

marks

12

- i] -a ii] -b iii] -a
- iv] -b v] -a vi] -b
- vii] a - positive viii] b - bromine ix] CO₂ limewater
- x] a - conjugate acid xi] a - Arrhenius concept xii] b - 10mg/kg
- xiii] b xiv] a xv] a
- xvi] b xvii] a xviii] ~~a~~ c

B]

03

- i] True ii] - True iii] False
- iv] True v] False vi] False

C]

05

- i] -d ii] -f iii] e) blue colour
- iv] I^- - g) soft base v] a vi] c

Questions should be —

WRITTEN IN LEGIBLE HANDWRITING IN BLACK INK.
SIGNS, SKETCHES OR FIGURES IF ANY BE DRAWN IN NEAT BLACK INK,
so as to avoid mistakes in the printed question papers.

Duration Hours.

Total Marks assigned to the paper

Q. No.	N.B. :	Marks
020]		
A	Defination of Joule-Thomson effect — 1 Mark Show $\Delta H = 0$ — 4 marks	
B	Van-der waals equation $(P + \frac{an^2}{V^2})(V - nb) = nRT$ — 1 mark Deviation at low pressure — 1 mark Deviation at high pressure — 1 mark Deviation at high temperature — 1 mark Deviation at low temperature — 1 mark	
C.	$\Delta G = -67 \text{ kJ} = -67000 \text{ J}$ $\Delta H = -42 \text{ kJ} = -42000 \text{ J}$ } 1 mark $\Delta H - \Delta G = T\Delta S$ — 1/2 mark $\Delta S = 83.3 \text{ J K}^{-1}$ correct answer + unit (1 1/2 mark) $\Delta G = \Delta H - T\Delta S$ — 1/2 mark $\Delta G = -71155 \text{ J}$ correct answer + unit (1 1/2 mark)	
D.	Defination of equilibrium constant — 1 mark Derive $K_p = K_c \times (RT)^{\Delta n}$ — 4 marks	
E.	Applying volume correction $V_i = V - nb$ — 2 marks Applying pressure correction due to force of attraction — 2 marks final derivation of vander-waals equation — 1 mark	

Q. No.

02

F

Marks

$$K_c = 227.8$$

— (1 ½ marks)

$$K_p = K_c (RT)^{\Delta n}$$

— (1 mark)

$$\Delta n = \text{No. of moles of Product} - \text{No. of moles of Reactants}$$

$$= 1 - 3 = -2$$

$$T = 327 + 273 = 600 \text{ K}$$

$$K_p = 1.11 \times 10^{-5}$$

(1 ½ marks)

1 mark

Sem II Chemistry I

Q. No.

Q.3

A)

Sulphite s , 0.1 m
 each paper, read acetates
 Dichromate paper & DMG
 Sulphides s 0.1 m
 paper preparation.

and

Ni^{+2} 0.1 m .

with reaction - any two 0.2 m .

B)

precipitation equilibria.

solubility - explain 0.1 m

solubility product. 0.2 m

define - 0.1 m

example. 0.1 m

C)

What is ionic strength? Discuss its
 relation with activity of ions

define. what is uncommon ion
 or salt effect 0.1 m

$$a = \gamma C$$

complete explanation. 0.1 m

0.3 m

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Q. No.	N.B. :	Marks
Q3	<p>D) Classification of substances of acids & bases (Solvent system)</p> <p>Defination 1 M</p> <p>Applicability to protonic & non protonic Solvents 1 M</p> <p>produce cations — Solvent cation 1 M</p> <p>produce anions — Solvent anion 1 M</p> <p>Reactions 1 M</p>	
	<p>E) Different types of Lewis acids & bases</p> <ul style="list-style-type: none"> • Simple Cations — Defination, reaction 2 M • molecules whose central atom linked with more electronegative atom 1 M • molecules whose central atom have vacant d orbitals. 1 M • molecules whose central atom have vacant p orbitals. 1 M. 	
	<p>F) Limitations of Lowry-Bronsted Concept</p> <p>Defination 1 M</p> <p>4-5 limitation 4 M.</p>	

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Q. No.

Marks

N.B. :

4

- A] β -elimination definition 1m.
 Example following E_2 mech. 1m.
 Mechanism $\frac{1}{2}$ m.
 Meaning of E_2 and rate equation $\frac{1}{2}$ m.
- B] i) Reaction for preparation 1m.
 Reason for low yield (reversibility of reaction) 1m.
 Use of oxidising agent like H_2O_2 increases yield 1m.
 ii) Lesser the reactivity of the reagent, greater the selectivity. 1m.
 Example of Cl_2 & Br_2 1m.
- C] Reaction
 Identification of major and minor products $2\frac{1}{2}$ m.
 Explanation on basis of Saytzeff rule. $\frac{1}{2}$ m.
- D] $CH_2=CH_2 + BH_3 \rightarrow CH_3-CH_2-BH_2 \xrightarrow{CH_2=CH_2} (CH_3CH_2)_2BH$
 $(CH_3CH_2)_3B$ $\xrightarrow{CH_2=CH_2} (CH_3CH_2)_2BH$] 2m.
- $(CH_3CH_2)_3B \xrightarrow{H_2O_2} (CH_3CH_2O)_3B$ 1m
 $(CH_3CH_2O)_3B \xrightarrow{aq. alkali} CH_3CH_2OH$ 1m.
- Rule governing addition — Anti Markownikoff rule 1m

[P.T.O.]

