

Pre - University Examination (2020)

B.Sc. I

TIME -3h

(PAPER II) [INORGANIC CHEMISTRY]

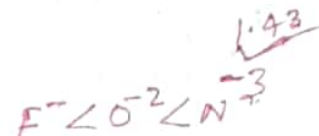
M.M: 45

Note - Attempt only five questions. All questions carry equal marks. Question no.1 is compulsory.

Attempt two questions from each section.

Q.1. Answer not more than 200 words

- Why is the difference between first and second ionization potential of group I element so high?
- Explain why the alkaline earth metal oxides are less basic than those of alkali metals.
- Explain why NF_3 is pyramidal but BF_3 is planar.
- Which of the following isoelectronic anion has the largest radius: N^{3-} , O^{2-} , F^-
- What are the consequences of "inert pair effect"?



[Section - A]

Q. 2. Discuss the group trends in the members of the carbon family from the following view points:

- Electronic configuration.
- Oxidation states.
- Nature of their hydrides
- Nature of their oxides.
- Catenation.

Q.3. Define electronegativity. How does it vary in a period and a group of the periodic table? How electronegativity is related with polarity of a chemical bond? Discuss the Pauling's scale of electronegativity.

Q.4. Give preparation, properties and structure of borazine. Why is it called as inorganic benzene?

Q.5. Explain Born- Haber cycle. How is it related with lattice energy of an ionic crystal?

[Section -B]

Q.6.(a) How does lithium occur in nature? Describe one method for its isolation.

(b) What are the Fajan's rules of polarization? What is the significance of polarization of ions?

Q.7. Discuss any two of the following -

(a) Discuss the structure of diborane.

(b) Describe VSEPR theory. How does the geometry changes in the following transformation?

Q.8 Write short note on any two of the following:-

(a) Discuss the hybridization in octahedral compounds with suitable examples.

(b) Explain reducing property of hydrazine with two examples.

Q.9. Write short note on any two of the following-

(i) Metallic bond

(ii) Fluorides of Xenon

(iii) Structure and basicities of oxyacids of sulphur