx fy[kk\
- i'u&7 SO_2 vkj Cl_2 dh fojt tu fØ;k vk e vUrj fy[kk\ **4 vd**
 vFkok
 rkc d l kFk ukbfVd vEy dh fØ;k vk dh lehdj.k nhft ;\
- i'u&8 dkj.k fy[kkA **4 vd**
 1 HF dk dkp dh ckry e l jf{kr ugh j[kk tkrk g \
 2 'kU; ox d rRo lkekU; ifjLFkfr; k e ;kfxd ugh cukr \
 vFkok
 1 mR—"V xlk dh vk; uu Åtk lokPp gkrh g \
 2 leg 17 d rRo icy vkDIhdjd gkr g \
- i'u&9 Li"V dhft ; fd $Ni(CO)_4$ pr"Qydh; g] tcfd $[Ni(CN)_4]^{-2}$ ox leryh; **4 vd**
 g] D;k \
 vFkok
 $[Fe(CN)_6]^{-3}$ ncy vupEcdh; g] tcfd $[Fe(CN)_6]^{-4}$ ifr pEcdh; g]
 D;k \

i'u&10 fuEufyf[kr ij lehdj.k lfgr fVli.kh fy[kkA **4 vd**
 1 jhej&Vheu vfHkfØ;k 2 dkfcu,;hu vfHkfØ;k
 vFkok
 fuEufyf[kr ij lehdj.k lfgr fVli.kh fy[kk &
 1 DDT 2 BHC

i'u&11 i;kx'kkyk e Mkb,fFky bFkj cuku dh fof/k dk o.ku fuEu fcUnvk ij **4 vd**
 dhft ;A
 1 fp= 2 lehdj.k 3 fof/k
 vFkok
 'khj }kjk ,fFky ,Ydkgy cuku dh fof/k dk o.ku fuEu fcUnvk ij dhft ;A
 1 ok'k dk cuuk 2 ok'k dk vk l ou 3 ifj'kk/ku

i'u&12 QkeYMhgkbM l fuEu dk iklr dhft ;A **4 vd**
 1 ;jkVkf iu 2 ijkQkeYMhgkbM
 3 cdykbV 4 eFkuky
 vFkok
 ,lhVd vEy l fuEu dk iklr dhft ;A
 1 ,flVd ,ugkbMkbM 2 eFku
 3 ,lhVku 4 ,lhVekbM

i'u&13 ikVhu dk fuEu fcUnvk d vk/kkj ij le>kb;A **4 vd**
 1 ikFkfed ljpuk 2 fo—frdj.k
 vFkok
 DNA o RNA e pkj vUrj fy[kkA

i'u&14 Hkkjr d nk ikphu oKkfudk d ckj e fyf[k;A **4 vd**
 vFkok
 fdUgh pkj vk"kk/kh; ik/k d okLrfod uke o mudk ,d&,d mi;kx fy[kA

i'u&15 1 DoFkukd e mUu;u D;k g \ **5 vd**
 2 ,d tyh; foy;u -0.186°C ij terk gA DoFkukd mUu;u Kkr
 dhft ; ($K_a = 1.86\text{K Kg mol}^{-1}$, $K_b = 0.0512\text{K Kg mol}^{-1}$)
 vFkok
 1 ijk l j.k nkc D;k g]
 2 300 K ij ;fj;k d ml foy;u dk ijk l j.k nkc Kkr dhft ;] ft l d

1 y^hVj e 6 xke ;fj;k gA
 (R=0.0821 y^hVj ok;e.My^h; fMx^{h-1} eky⁻¹ ;fj;k dk v.kHkkj^{3/4}60)

i'u&16 vfHkfØ;k dh nj D;k g] bl dk iHkkfor dju oky pkj dkjd fy[k \ **5 vd**
 vFkok
 ngy^h Åtk vk lfØ;u Åtk dk le>kb;] rFkk budk vkil e lEcU/k
 crkb;A

i'u&17 yUFkukbM ldpu D;k g] bl l yUFkukbM ij iMu oky iHkko] dkb rhu **5 vd**
 iHkko le>kvkA
 vFkok
 3D rRok fuEu x.kk dk Li"V dhft ;&
 1 mRijdh; x.k 2 jxhu vk;u

vkñ'k mRrj

i'u- 1

$\frac{1}{4}1\frac{1}{2}$ $\frac{1}{4}i\frac{1}{2}$ dkb nk" k ugh
 $\frac{1}{4}ii\frac{1}{2}$ 8
 $\frac{1}{4}iii\frac{1}{2}$ feBk l ink dju okyk inkFk
 $\frac{1}{4}iv\frac{1}{2}$ foVkfēu D
 $\frac{1}{4}v\frac{1}{2}$ nxuk

$\frac{1}{4}2\frac{1}{2}$ $\frac{1}{4}i\frac{1}{2}$ vfØLVyh;
 $\frac{1}{4}ii\frac{1}{2}$ of)
 $\frac{1}{4}iii\frac{1}{2}$ x l dk no e
 $\frac{1}{4}iv\frac{1}{2}$ 'kU;
 $\frac{1}{4}v\frac{1}{2}$ i dh.ku

$\frac{1}{4}3\frac{1}{2}$ $\frac{1}{4}i\frac{1}{2}$ t y e ry
 $\frac{1}{4}ii\frac{1}{2}$ dkykbMh foy;u
 $\frac{1}{4}iii\frac{1}{2}$ vk;ju
 $\frac{1}{4}iv\frac{1}{2}$ fejcu dk ry
 $\frac{1}{4}v\frac{1}{2}$ nxU/k;Dr ok"i'khy no

