"Dear Sir, I don't attend the any IA Exam so I need Minimum passing Marks is 40 Plea I am requesting to you, you have to give above 40+ Marks and do the pass me My request Sir, really promise sir I don't attend the Any IA Exam in 5th sem, Sir Thank you"

I

1) Bio-Inorganic nanomaterials are the bridge between the solid state Inorganic material and living cell are called as a Bio-Inorganic nanomaterials.

5) Characteristics of alkaloids.

1) Alkaloids are Naturally obtained from ~~plants~~, Organics which are Saturated from plants.
2) They are very chiral purpose

3) Silicones are the organo silicone polymers containg Silicones are full filled by organic group like, CH_3, C_2H_5, etc they are also called as a Silicones.

* Use of Silicones :- 1) Rubbers, 2) Silicone fluids, 3) Silicone grase

8) Hook's law :- the restarting force of an oscillating pendulum is directly proportional to the displacement of the pendulum from it's mean position (or) equilibrium position - The restoring force acts in the opposite direction of displacement

$F \propto -x$

$\boxed{F = -Kx}$ where K = force constant

$x = 1$ where $F = K$

III 4) Principles of Green chemistry.

1) Prevention of waste
2) Maximaze atom economy
3) Non-toxic Products
4) Design safer chemical and Products
5) Design safer Solvents and reaction conditions
6) Design for eco effiency
7) Avoide chemical Accidents
8) Avoide Chemical derivatives
9) Use catalyst
10) Design chemicals and products which degrade to us After
11) Use the stalrable renawable matials

I 2) the contamination of the precipitate by substance that are normally soluble under the conditions of precipitation is called co-precipitation.

II

2) Gravimetric Analysis or quantive analysis by weight is the process of isolating & washing an element or a definite compound of the element is known as gram

Steps involved in the gravimetric analysis.

1) Preparation of solutions,

i) Simple solution is prepared generally but let soln solution is prepared

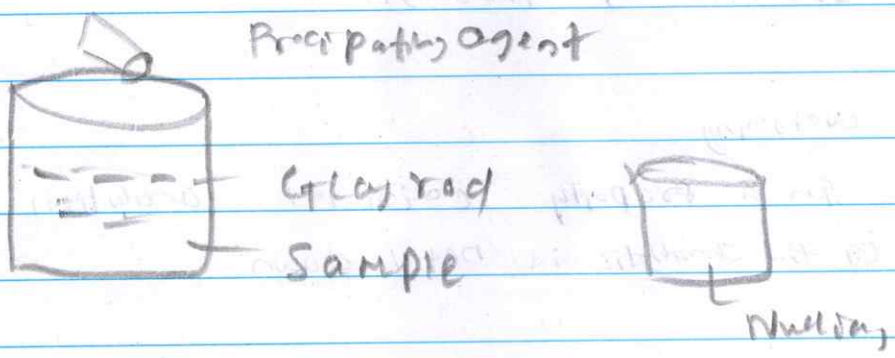
ii) Adjustment of the valume pH and getting the desired property of the solution is. teken care in the step

2) Precipitation :-

i) precipitating agent will be added in the sample solution and precipitating agent takes place

ii) Agent addition of first droop of precipitating agent super - saturation occurs

iii) Nutrolisation state after super saturation & Nucleus will grow further as precipitate



3) Digestion :-

i) The precipitate is left that (below boiling pt) for 30-60 minuts in order to adjust the particles,

ii) This digestion involves the dissolution of small particle & re-precipitation in larger ones. when cooling study

Saturated soln:- The solution obtained by dissolving maximum amount of solute of a given temprature is known as saturated soln.

