

सीनियर स्कूल सर्टिफिकेट परीक्षा (कक्षा बारहवीं)
परीक्षार्थी प्रश्नपत्र के अनुसार जरूर
उत्तर देने का माध्यम

Subject : **CHEMISTRY**
Exam Subject Code : **043**

Date & Date of the examination : **TUESDAY 12/3/15**

अपने द्वारा उत्तर

प्राप्त करने का दिन

प्राप्त करने की तिथि
Write code No. as written on
the top of the question paper:

Code Number
561121D

Set Number
① ● ③ ④

No. of supplementary answer-book(s) used
2

Person with Disabilities : Yes / No **NO**

जिसी शारीरिक अवस्था से प्रभावित हो तो उसके लिए चारों में का निम्नलिखित
In physically challenged, tick the category

B D H S C A

B = डिफ़ोर्स, D = मूँह व गोर, H = आर्टिरिक या सीनियर, S = शारीरिक
C = डिस्लेक्स, A = अटिस्टिक
B = Visually Impaired, D = Hearing Impaired, H = Physically Challenged
S = Spastic, C = Dyslexic, A = Autistic

क्या लेखन - लिपि व उपलब्ध करवाया गया : हाँ / नहीं **NO**

Whether writer provided :

मदि दुष्टिकृत हो उपर्योग में लाए गए
लाइटपैड का नाम

ग्राहित विभिन्न हाई टेक उपयोग में लाए गए
लाइटपैड का नाम

ग्राहित विभिन्न हाई टेक उपयोग में लाए गए
लाइटपैड का नाम

Each letter be written in one box and one box be left blank between each part of the
name. In case Candidate's Name exceeds 24 letters, write first 24 letters.

2003960

कार्यालय उपयोग के लिए
Space for office use

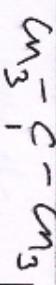
043 / 04521

1.

~~CH₃-CH₂-Br~~ will undergo
 S_N2 reaction faster.

This is because -

CH₃CH₂Br is 1° halide while



- Due to less steric hindrance.
- Nucleophile will attack more easily.

(2)

BaCl₂ is more effective in coagulating negatively charged sol.

since Ba valence = +2

Kt valence = +1

According to Hardy-Schulze Rule, greater the valence of coagulating ion, greater is its coagulating power.

3. der no of 4 atoms = N

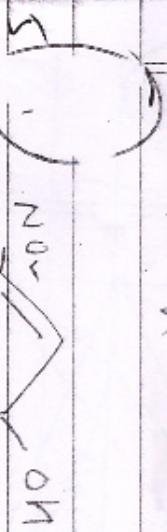
i. no of X atoms = $\frac{2N}{3}$ (1/3 of Tetrahedral voids)

i. $X_2 Y_3$ is formula.

Since there are 3-OH

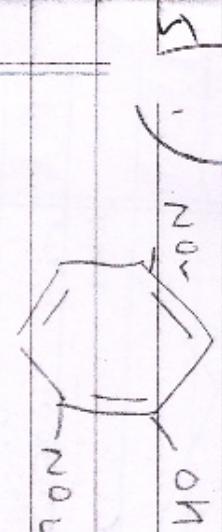
bonds : basicity = 3.

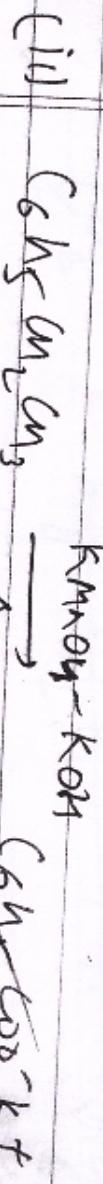
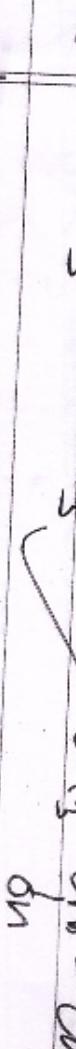
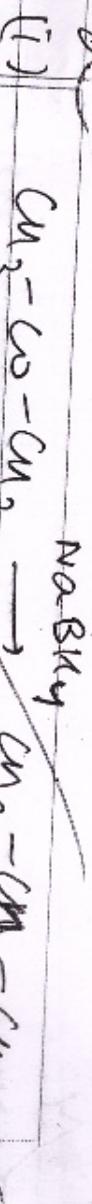
no / O on



2,5-dinitro phenol

- - -





VAPOUR PRESSURE OF SOLUTION

Positive deviation

means that solution is

non-ideal ie does not

obey Raoult's law over

entire range of concⁿ because -

$x_1 = 1 - \frac{P}{P_1}$ more than 1. Solvent-solute (solute-solvent).