$\frac{1}{4}4\frac{1}{2}$ $\frac{1}{4}i\frac{1}{2}$ i lVhdj.k
 $\frac{1}{4}ii\frac{1}{2}$ f=dk.kh; fijkfēM
 $\frac{1}{4}iii\frac{1}{2}$,LVVhu
 $\frac{1}{4}iv\frac{1}{2}$ i kjk $\frac{1}{4}ejdjh\frac{1}{2}$
 $\frac{1}{4}v\frac{1}{2}$ gkQeu ckekbM vfHkfØ;k

i'u 5

mRrj & v) vk;dky & og le; ft le fØ;kdkjd dh l kUnrk m l dh ikjfeHkd
l kUnrk dh vk/kh jg tkrh g vFkok og le; ft le dkb fØ;k v) i.k gkrh g m l b l
fØ;k dk v) vk;dky dgr gA b l t $\frac{1}{2}$ l inf'kr djr gA iFke dkfV d fy, b l dk
ek=d feuV gkrk gA

iFke dkfV vfHkfØ;k d fy, l=

iFke dkfV vfHkfØ;k d fy; lekdfyr nj lehdj.k fuEu gkrk gA

$$\begin{aligned}
K &= \frac{2.303}{t} \log \frac{a}{a-x} \\
t &= \frac{2.303}{K} \log \frac{a}{a-x} \\
t_{1/2} &= \frac{a}{2} \\
t_{1/2} &= \frac{2.303}{K} \log \frac{a}{(a-a/2)} \\
t_{1/2} &= \frac{2.303}{K} \log 2 \\
t_{1/2} &= \frac{2.303}{K} \times 0.3010 \quad [\because \log 2 = 0.3010] \\
t_{1/2} &= \frac{0.693}{K}
\end{aligned}$$

iFke dkfV vfHkfØ;k d fy, v) vk; dky dk eku nj fLFkjkd d 0; rØekuikrh gkrk g

vFkok

idk'k jklk;fud vfHkfØ;k d pkj mi;kx

1- idk'k jklk;fud vfHkfØ;k,] lkyj Åtk inku dju dk ,d ek= l/ku gA l; l iklr Åtk dk jklk;fud Åtk d : i e ,df=r djd bldk fofHkUu : ik e i;kx fd;k tkrk gA

2- jlk;u m|kx e vud cgyhdj.k fØ;kvk rFkk dkcfud ;kfxdk d l'y"kk e idk'k mRijd dk dk; djrk gA

3- QkVxkgh v) pkyd byDVkMk dh lgk;rk l ty dk idk'k o|r vigkl djd gk;Mktu b/ku cuk;k tkrk gA

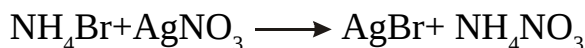
4- vud vk/kfud ik|kfxdh idk'k jklk;fud fØ;kvk ij vk/kkfjr g QkVxkQh] QkVk fifVx] jxhu QkVxkQh vkfnA bld vfrfjDr vU; mi;kx Hkh fy[k tk ldr gA

i'u 6

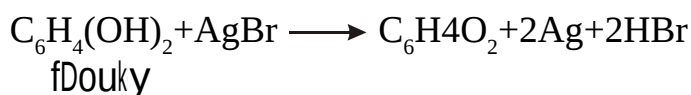
mRrj & idk'k dh mifLFkfr e oLrvk d fp= vfdr dju dk QkVxkQh dgr g ;g flYoj gykbM d idk'k d ifr lxfgrk ij fuHkj djrk gA

1- lxkgh lyV dk fuek.k ftyfVu ;Dr vekfu;e ckekbV d ?kky e flYoj ukbVV dk vekfu;ke; foy;u feykr g ft l l flYoj ckekbM vfr egdu d.kk d : i e vo{kfir gk tkrk g feJ.k dk yxHkx 45° ij dN le; d fy, j[k nr gA ft l l AgBr d d.k cM gkdj mfpr vkdkj d cu tkr gA bl idkj AgBr dk ftyfVu e ,d beYlu cu tkrk gA vc dkp dh lyV ij yky idk'k dh mifLFkfr e beYlu dh

,d iryh ijr tek nh tkrh g bl idk'k dh vU; fdj.kk d ifr l xkgh cuku d fy, ftyfvu e fo'k'k idkj d jtd feyk fn; tkr gA l Hkh jxk dh fdj.kk dk iHkkfor dju okyh lyV dk iuØkefvD lyV dgr gA



2- Moyfix QkvxkfQd lyV dk yky idk'k e dej l fudkydj (Developer) if"Vdkjd e Mkyk tkrh g M0yij ik;jkxyky fDouky gkbMkfDouky ;k ,feMky t l vipk;dk dk {kkjh; ?kky gkrk g ;g idk'k }kjk ikjHk gb AgBr l Ag vip;u dh fØ;k dk i.k dj nrk gA lyV e ftu Hkkxk ij idk'k iMrk g ogk flYoj dh dkyh rg te tkrh gA bl idkj oLr dk pedhyk Hkkx lyV dh voLFkk e dkyk gkrk g vkj dkyk Hkkx l Qn gkrk gA vr% oLr dk i.k mYVk fp= lyV ij iklr gkrk gA



vFkok

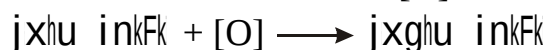
feJ /kkR & ;g nk ;k nk l vf/kd /kkR ;k v/kkr dk l Hkkxh feJ.k gA feJ /kkR, viu tud /kkrvk dh ryuk e vf/kd dBkj] vf/kd xyukd okyh rik vf/kd l {kkj.k ifrjk/kh gkrh gA rkc dh feJ /kkR,

l-Ø-	feJ /kkR dk uke	l xBu	mi;kx
1-	ihry	Cu-66 l 28 % Zn- 20 l 40 %	cru ,o efr;k cuku e
2-	dk l k	Cu-80 l 90 % Sn-10 l 25 %	efr;k] flDd o e'khu cuku e
3-	xu eVy	Cu-88 % Sn-10 % Zn- 2 %	rki] cUnd cuku e

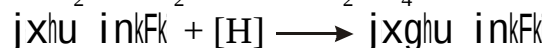
bud vykok vU; feJ /kkR, fy[kh tk l drh gA

i'u 7

mRrj & Dykjhu dk fojtu vkDlhdj.k }kjk gkrk g tcfd bl d foijhr lYQj Mkbvkd l kbm dk fojtu vip;u }kjk gkrk gA Dykjhu dk fojtu LFkk;h gkrk gA



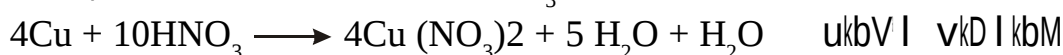
SO_2 dk foj tu vLFkk; h gkrk g D; kfd o jxghu inkFk ok; e. My dh vkDI h tu l vkDI h dr gkdj iu% jxhu gk tkrk g &