Super saturated soln:- the solution which contains more amount of solute that is equired to saturate it known as super saturated soln

4) Filtration and washing:-

i) Take filter paper & filter the supernant liquid and Precipitate

ii) After filtration washing is done by hot water or electrolyte solution

iii) Impurities will be removed after washing

5) Drying and Ignition

i) After drying & ignition we get exactly known structure of the onlyte

6) weighing

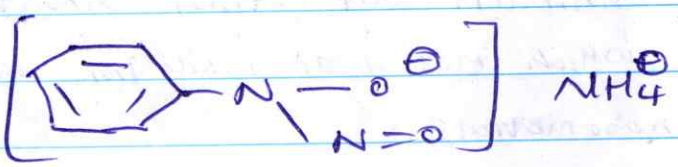
i) In a properly calibrated analytical balance weight of the analytic is noted down

7) Calculation

Calculate the prentage by mass analyting in sample

$$\frac{\text{Mass analyte}}{\text{Mass Sample}} \times 100.$$

4) Nitration reaction of Furan



10) Synthons are the imaginary fragments obtained by disconnection The concept of bond polarity with the fragment is of prime importance during disconnection. Synthon are not real compound but are idealized ion Nutral fragment and they are not reagents are known as synthons.

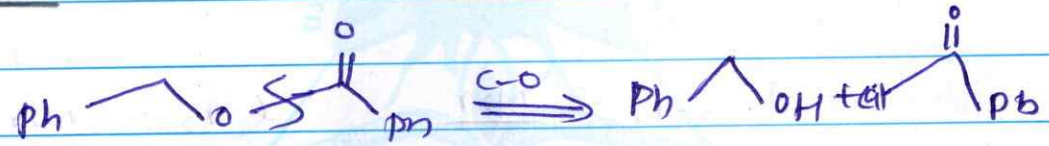
II 1) These are nano (small) objects with ~~three~~ any internal or external structures on the nanoscale do similar. At minimum one external dimension in the range of 1-nm. which material are made from nanoparticles, these are called nano materials.

V) 1) Retrosynthesis :-

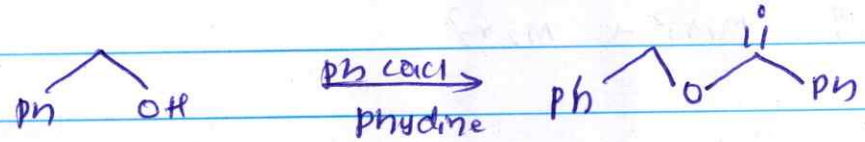
One group C-X disconnection :- the disconnection in which we used need to recognise only one functional group to know the position of disconnection are known as one-group disconnection a bond joining carbone to hetroatom.