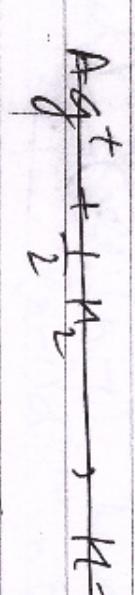
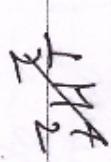
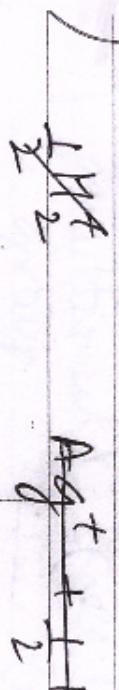
1. Interactions in solution
are weaker than between solute-solute &

Solvent-solvent
eg solution of ethanol and acetone

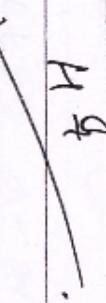
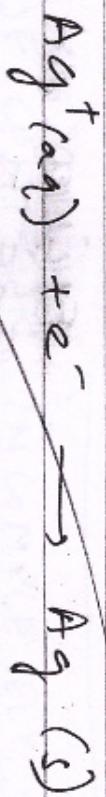
$\Delta V_{\text{mix}} > 0$ for positive deviation.

c)

a) Reach in feasible.



• Ag^+ has more tendency to gain e^- .



because standard reduction electrode potential
 $\eta_{\text{Ag}/\text{Ag}} > \eta_{\text{H}_2^+/\text{H}_2}$ ∴ it is more feasible.

b) Diminishing molar conductivity \rightarrow molar conductivity when concentration approaches zero.

Conductivity is conductance of unit volume solution.
With decrease in concentration there is decrease in no. of ions that carry current in unit volume solution. ∴ conductivity decreases with decrease in concentration.

1) Transition elements are the d-block elements where electrons are filled in penultimate shell ($n-1$). Here are present in group 3-12. ($(n-1)d^{1-10} ns^{1-2}$)

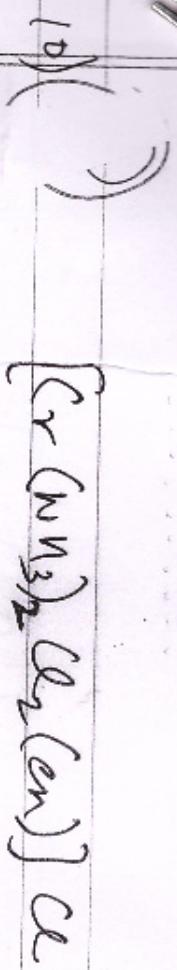
These contain incomplete filled d-orbitals in ground state or may one of the oxidation states.

- i. These form complex compounds due to coordination

b. high ionic charge
c. availability of d-orbitals

2. Act as catalysts as

- i. adopt multiple oxidation states
ii. availability of $(n-1)d$ and ns orbital to form intermediates with reagents.

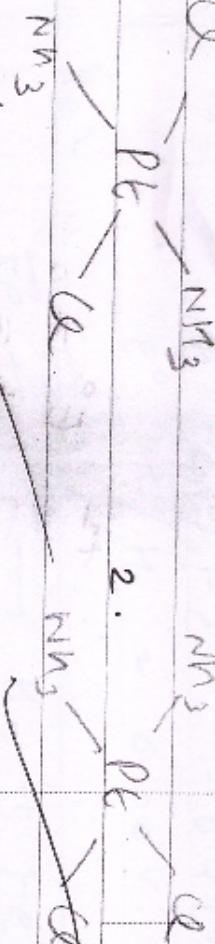


(ii) Diamminedichlorido(ethylenediamine)chromium(III)chloride



(iii)

(iv)



trans isomer

cis isomer

(v)

It would be t_{tg}^3

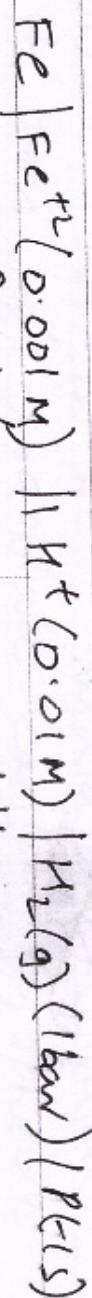
t_{eg}^1

Since $\text{D} < \text{P}$.