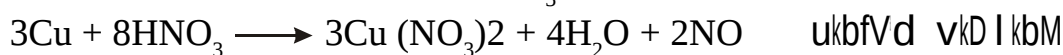
vFkok

rkc dh ukbfVd vEy l vfhkfØ; k, &

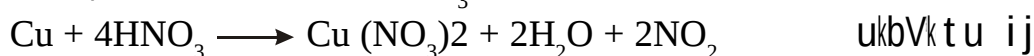
1- B.M ,o 20 l 25 ifr'kr l kUn HNO_3 l



2- B.M ,o 35 l 45 ifr'kr l kUn HNO_3 l



3- B.M ,o 50 ifr'kr l kUn HNO_3 l

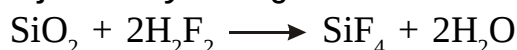


4- 50 ifr'kr l kUn rFkk xe HNO_3 l

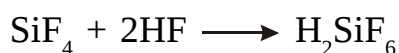


i'u 8

mRrj & (a) HF dk dkp dh ckry e l jf{kr ugh j[kk tkrk g D; kfd og dkp dh ckry d dkp l fØ; k dj ml ?kky nrk g



Silicontetra Flouride



Hydro Flourosilic Acid



Sodium Flourosilicate

vkj Sodium Flourosilicate cukrk gA

(b) 'kU; ox %vkn'k x l ½ d l Hkh ije k. k d l Hkh dk'k i. kr% Hkj gkr gA ghfy; e dk NkMdj l Hkh x l k dh ckâ; r; d{k e LFkk; h v"Vd 0; oLFkk ns²np⁶ gA ghfy; e e 1s² LFkk; h fou; k l gA

1 'kU; xlk d iek.k e dkb v;fXer byDVku ugh gA vr% ; rRo jklk;fud cU/k ugh cukrA

2 mPp vk;uu Åtk d dkj.k byDVku R;kx dj /ku vk;u ugh cukrA

3 mi{k.kh; byDVku cU/krk d dkj.k ; byDVku xg.k ugh djr vkj %.kk;u ugh cukrA

vFkok

1 mR—"V xlk dh vk;uu Åtk vf/kd gkrh g D;kfd bu xlk dk byDVkfud foU;kI i.k Hkjk ,o LFkk;h gkrk gA ft l l bue l byDVku fudkydj vk;u cuku d fy; vk;uu Åtk cgr vf/kd yxrh gA blfy; ;g vfØ; gkr gA

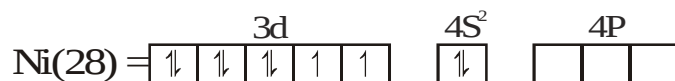
2 leg 17 d rRo icy vkDIhdkj d gkr g D;kfd bu rRok dh byDVku cU/krk vf/kd gkrh gA vr% bue byDVku xg.k dju dh {kerk vf/kd gA bl dkj.k ;g icy vkDIhdkj d gkr gA

i'u 9

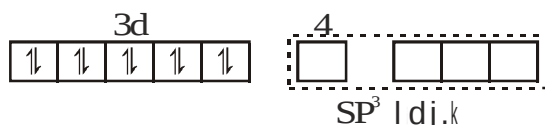
mRrj & (a) $[\text{Ni}(\text{CO})_4]$ pr"Qydh; g tcf d $[\text{Ni}(\text{N})_4]^{-2}$ ox leryh; g D;kfd $[\text{Ni}(\text{CO})]$ ldy e /kr iek.k : i e gA vr% bl dh vkDIhdj.k l [;k 'kU; gA Ni(28) dk iek.k foU;kI fuEu fyf[kr gA

$$28\text{Ni} = 1\text{S}^2, 2\text{S}^2, 2\text{P}^6, 3\text{S}^2, 3\text{P}^6, 4\text{S}^2 3\text{d}^8$$

vr% byDVkfud foU;kI g



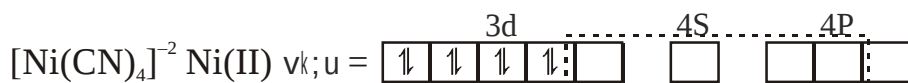
ldj.k d io rFkk cU/k fuek.k d fy; 4s byDVku 3d d{k d e 0; ofLFkr gk tkr g vr%



vr% ldy $[\text{Ni}(\text{CO})_4]^\circ$ e &



;g SP³ ldj.k g blfy, pr"Qydh; g tcf d $[\text{Ni}(\text{CN})_4]^{2-}$ e Ni dh vkDIhdj l [;k +2 gA vr% Ni⁺⁺ dk byDVkfud foU;kI gkxk&

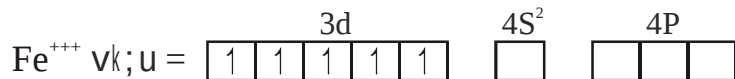


dsp² ldj.k d dkj.k ldy dh ljpuk ox leryh; gkrh gA

vFkok

$[\text{Fe}(\text{CN})_6]^{-3}$ ncy vupEcdh; g tcf d $[\text{Fe}(\text{CN})_6]^{-4}$ ifr pEcdh; g D;kfd $[\text{Fe}(\text{CN})_6]^{-3}$ e Qfjd vk;u e vfre RkFkk vfre l , d d{kk dk byDVkfud foU;k l fuEu fyf[kr gA

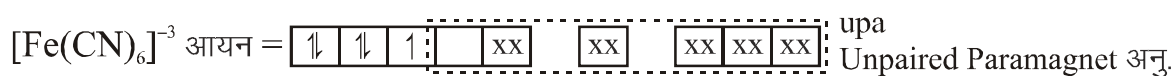
$$\text{Fe}^{+3} \text{ dk ije.k } \emptyset \text{ekd g } 26-3^e=23 = 1s^2, 2s^2p^6, 3s^2p^6d^5$$



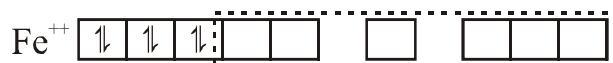
;g d^2sp^3 ldfjr d{kd g vr% foU;k l



;gk d^2sp^3 ldfjr d{kd 6 byDVku tkfM;k d fy; i;Dr gkr gA



;gk ij , d v;fXer byDVku g blfy, ;g ncy vupEcdh; Paramagnetic gA tcf d $[\text{Fe}(\text{CN})_6]^{-4}$ e ldfjr Qj l vk;u dk byDVkfud foU;k l