$$R-X \Longrightarrow R^{\oplus} + X^{\ominus}$$

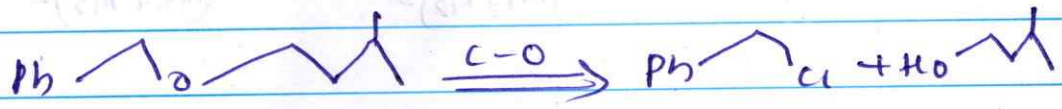
Example :-

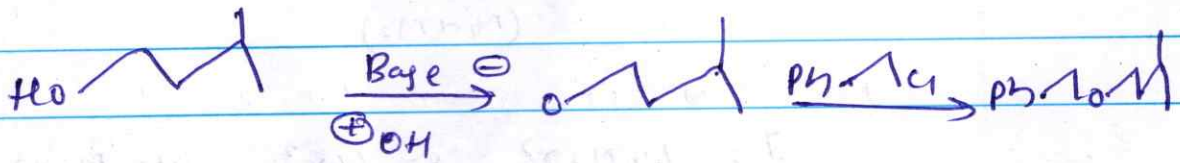


Synthesis



Ex:-

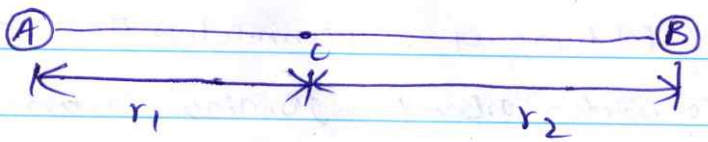




IV) 1) Let us consider diatomic molecule A —— B

A rigid diatomic may m_1 & m_2 joined by together by regidity

Length $r = r_1 + r_2$



From the Determination of Centre of gravity we can write as,

$$m_1 r_1 = m_2 r_2 \quad \text{——(1)}$$

$$I = m_1 r_1^2 + m_2 r_2^2 \quad \text{——(2)}$$

$$I = r_1 r_2 (M_1 + M_2) \quad \text{——(3)}$$

$$\therefore r_1 = \frac{M_2 r}{(M_1 + M_2)} \quad \& \quad r_2 = \frac{M_1 r}{M_1 + M_2}$$

Substituting eqn (3) we get

$$I = m_1 r_1^2 + m_2 r_2^2$$

$$= \frac{m_1 m_2^2 r^2}{(M_1 + M_2)^2} + \frac{m_2 m_1^2 r^2}{(m_1 + m_2)^2}$$

$$= \frac{M_1 M_2 (M_1 + M_2) r^2}{(M_1 + M_2)}$$

$$I = \frac{M_1 M_2 r^2}{M_1 + M_2} = \mu r^2, \quad \mu = \frac{m_1 m_2}{m_1 + m_2}$$

Where μ = reduced mass

$I = \mu r^2$ By defn of Angular momentum

$L = I\omega$ — (5)

where ω = Angular Momentum.

$L = \sqrt{J(J+1)}\ h/2\pi$ — (6)

where J = rotional quantum number

The energy of a rotating molecule is give by

$\Rightarrow E_r = \frac{1}{2} I\omega^2$

$= \frac{I\omega^2}{2I}$

$= \frac{L^2}{2I}$

Substitute the value of L

$E_r = \frac{L^2}{2I} = J(J+1)\ \frac{h^2}{4\pi^2} \times \frac{1}{2I}$

$E_r = \frac{h^2}{8\pi^2 I} J(J+1)$

Expression for Rotational energy

h = Planks constant rotational energy.

J = Rotational quantum number

I = Momentum Inertia

$E = h\nu$ or $\nu = \frac{E}{h} = \frac{h}{8\pi^2 I} J[J+1]$

we have $\nu = \frac{c}{\lambda} = c \times \frac{1}{\lambda}$

$= c * \bar{\nu}$

$\bar{\nu} = \frac{\nu}{c}$

Putting the value of ν we get

$$\bar{\nu} = \frac{h^2}{8\pi^2 I c} J(J+1) = BJ(J+1)$$

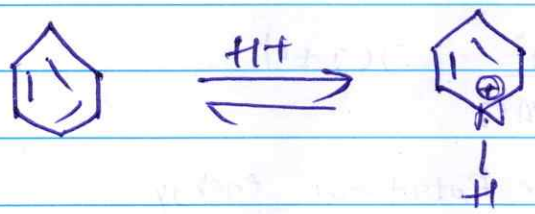
Where number $\nu = BJ(J+1)$

Where $B = \frac{h^2}{8\pi^2 I c}$

Where B is called rotational constant.

2) Pyridine

In pyridine Nitrogen contains lone pair of $e^{\ominus}$ This lone pair of electrons does not participate in delocalization is readily available for protonation. So pyridine is basic nature in



Pyridinium Salt

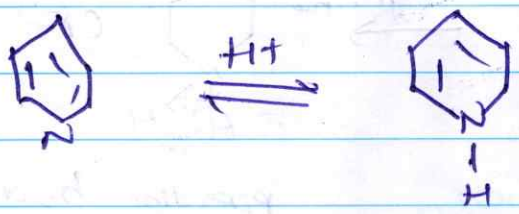
Pridine is more basic than Pyrrole

In Pyrrole the lone pair of electrons on nitrogen atom is involved in the delocalization sonew electrons

available for protonation.

$\xrightarrow{H^+}$ No electron is available for protonation.