(iii) $\text{Ni}(\text{Cl})_4$

hybridization - sp^3 (tetrahedral)

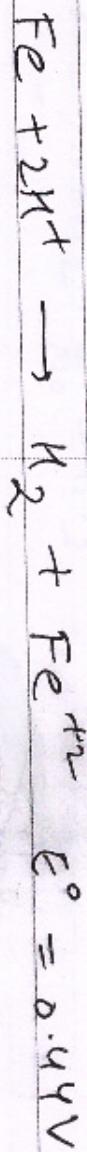
magnetic behaviour - diamagnetic.



$$E^\circ_{\text{Fe}^{+2}/\text{Fe}} = -0.44\text{V}$$

$$E^\circ \text{ H}^+/\text{H}_2 = 0.00\text{V}$$

Rxn



$$n = 2$$

Nernst eqn

$$E = E^\circ - 0.059 \log a$$

$$E = 0.44 - 0.059 \log \frac{[\text{Fe}^{+2}]}{(\text{H}^+)^2}$$

$$E = 0.44 - 0.059 \log \frac{10^{-3}}{10^{-4}}$$

$$E = 0.405 \text{ V}$$

$$E = 0.405 \text{ V}$$

(b)

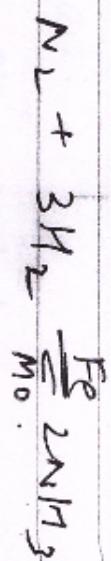
(i)

Hides which are positively charged are coagulated neutralized by tannins which are negatively charged. Due to neutralization of two colloids, leather gets hardened.

(ii)

Tyrophilic sol is well hydrated / solvated. Thus it does not coagulate easily. Tyrophilic sols are not solvated much.

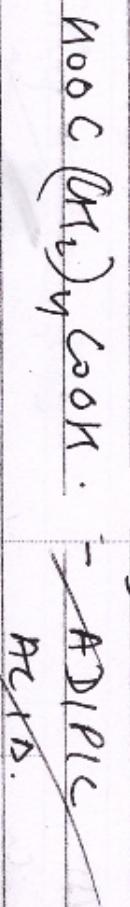
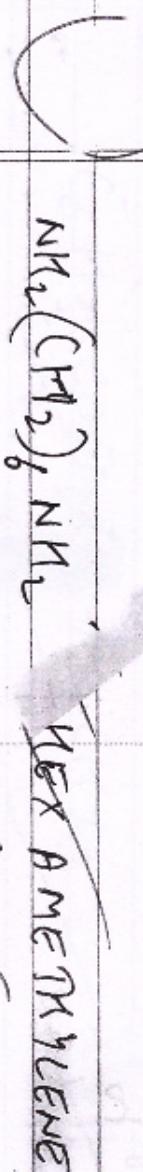
(iii)



Fe acts as catalyst. So inhibits the activity of Fe. Thus needs to be removed.