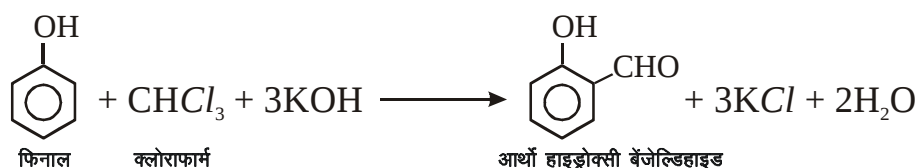
;gk ij l dy fuek.k d^2sp^3 l dj.k l gkxkA



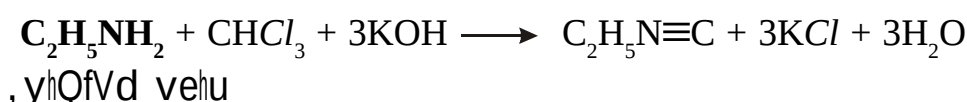
;gk ij l Hkh byDVku ;fXer gA vr% Qjklk;ukbM vk;u dh i—fr ifr pEcdh; diamagnetic gkrh gA

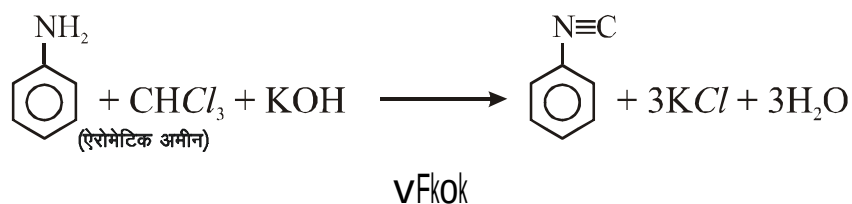
i'u 10

mRrj & (a) **jhej & Vheu vfHkfØ;k** & fQuky dk dkfLVd {kkj dh mifLFkr e DykjkQke ;k dkcU VVkdYkjkbM d lkFk xe dju ij vkFkk ;k ijk gkbMKDlh ,fYMgkbM ;k vEy curk g jhej & Vheu vfHkfØ;k dgykrh gA

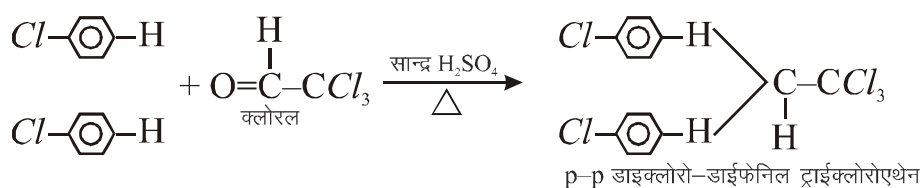


(b) **dkfcy ,ehu vfHkfØ;k** & ,fyQfVd ;k ,jkefVd ikFkfed ,ehu dk CHCl_3 rFkk ,Ydkgkyh; KOH d lkFk xe dju ij rho nxU/k ;Dr Qfuy vkb l lkbukbM $\frac{1}{2}$ dkfcu ,feu% curk gA

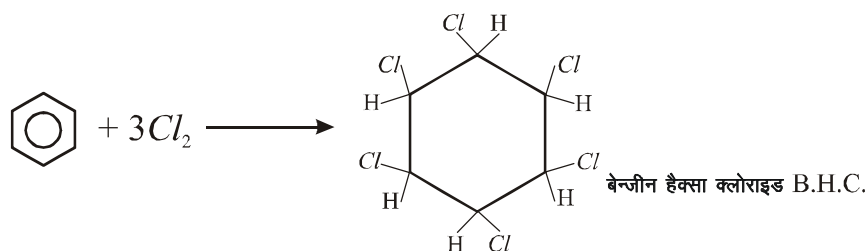




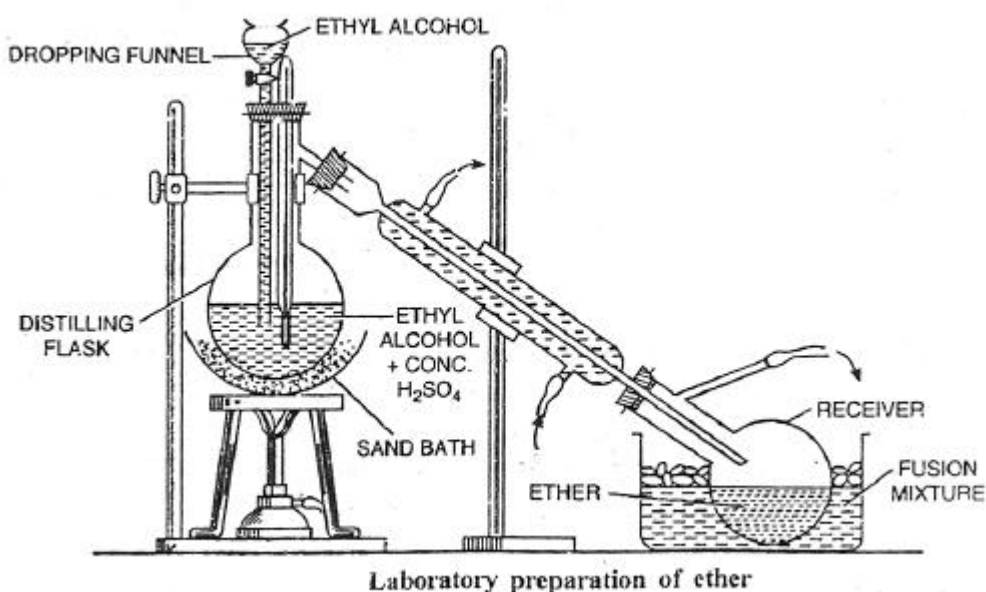
(1) D.D.T. ij & MkbDykjk MkbQfuy VkbDykjk ,Fku bldk jklk;fud uke g bl Dykjk cthu d nk v.kvk dh lKUn H_2SO_4 dh mifLFkfr e Dykjjy $\frac{1}{4}$ VkbDykjk , lhvfYMGkbM½ d lkFk vfhkfØ;k djku ij D.D.T. curk gA