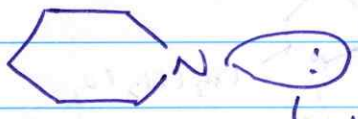
In Pyridine the third sp^2 orbital containing lone pair of electrons these lone pair of e⁻s does not involve in the delocalization and it readily available for protonation



Pyridinium salt

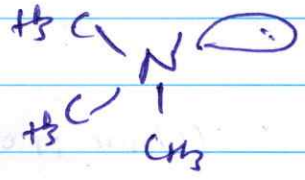
B) Pyridine is less basic than aliphatic amines.

In Pyridine nitrogen is sp^2 hybridization where as in aliphatic amines the nitrogen is sp^3 hybridization The sp^2 hybridization nitrogen is more electronegative than sp^3 hybridized nitrogen the lone pair of electrons is held.



Pyridine (Less Basic)

Lone Pair in sp^2 hybrid Orbital

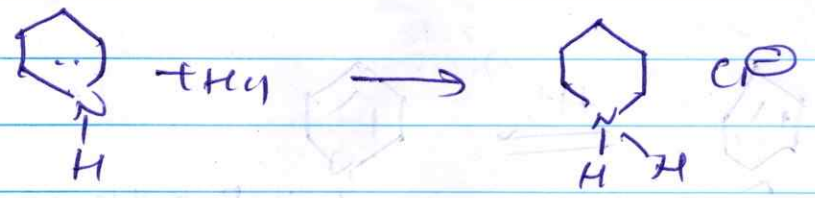


Trimethyl Amine (More basic)

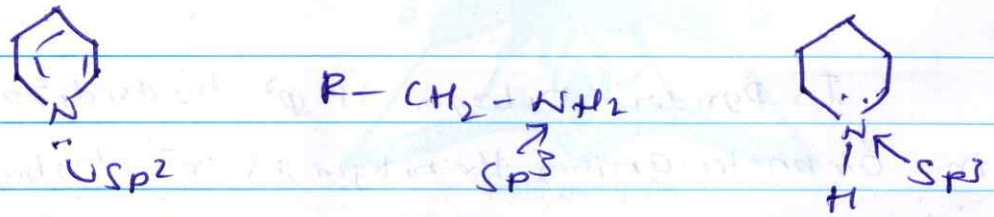
Lone pair in sp^3 hybrid Orbital

c) Piperdine & Puridine

Piperdine is not an aromatic compound and lone pair on the nitrogen atom in it is fully available for protonation. It react with I_2 to give Piperdine hydro chloride with HCl to give piperdine hydrochloride that why Piperdine is a strong base as compared to pyridine



Piperdine — piperdine hydrochloride

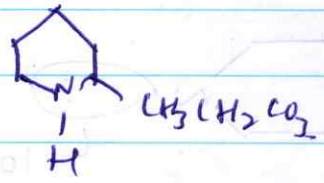


(More electronegative) (less electronegative)

III 3) Constitution of conine

- Molecular formula of conine is found to be $C_8H_{17}N$

Structural formula

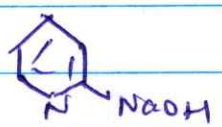


- Conine is one the simple alkoid and Poisonous toxic substance present in the seeds and other parts of the spotted hemlock a shrub growing in wet locations

* Isolation:- Seeds of the weed are Powdered & distilled with NaOH soln & distilled way. extracted with ether to get Conine

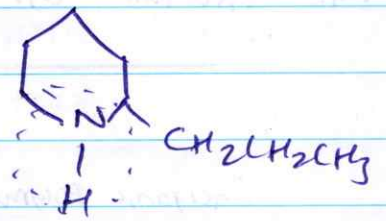
Constitution and synthesis of conine

- Presence of Pyridine derivative Conine with distilled with zinc dust it gives Conine with oxidation with permanganate give 2-Pyridine Carboxylic acid