Q. No.

05.

Marks

A. Statement of Le-Chatelier Principle — 1 mark

Effect of temperature / pressure / volume /

concentration / catalyst

(any four variables)

— 4 marks

B.

$$\text{No. of moles of } \text{CO}_2 = \frac{11.0}{44.0} = 0.25 \text{ mol}$$

$$V = 1.5 \text{ dm}^3 = 1.5 \times 10^{-3} \text{ m}^3$$

} — 1 mark

$$\textcircled{1} P = \frac{nRT}{V} \quad (\text{Ideal gas equation}) \quad \text{— 1 mark}$$

$$P = 4.129 \times 10^5 \text{ Nm}^{-2} \quad \text{— 1 mark}$$

 $\textcircled{2}$ using Van der Waals equation

$$P = \frac{nRT}{(V-nb)} - \frac{an^2}{V^2}$$

— 1 mark

$$P = 4.059 \times 10^5 \text{ Nm}^{-2}$$

— 1 mark

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Q. No.	N.B. :	Marks
Q.5 =	g)	
	What are dry and wet test	
	Explain.	
	dry test with explanation	2 1/2 m.
	wet test with example and explanation	2 1/2 m.

Sem II Chemistry I

Page No.

Marks

9/10

Q. No.

Q 5 D) PH calculation 0.1M NaOH vs 0.1M HCl

a) 5.0 cm³ NaOH added PH - 1.58 - 2Mb) 4.9 cm³ — PH 3.30 - 2M

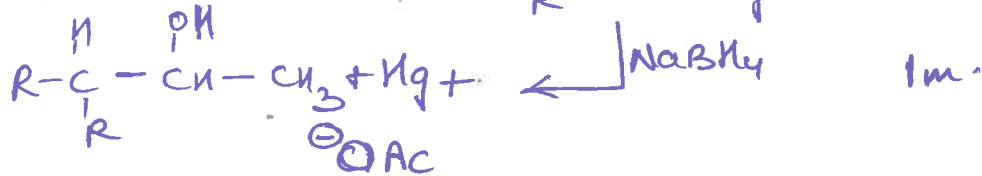
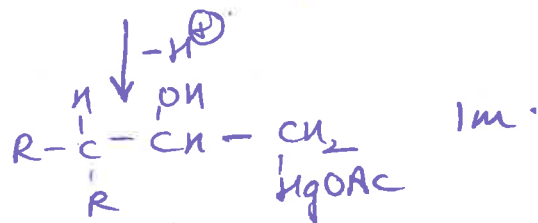
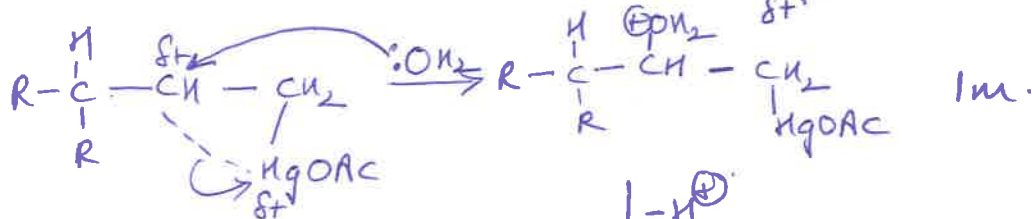
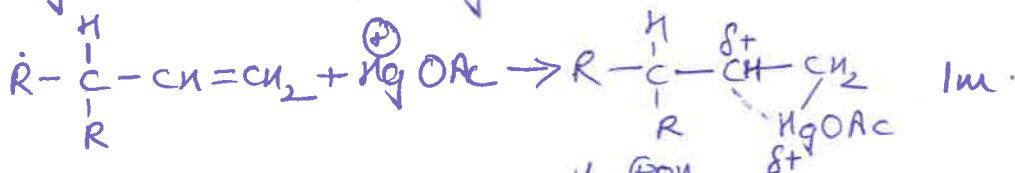
c) Neutralization curve 1M

5 Q. No. E]

Definition of conjugated diene with example.

2m.

1,2- addition & 1,4- addition reactions $\frac{1}{2} + \frac{1}{2}m$.



Marks