(2) B.H.C. bldk jklk;fud uke cthu gDlkDykjkbM g cthu dk Cl_2 d lkFk l ; idk'k dh mifLFkfr e Ø;k djku ij B.H.C. iklr gkrk gA bl 666 ;k xeDlu ;k 1]2]3]4]5]6 gDlk DYkkjk lkbDykgDlu Hkh dgr gA

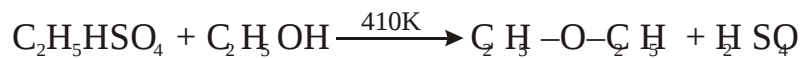


i'u- 11 bFkj cuku dh i ;kx'kkyk fof/k %&



mRrj & fp=

lehdj.k



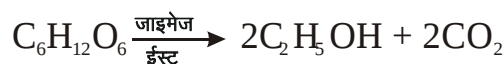
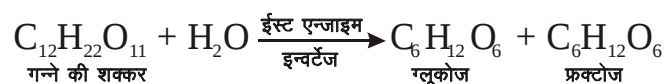
fof/k %& 25 xke ikVf'k;e MkbØkeV dk 100 ml ty e ?kkydj ,d xky inh d ftykLd e yr gA fcUndkjh dhi e 100ml ,Fkuky rFkk 20 ml l kUn H₂SO₄ dk feJ.k y fy;k tkrk g fp=kulkj midj.k r;kj dj ftykLd dk ty m"ed ij xe djr g] cuh gb ok"i l?kfu= e l xtjrh gA bl vfHkfØ;k e in (ii) e H₂SO₄ iu% mRiUu gk tkrk g tk C₂H₅OH l in (i) d vulkj fØ;k djd ml iu% bFkj e cnyrk g blfy, bl vfojy bFkjhdj.k dh fof/k Hkh dgr gA

'kk/ku & i;kx'kkyk fof/k l iklr bFkj e ,Fkuky] ty] o lYfj;fjd vEY dh v'kf) ;k gkrh gA igy bFkj dk NaOH foy;u l /kk r g ft l l lYfj;fjd vEY dh v'kf) nj gk tkrh gA bFkj oky ry dk iFkd djd mle 50 ifr'kr CaCl₂ foy;u feykr g bl l ,Ydkgy vyx gk tkrk gA iFkdDkjh dhi }kjk bFkj dk iFkd dj yr g rFkk vukn CaCl₂ d mij l [kk yr gA 54°–36°C ij iu% vklou dju l 'k) bFkj iklr gkrk gA

vFkok

'khj l ,Ydkgy cuku dh fof/k

1- **ok'k dk cuuk** %& xUu d j l l 'kDdj d fØLVy iFkd dj yu d i'pkr ihy xk< jx dk pkluh t l k no cprk g ft l 'khjk dgr g] 'khj e ty feyk dj 8 l 10 ifr'kr ru djr g vkj ble FkkMh ek=k e vekfu;e lYQV vkj vekfu;e QkLQV rFkk lYfj;fjd vEY feyk fn;k tkrk g mDr foy;u e 5% ;hLV feyk fn;k tkrk gA feJ.k dk 2 l 4 fnu d fy, 25° l 30°C fMxh rki ij j[k nr gA dN le; i'pkr ;hLV e mifLFkr ,utkbek dh mRijd fØ;kvk }kjk ,Fkuky cu tkrk gA

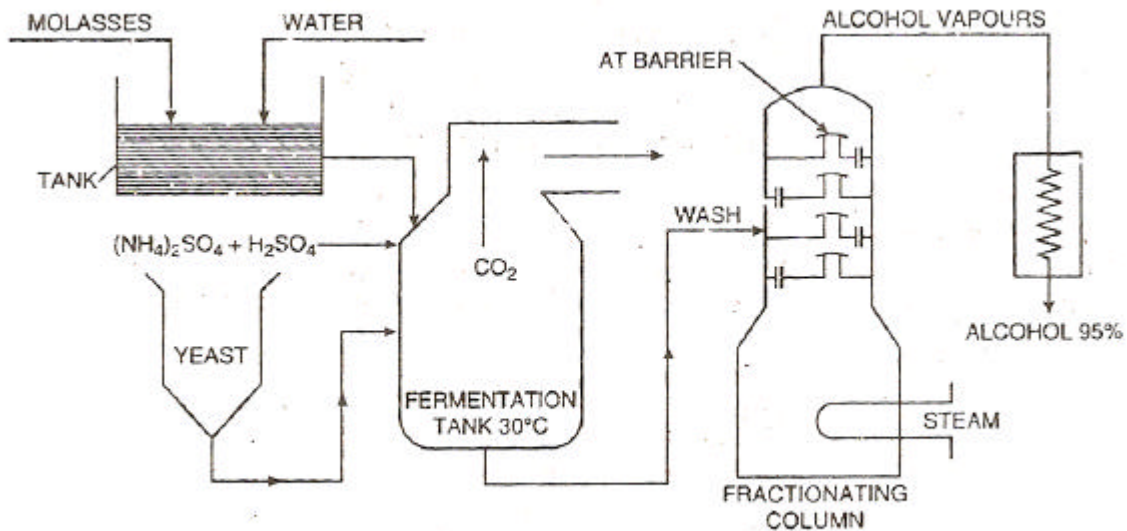


ikl r foy;u dk ok'k dgr g ft le 6 l 10 ifr'kr C₂H₅OH rFkk 'k" ty vkj vU; v'kf) gkrh gA

2- **ok'k dk vklou** %& ok'k dk vklou dkQ Hkhkd e fd;k tkrk g ble nk LrEHk gkr g fo'y"kd rFkk ifj'kk/kd tk ,d nlj l tM gkr gA ok'k dk lfiykdkj

uyh }kjk ifj'kk/kd e l iokfgr djr g iklr xe ok"i fo'y"kd d mijh fgLI l /khj&/khj fxjkr gA fo'y"kd e mij dh vk tk jgh Hkki uhp dh vkj vk jg ok'k d lEiØ e vkrh g rFkk mle l ,Ydkgy okf"ir djrh g ,Ydkgy dk DoFkukd 78-3 gA vrll ;g ok"i e vx c<rk tkrk gA bu ok"i dk l?kfur dju l yxHkx 90 ifr'kr ,Ydkgy iklr gkrk gA

fp=



Manufacture of ethyl alcohol from molasses

3- ifj'kk/ku& ok'k dk ifj'kk/ku iHkkth vklou l djr gA iHkkth vklou dju ij rhu iHkkth iklr gkr gA