$C_8H_{17}N \xrightarrow[-3H_2]{Zn} C_8H_{11}N \xrightarrow{[O]}$ 

Conine — Conynine — Pyridine-2 Carboxylic acid

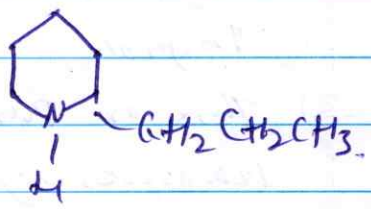
- On heating with hydrochloric acid and Phosphorus Conine is reduced to give n-octane this shows that the side contains is n-propyl not isopropyl



$\xrightarrow[+4[H]]{HI/\Delta}$ $CH_3(CH_2)_6CH_3$ n-Octane

Therefore it stands to that Conine by the structure

- An additional evidence

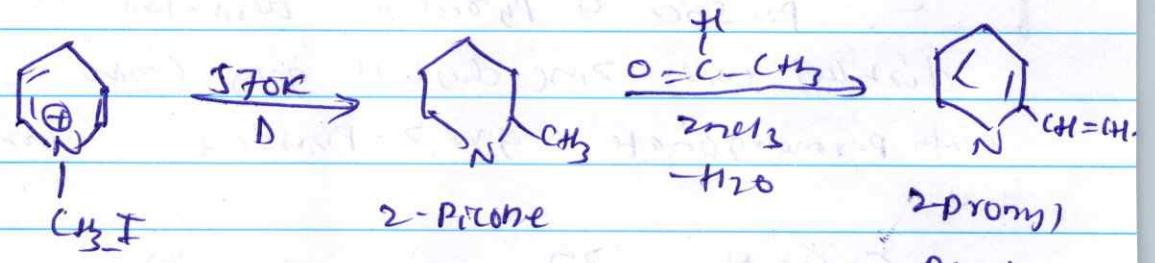


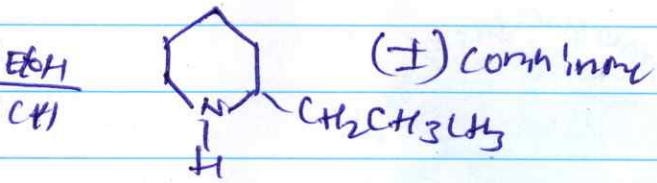
for the above structure of Conine is attached by the exhaustive Methylation & allowed with gives an Alkene

[P.T.O

With the elimination of nitrogen gas as $(CH_3)_2N$ the complex can be reduced to form n-Octane