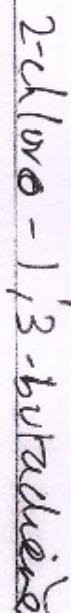
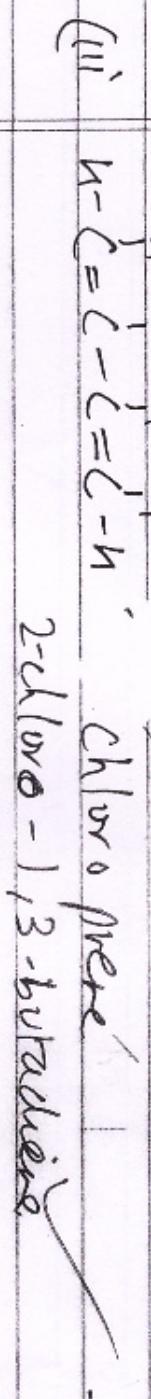
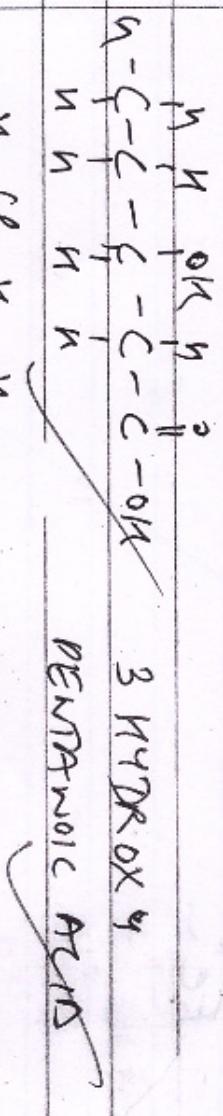
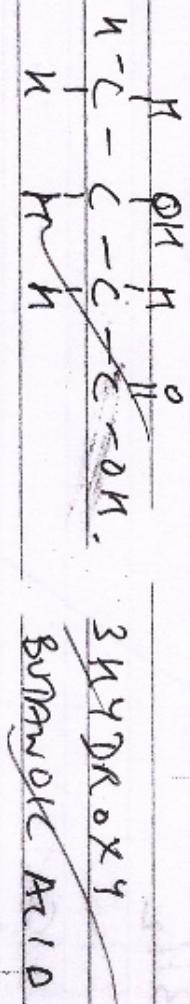
(ii) Nylon - 6,6.

Monomers.

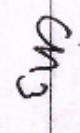
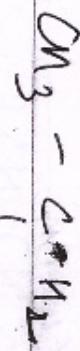


(iii)

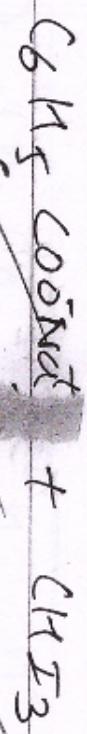
DH Bu



(i)

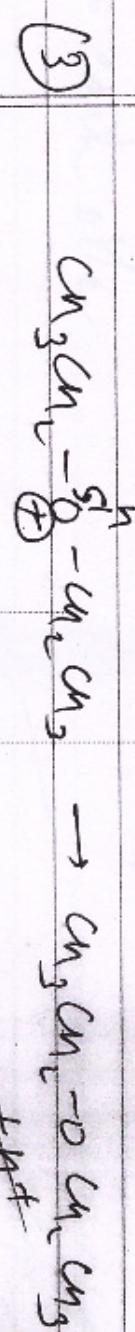
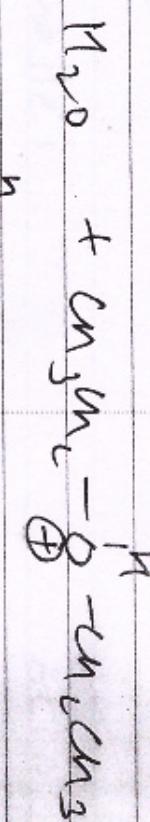
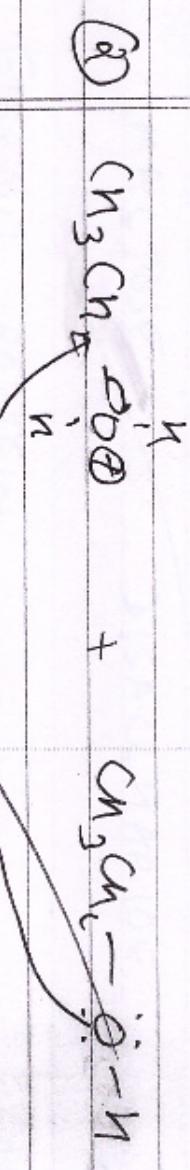
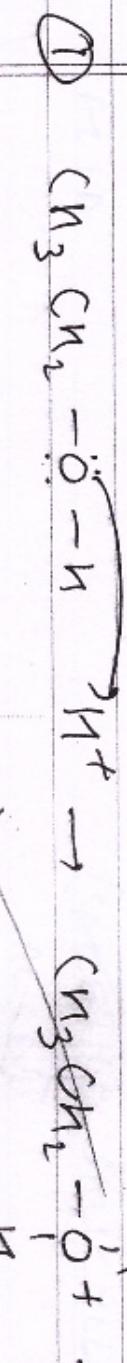
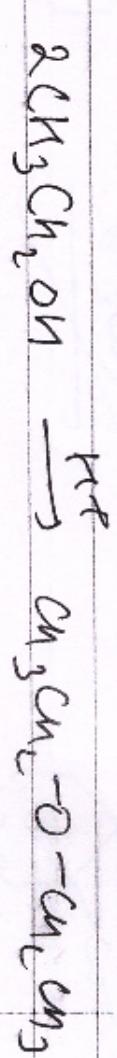