1- iFke iHkkth & ble ,lVfYMgkbM vkfn de DoFkukd d vin0; gkr gA

2- f}rh; iHkkth & ble 93&93-6 ifr'kr ,fFky ,Ydkgy gkrk g bld ifj'kk/ku l ifj'k) ,Ydkgy feyrk gA

3- vfre iHkkth & bl ¶; ty ry dgr g ble mPp DoFkukd oky vin0; gkr gA

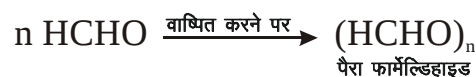
i'u 12

mRrj & QkefYMgkbM l fuEu dk cukuk &

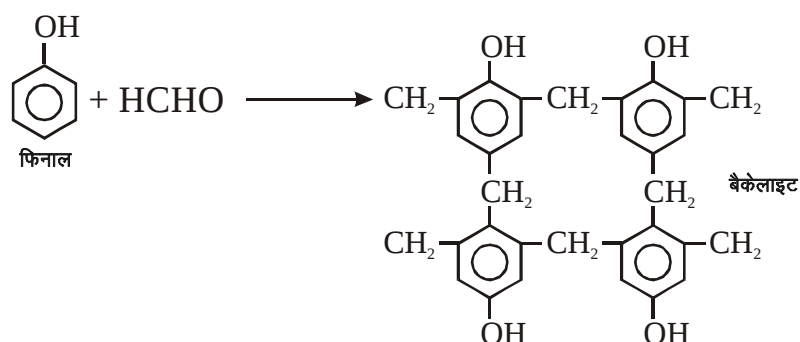
(1) ;jkVkfQu &



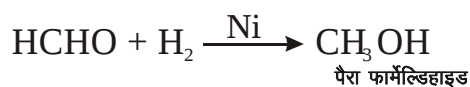
(2) ijk QkefYMgkbM &



(3) cdykbM &



(4) eFkuky &



vFkok

, lhfVd vEy l fuEu iklr djuk

(1) , lhfVd ,UgkbMkbM cukuk & $[\text{CH}_3\text{CO}-\text{O}-\text{COCH}_3]$



(2) eFku cukuk & $[\text{CH}_3\text{OH}]$



(3) , lhfVku & $[\text{CH}_3\text{COCH}_3]$



(4) , lhfVekbM & $[\text{CH}_3\text{CONH}_2]$



i'u 13

mRrj & (1) ikVhu dh ikFkfed ljpuk & iLrd l n[kdj tkudkj iklr dj

(2) fo—frdj.k & ikVhu dk fo—frdj.k e ikVhu m” ek rFkk jlk;uk l iHkkfor gkr gA ikVhu dk xe dju ij vFkok jlk;fud ;kfxdk l fØ;k djku ij bl dh tfod fØ;k'khyrk u"V gk tkrh g vkj ; Ldfunr gkdj vfoy; gk tkr gA bl fØ;k dk ikVhu dk fo—frdj.k dgr gA fo—frdj.k l ikVhu dh ikFkfed ljpuk vifjofr

jgrh g fdUr f}rh; d ,o rrrh; d ljpuk e ifjoru gk tkrk g t l & tc v.M dk mcyr g, ikuh e dN nj d fy, j[kr g rk v.M dh ikVhu vfoy; j'knkj ikVhu e ifjofrr gk tkrh g ft l l ikVhu LdfUnr gk tkrk g vFkkR ikVhu dk fodfrdj.k gk tkrk gA

vFkok

D.N.A. o R.N.A. e pkj fuEu fyf[kr vrj gA

	R.N.A.	D.N.A.
1-	bl dh ,dygyfDI ljpuk gkrh g	bl dh f}VfyDI ljpuk gkrh g ft le
2-	ft le jkbok t 'kdjk gkrh g	Mh&vkDI hkbck t 'kdjk gkrh gA
3-	bl d ik;jhfeMhu {kkj e ;jfly gkrk gA	ble ik;jhfeMhu {kkj e Fkk;ehu gkrk gA
4-	;g lkbVkykTe o Økek lke e ik;k tkrk g ft l dk e[; dk; ikVhu fuek.k gA ;g ln'k okgd dk dk; djrk gA	;g ukfHkd e ik;k tkrk g ft l dk e[; dk; ird x.kk d okgd d :i e dk; djrk gA iR;d D.N.A. ,d ;k ,d l vf/kd ,Ut kbe d dk; dk fun'k djrk gA

i'u 14

mRrj & ikphu Hkkjrh; oKkfud

(1) **pjd** & fpfdRIk 'kkL= d {k= e egku dk;k d fy, pjd dk fpfdRIk 'kkL= dk fir k dgk tkrk gA

vk;on e vkpk; pjd dk ;kxnu egROI.k g D;kfd bUgku ekuo ljpuk ,o jDr lpkj d ckj e egROI.k tkudkj miyC/k djokb gA bl d vfrfjDr e/keg] {k;jkx ,o ân; lc/kh chekj d mipkj Hkh crk; gA

bud }kjk jfpr pjd lfgrk dk vk;on dk fo'o dk'k ekuk tkrk gA

pjd u bl pjd lfgrk e 1 yk[k tMh&cfV;k dh x.koRrk ,o mldh dk; i.kkylh dk crk;k g mUgku ekuk g fd /kkfed lkp o LokLF; dk lc/k gkrk gA mUgku dgk g fd 'kjhj efLr"d ij Hkk tu o nfud fØ;kDykik dk iHkko gkrk gA ft l l jkxk dk vk lkuh l igpku dj funku fd;k tk ldrk gA