The structure of coniine finally formed by Ladenburg synthesis



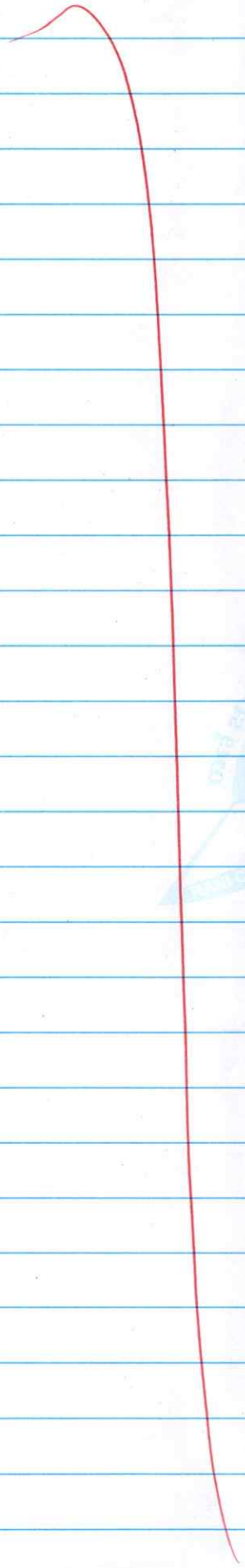


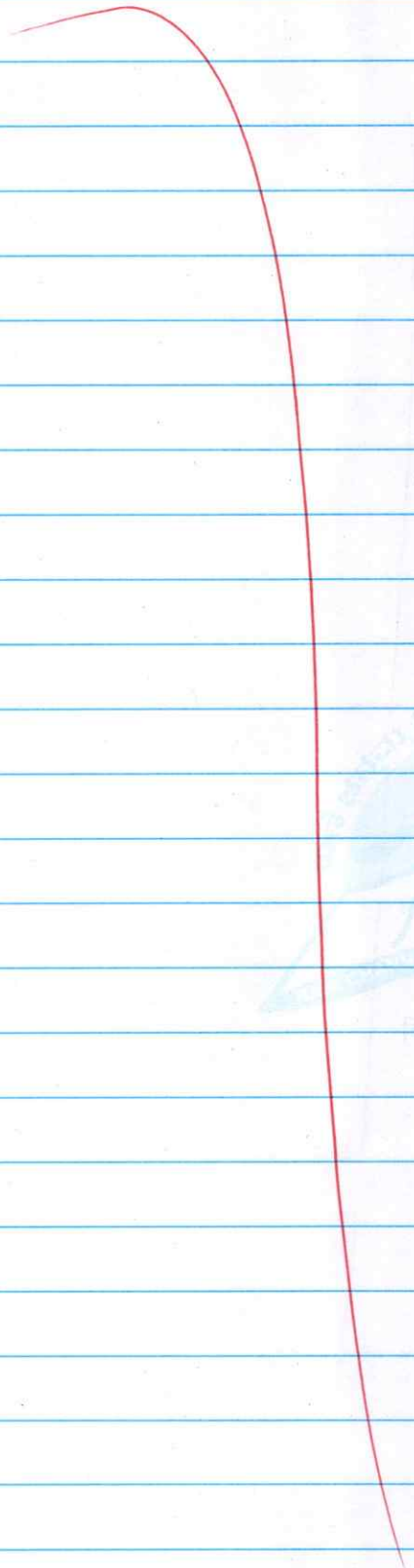
II

4) Phosphazenes :- These are cyclic or linear polymers in which $-N=P-$ repeating units in their structure are called as a Phosphazenes

Organic Polymers	Inorganic Polymers
1) Organic polymers are soft and melt at high temp	1) Inorganic polymers do not burn
2) Organic polymers are Generally Soft	2) Inorganic polymers are generally harder and more brittle
3) These are polymers which have weak intermolecular forces and low density of content bonds are soft	3) These are polymers which have strong intermolecular forces with a high density of covalent bonds are generally softer

4) These are polymers are Partially amorphy & partially Crystalline	4) These are obtained either in pure crystalline form Pure amorphy form
5) Inorganic Polymer breaks upon isented by 10%.	6) generally much less brittle than organic polymers