(ii)

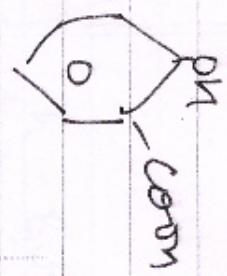
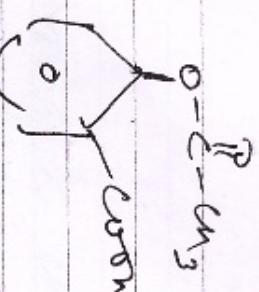


(iii)





b)

~~ACETIC ANHYDRIDE~~

SACCHAROID

ACID

(ACETYL SACCHAROID)

ACID

(i) SACCHAROID

MALTOSE

DISACCHAROID

(ii)

FIBROUS PROTEIN

- Insoluble in water

- Arranged parallel

to each other.

GLOBULAR PROTEIN

- Soluble in

water.

- coiled in

spherical shape.

eg - Keratin,

Myosin

(iii)

Vitamin - D

(d) n - Butyl bromide is a straight chain whereas t - Butyl bromide is branched.

Re intermolecular forces in both are

DIPOLE - DIPOLE (van der waal).

VAN DER WAAL FORCES are stronger when chain is straight than branched.

boiling pt nButyl Bromide > t-Butyl Bromide.

n Butyl bromide has greater surface area.

(e) A mixture with 2 enantiomers (d,l) has

zero optical activity because rotation due to one isomer cancels rotation due to other.

Racemic mixture is optically inactive.

c) NO₂ shows -I and -R effect. Halogens are o-p directing. In nucleophilic substitution, anion appears at o & p position. Thus by -E & -R resonance, NO₂ stabilizes anion & increases reactivity.

~~$\Delta T_f = i k f.m.$~~

~~$\Delta T_f = 1.62 \text{ K} \cdot M^{-1}$~~

~~$m_{\text{benzene}} = 3.9 \text{ g}$~~

~~$m_{\text{benzene}} = 4.9 \text{ g}$~~

$$\text{moles} = \frac{3.9}{122}$$

$$1.62 = 4.9 \times i \times \frac{3.9 \times 1000}{122 \times 49}$$

~~$\frac{1.62 \times 122}{3.9 \times 100} = i$~~

~~$0.5067 \approx 0.50 = i$~~

Solute is associated

~~$i < 1$~~

Q. 20)

Zn is refined by Electrolytic refining.

Here impure metal is taken as anode.

Pure metal as cathode.

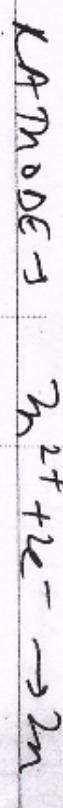
An electrolytic solution of common

ion is taken. also less basic

metals add to anode met eg - Pt, Au, Ag

In this manner impure metal is dissolved

In solution while pure metal is deposited at ca Node!



(ii) SiO₂ is used as flux ie



It is used to produce slag (insoluble)

of FeO. Thus helps to remove impurities.

(iv) Wrought iron / malleable iron is pure form
of commercial iron.

$$2) d = \frac{2 \times M}{N_A \times a^3}$$

$$M = 27 \text{ g/mol}$$

$$a = 2.05 \times 10^{-8} \text{ cm}$$

$$d = 2.7 \text{ g/cm}^3$$

$$N_A = 6.02 \times 10^{23}$$

$$2 = \frac{d \times N_A \times a^3}{M} = 2.7 \times \frac{6.02 \times 10^{23} \times (2.05 \times 10^{-8})^3}{27}$$

$$\tau = 4 + 8 + 3 \cdot 9.85$$

$$2 \approx 4 \quad \therefore \text{it is fcc}$$

Cohesive forces -
Face centred
unit cell)

22)

(ii)

Screening effect of subshells of orbitals.