(2) **vkpk;d.kkn** & vkpk; d.kkn dk ije.k fl)kur dk tud ekuk tkrk gA o o'kf'kd n'ku d iord eku tr gA o'kf'kd n'ku dk ey vk/kkj ije.k.kkn gA mud vulkj lHkh oLr, uk rRok l feydj cuh gkrh g iFoh] ikuh] gok] vkRek] efLr"d] idk'k] ekle] le; txg gA

vkpk;d.kkn u MkYVu d fl)kr d gtjkj o"k io crk;k fd cgek.M d iR;d

d.k dk fuek.k ije.k }kjk gvk gA mUgku v.kvk dh xfr] foekvk vkj jklk;fud fØ;vk d ckj e Hkh crk;k gA ¼bl d vfrfjDr vU; oKkfud t l & vkpk; lJr] vkpk; ukxktu] ck.k HkVV vkfn oKkfudk dk crk;k tk l drk gA½

vFkok

i'u 15

mRrj & (a) DoFkukd e mUu;u & fd lh no dk DoFkukd og rki g ft l ij mld ok'i nkc dk eku ok; e.Myh; nkc d cjkcj gkrk tkrk g vr% ge tkur g fd fd lh foy;u dk ok'i nkc 'k) foyk;d d ok'inkc l de gkrk gA vr% og rki ij ft l ij fd lh foy;u dk ok'i nkc ok;e.Myh; nkc d cjkcj gk tkrk gA ¼vFkkr foy;u dk DoFkukd½ m l rki l vf/kd gkxk ft l ij 'k) foyk;d dk ok'i nkc ok;e.Myh; nkc d cjkcj gk tkrk g ¼vFkkr 'k) foyk;d dk DoFkukd½ ;kfu 'k) foyk;d e dkb foy; feyku ij mld DoFkukd e gku okyh of) DoFkukd dk mYy?ku dgykrh gA bl ΔT_b l inf'kr djr g vr% $\Delta T_b = T_b - T_b^\circ$

$$\text{fgek d voueu } \Delta T_f = 0 - (-0.186) = 0.186^\circ\text{C}$$

$$\text{fgek d voueu fLFkjkd } K_f = 1.86 \text{ K Kg mol}^{-1}$$

$$\text{DoFkukd mUu;u fLFkjkd } K_b = 0.512 \text{ K Kg mol}^{-1}$$

$$\Delta T_f = K_f \times \text{ekyyrk}$$

$$\text{ekyyrk} = \frac{\Delta T_f}{K_f} = \frac{0.186}{1.86} = 0.2$$

$$\Delta T_b = K_b \times \text{ekyyrk}$$

$$\Delta T_f = 0.512 \times 0.1$$

$$\Delta T_f = 0.512^\circ\text{C}$$

$$\text{DokFkukd dk mUu;u} = 0.512^\circ\text{C}$$

vFkok

ijklj.k nkc & v) ikjxE; f>Yyh }kjk foyk;d v.kvk d foy;u dh vkj gku oky iokg dk jkdu d fy; foy;u ij yxk;k x;k nkc iklj.k nkc dgykrk gA

$$(2) \quad \pi v = nRT = \frac{WB}{MB} RT$$

i'u d vulkj $v = 1 \text{ yhVj}$ $T = 300 \text{ k}$, $R = 0.0821 \text{ yhVj ok;e.Myh;}$ $WB =$ foy; dk n0;eku] $MB =$ foy; dk vf.od n0;eku $\text{fMxh}^{-1} \text{ eky}^{-1}$

$$\text{ijklj.k nkc } \pi = \frac{WB}{MB} \times \frac{RT}{V} = \frac{6}{60} \times \frac{0.0821 \times 300}{1} = 2.46 \text{ ok;e.My}$$

$$\text{ijklj.k nkc} = 2.46 \text{ ok;e.My}$$

i'u 16

mRrj & vfHkfØ;k d vfHkdjkd vFkok fØ;kQyk dh lUnrkvk e le; d lFk tk ifjoru gkrk g m l vfHkfØ;k nj dgr gA

$\text{vfHkf}\emptyset; k \text{ nj } \frac{3}{4} \frac{\text{f}\emptyset; \text{kdkjd rFkk f}\emptyset; \text{kQy dh lKUnrk e ifjoru}}{\text{le; vUriky}}$
 $\text{bdkb \& eky fyVj}^{-1} \text{ l d.M}^{-1}$

$\text{vfHkf}\emptyset; k \text{ dh nj dk iHkkfor dju oky dkjd \&}$

1- $\text{vfHkd kjd dk lKUn.k \& vfHkd kjd dk lKUn.k c<ku ij vfHkf}\emptyset; k \text{ dh nj c<}$
 $\text{tkrh g D; kfd vfHkf}\emptyset; k \text{ dh nj vfHkd kjd d lf}\emptyset; \text{n0; eku d lekuikrh gA lKUn.k}$
 $\text{c<ku ij vfHkd kjd v.kvk dh l [; k c< tkrh g ft l l iHkkoh VDDjk dh l [; k e of)}$
 gk tkrh gA

2- $\text{vfHkf}\emptyset; k \text{ dk rki \& lkekU; vfHkf}\emptyset; \text{kvk e rki c<ku l vfHkf}\emptyset; k \text{ dh nj e of)}$
 $\text{gk tkrh g] D; kfd rki c<ku l v.kvk dh xfrt \text{\AA} \text{tk dk eku c< tkrk gA i; kxk}$
 $\text{\} kjk n[kk x; k g fd ifr 10 rki of) l vfHkf}\emptyset; k \text{ dh nj nk l rhu xuh rd gk tkrh}$
 gA

3- $\text{mRijd dh mifLFkr \& mRijd dh mifLFkr l lf}\emptyset; \text{\AA} \text{tk dk eku ifjofrr gk}$
 $\text{tkrk gA ft l l vfHkf}\emptyset; k \text{ dh nj ifjofrr gk tkrk g ft l l vfHkf}\emptyset; k \text{ dh nj ifjofrr}$
 $\text{gk tkrh gA /kukRed mRijd vfHkf}\emptyset; k \text{ dh nj dk c<k nr g tcfd _ .kkRed mRijd}$
 $\text{vfHkf}\emptyset; k \text{ nj e of) gk tkrh gA}$

4- $\text{nkc \& xl h; vfHkf}\emptyset; \text{kvk e nkc c<ku l vfHkf}\emptyset; k \text{ dh nj c< tkrh gA nkc}$
 $\text{c<ku l vfHkd kjd v.k ik l \& ik l vk tkr g iHkkoh VDDjk dh l [; k c< tkrh gA}$
 $\text{ft l l vfHkf}\emptyset; k \text{ nj e of) gk tkrh gA}$