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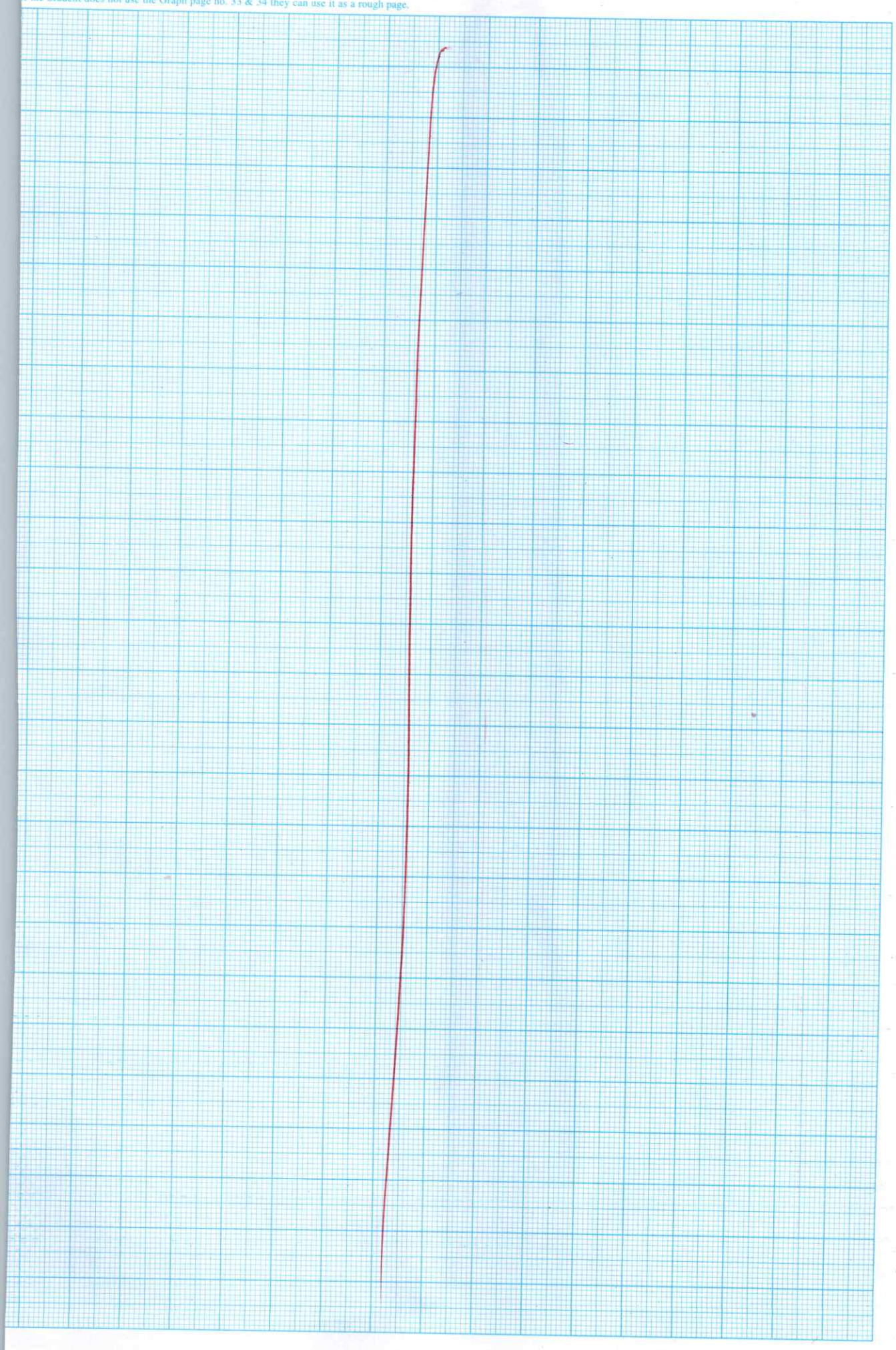

