

N.B. : 1) All questions are compulsory

2) Figures to the right indicate full marks.

3) Use of log tables/non-programmable calculator is allowed.

4) Answers to the two section should be written on the same answerbook

- Q1. A Explain the type of hybridization involved in BaCl_2 molecule. 3
- B Answer any **three** of the following :
- i Explain using M.O. diagram Be_2 molecule does not exist. 4
- ii Construct a labeled M.O. diagram for fluorine molecule. 4
- iii Explain paramagnetism of the oxygen molecule on the basis of MOT. 4
- iv Explain in detail concept of resonance. 4
- v MnO_4^- has tetrahedral geometry explain on the basis of hybridization. 4
- Q 2. A Give the electronic configuration of the last three elements of 3d transition elements. 3
- B Answer any **three** of the following:
- i Explain magnetic properties of 3d transition elements. 4
- ii On the basis of VBT, explain the structure of $[\text{Ni}(\text{CN})_4]$. 4
- iii Write a note on washing of precipitate in gravimetric analysis. 4
- iv Explain the use of DMG in gravimetric analysis. 4
- v Write a note on Ostwalds ripening. 4
- Q 3. A Explain Hoopes process of electrorefining of aluminium. 3
- B Answer any **three** of the following
- i Write a note on froth floatation process. 4
- ii Explain smelting in pyrometallurgy. 4
- iii Write a note on hydrametallurgy of silver . 4
- iv Explain different catalyst used in oxidation of SO_2 to SO_3 . 4
- v Explain effect of temperature and pressure in the manufacture of ammonia by Habers process. 4
- Q 4 A Give electronic configuration of first three elements of group 15 Elements. 3
- B Answer any **three** of the following

	i	Write a note on Pearsons concept of acid and base.	4
	ii	Explain hydrogen bonding.	4
	iii	Give applications of organometallic compounds.	4
	iv	Write a note on Usanovich concept.	4
	v	Explain 18 electron rule.	4
Q 5	A	Explain oxidation properties of Halogens.	3
	B	Answer any three of the following:	
	i	What are similarities between Halogens and pseudohalogens ?	4
	ii	Give an account of preparations and uses of thiocyanogen.	4
	iii	On the basis of VBT explain the structure of XeF ₄ .	4
	iv	Write a note on chlorophyll.	4
	v	Explain the structure and bonding in XeF ₂ .	4
Q 6	A	Explain the various types of corrosion.	3
	B	Answer any three of the following :	
	i	Write a note on electrochemical theory of corrosion.	4
	ii	Discuss the control measures of water pollution.	4
	iii	Write a note on environmental protection act.	4
	iv	Explain the cathodic protection method in prevention of corrosion.	4
	v	What are the sources and effects of soil pollution ?	4