This is because ionic contraction

is greater 'ie from element to elements' due to poor shielding of orbitals.

(iii)

Transition metals form coloured compounds

because of large no of electrons -

These undergo d-d transition as they absorb light and emit complementary colour.

Also they contain large no of d electrons which are unpaired.

and undergo transition under effect of ligand.

b)



23)

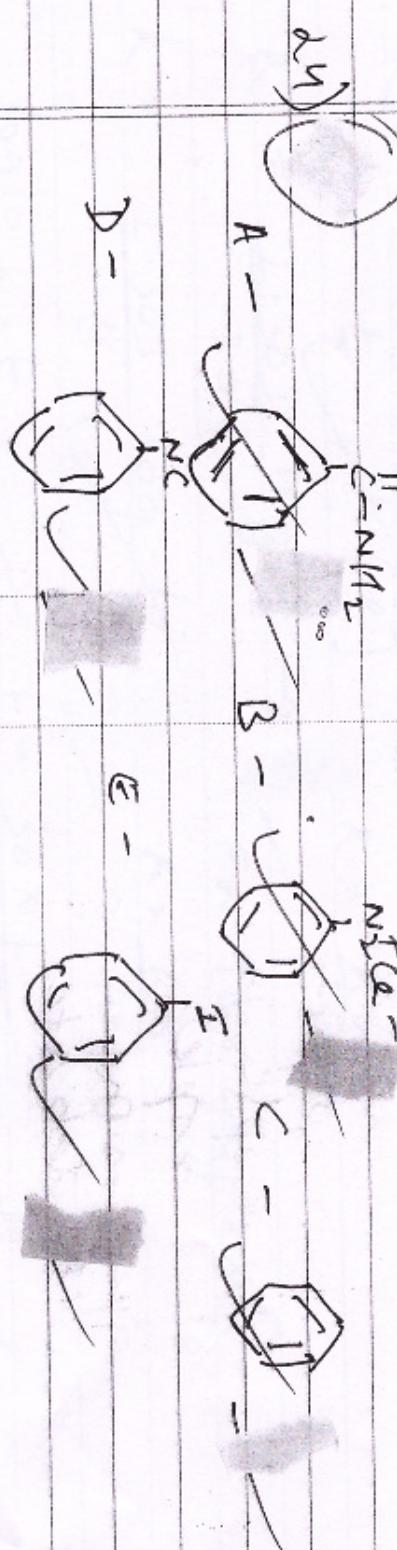
i) Mr Roy ~~displays~~ awareness, care to prevent
unhealthy, responsible behaviour

(ii)

- I would spread awareness by
- putting up posters, notices.
 - tell people importance of remaining fit.
 - make people aware of problems like diabetes, hypertension.
 - hold debates, on this issue.

(ii) Tranquillizers are used to relieve stress, anxiety, depression by inducing a sense of well being. They are neurologically active drugs. Major component of sleeping pills. e.g - IPRONAZIDE

(iv) Aspartame is unstable at high cooking temperature. Thus use of aspartame is limited to cold foods & drinks.



a) $\text{Rate} = k[A][B]^2$

(i) If concentration of B is doubled, Rate is increased by 4 times.

(ii) overall order now would be:

$$\text{Rate} = k[A]^0[B]^2$$

$\therefore \text{order} = 2$

b)

$$k = 2.303 \log \frac{k_2}{k_1}$$

$$k = \frac{R_2}{t}$$

$$k = \frac{2.303}{30} \log 2 = 5.$$

For 90% completion

$$k_2 = 2.303 \log 10$$

$$10$$

$$\frac{\log 10 - t}{\log 2} \therefore t = \frac{30 \times 1}{0.3010}$$

$t = 99.6 \text{ minutes. for } 90\% \text{ completion.}$

(b)

White phosphorous is more

reactive.

It consists of tetrahedral discrete units with
angular strain = 60° . Thus it is very

reactive.

(ii)

Supersonic jet aeroplanes are responsible
for depletion of ozone layer ..



\therefore nitrogen oxides reacted
convert $O_3 \rightarrow O_2$ \therefore reduced
 O_3 content.

(v) F_2 has lower bond dissociation bond enthalpy than Cl_2 because

1. small size
2. high electronegativity
3. Due to interelectronic repulsion.

(vi)

H_2 is used in filling balloons for meteorological observations.

(v)