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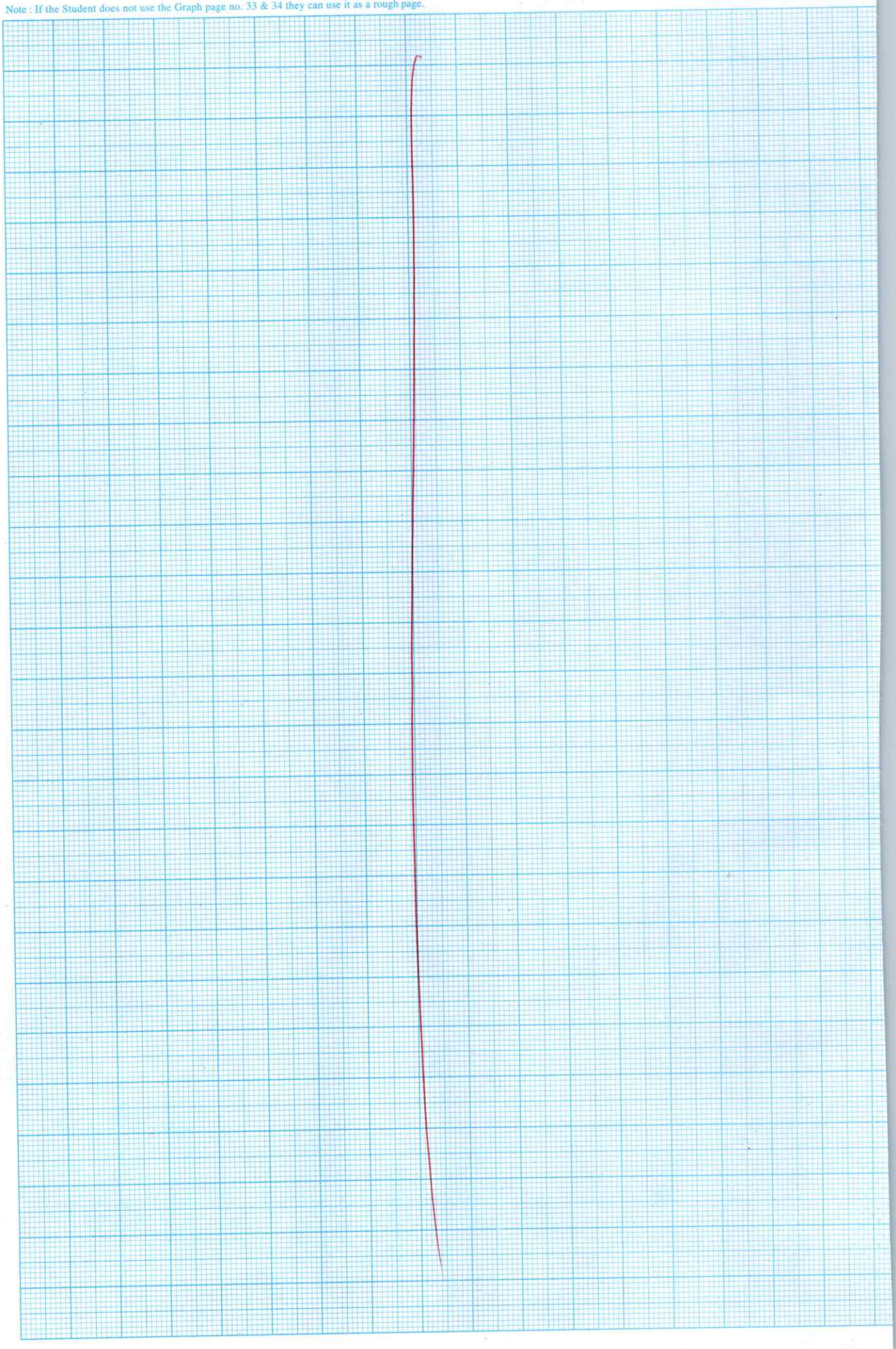

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Part - III

To be filled by Examiner (Second Valuation)

Examiner Code

Signature of the Examiner

Reviewer Code

Signature of the Reviewer

Date

Qn.	Marks							Total Marks	Qn.	Marks							Total Marks
	A	B	C	D	E	F	G			A	B	C	D	E	F	G	
1									13								
2									14								
3									15								
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12									24								
								Sub Total									Sub Total

Grand Total in words _____ Grand Total

Part - II

To be filled by Examiner (First Valuation)

Examiner Code 1 3 3 0 1

Signature of the Examiner

Reviewer Code 1 3 4 4 6

Signature of the Reviewer

Date

Qn.	Marks							Total Marks	Qn.	Marks							Total Marks
	A	B	C	D	E	F	G			A	B	C	D	E	F	G	
1	1								13	14			4				09
2	2								14								
3	1								15	4	4	3					11
4	0								16								
5	1								17	4	—						04
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8	2								20								
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10	1								22								
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								Sub Total 08									Sub Total 26

Grand Total in words Thirty four only. Grand Total 34.