$\frac{1}{4} \text{bl d vykok i}^{\text{B}} \{k = \text{Qy Hkh fy} [kk \text{ tk l drk g } \frac{1}{2}$

vFkok

$\text{ngyh \text{\AA} tk \& lf}\emptyset; \text{r v.k d ik l tk lEi.k \text{\AA} tk gkrh g ml ngyh \text{\AA} tk dgr gA}$
 $\text{ngyh \text{\AA} tk ; Dr v.k rjUr gh mRikn l dy vkj fQj vi?kfVr gkdj mRikn v.k e}$
 cny tkrk gA

$\text{ngyh \text{\AA} tk } \frac{3}{4} \text{ v.k dh fuEure \text{\AA} tk + lf}\emptyset; .k \text{\AA} \text{tk}$

$\text{lf}\emptyset; .k \text{\AA} \text{tk \& og \text{\AA} tk tk v.k dk lf}\emptyset; \text{dju d fy, vko'; d gkrh g lf}\emptyset; .k}$
 $\text{\AA} \text{tk ik l r v.k \text{\AA} tk voj k/k dk ij dj mRikn l dy cukrk gA}$

$\text{lf}\emptyset; .k \text{\AA} \text{tk} = \text{ngyh \text{\AA} tk \& v.k dh fuEure \text{\AA} tk}$

$\text{lf}\emptyset; .k \text{\AA} \text{tk vkj ngyh \text{\AA} tk e lc/k \& lf}\emptyset; .k \text{\AA} \text{tk vkj ngyh \text{\AA} tk e ijLij}$
 $\text{fudV dk lc/k gkrk g v.k \text{\AA} tk xg.k dj lf}\emptyset; .k \text{\AA} \text{tk ik l r dj yrk g tk 'kh?k}$
 $\text{gh ngyh \text{\AA} tk e cn y tkrh gA ngyh \text{\AA} tk ; Dr v.k mRikn e cn y tkrk gA vr\}$

$\text{lf}\emptyset; .k \text{\AA} \text{tk} = \text{ngyh \text{\AA} tk \& v.k dh fuEure \text{\AA} tk}$

$\text{ngyh \text{\AA} tk} = \text{lf}\emptyset; .k \text{\AA} \text{tk} + \text{v.k dh fuEure \text{\AA} tk}$

i'u &17

mRrj & yUFukbM l dpu & yUukbMk d ijek.k Øekd d c<u d lkFk lkFk mud ijek.kvk ,o vk;uk d vkdkj e deh gkrh g bl yUFukbM l dpu dgr gA dkj.k & yUFukbMk e vku okyk byDVku OKL;re d{k e u tkdj midk'k e io'k djrk g Qyr% byDVku vkj ukfHkd d e/; vkdk.k cy e of) gkrh g ft l l ijek.k rFkk vk;u ldfpr gk tkrk gA

yUFukbM l dpu d iHkko & yUFukbM l dpu fuEu fyf[kr dkj dk iHkfor djrk gA

1- vk;u dk vkdkj % yUFukbMk d vk;uk dk vkdkj Øe'k% de gk tkrk gA

2- fo|r _ .kkRedrk % Ce(58) l Lu(71) rd fo|r _ .kkRedrk Øe'k% vf/kd gkrh gA

3- vip;u foHko +3 vkDlhdj.k voLFkk d fy, vip;u foHko Øe'k% -2.48v l -2.25v rd Ce(58) l Lu(71) rd vf/kd gkrk tkrk gA

vFkok

lØe.k rRok (3D) d x.k &

1- mRijdh; x.k & fofHkUu jklk;fud vfHkfØ;kvk e i;Dr gku oky mRijd ik;% lØe.k J.kh oky rRo vkj mud ;kfxd gkr gA

lØe.k dh mRij.k fØ;k'khyrk d fuEu dkj.k gA

v- ek;/fed ;kfxd dk fuek.k& lØe.k rRo ifjorh l ;ktdrk d dkj.k vLFkk;h ek;/fed ;kfxd cuk yrk g vkj bl ikj ,d fuEurj lfØ;.k Åtk okyk uohu iFk vfHkfØ;k d fy, miyC/k djokr gA

c- i"B {k=& lØe.k rRok dk i"B {k=Qy vf/kd gkrk g blfy, l ;ktdrk, Lor= vf/kd gk tkrh gA vr% ; rRo viuh lrg ij vfHkdjkd dk vf/k'kkf"kr dj yr gA ft l l i"B {k=Qy ij vfHkdjkd dk lUn.k c< tkrk g QyLo: i fØ;kRed ox e of) gk tkrh gA

2- jxhu vk;u & lØe.k rRok d (n-1) miØk'k vkf'kd Hkj gkr g bue mifLFkr vk;fer byDVku n'; idk'k dh Åtk dk vo'kkf"kr dj mPp Åtk okyh fjDr vkfoVy e py tkr gA lØe.k gk tkrk g QyLo: i ijkofer idk'k lQn u gkdj jxhu gkrk g blfy, lØe.k rRok d ;kfxd vFkok vk;u jxhu gkr g

mnkgj.k % $Cu^+ = 1s^2, 2s^2p^6, 3s^2p^6d^{10}, 4s^0$

$Cu^{++} = 1s^2, 2s^2p^6, 3s^2p^6d^9, 4s^0$

byDVkfud foU;k l Li"V g fd Cu^+ ½d; i l ½ vk;u e l Hkh byDVku ;fXer g blfy, n'; idk'k dh Åtk dk vi'kkf"kr dj bld byDVku mRrft r ugh gkr g vFkk lØe.k ugh gkrk gA QyLo: i ijkofer idk'k lQn gkrk gA blfy, Cu^{++} jxghu gkrk gA tcf d Cu^{++} vk;u l ,d byDVku vk;fXer gkrk g ;g n'; idk'k dh Åtk dk vo'kkf"kr dj mPp Åtk Lrj e dn tkrk gA C^{++} lØe.k gk tkrk gA QyLo: ii ifjofer idk'k lQn u gkdj jxhu gkrk gA blfy, Cu^{++} vk;u jxhu gkrk gA