

- NOTE: i) All the questions are compulsory.
ii) Figures to right indicate full marks.
iii) Use of non-programmable calculator / log table is allowed.

Q.1. Attempt any four:

[20]

- A) Discuss the following terms i) oxidation state ii) metallic-nonmetallic characters.
- B) What is diagonal relationship? Explain it with suitable example.
- C) Write a note on anomalous behaviour of lithium.
- D) Write down the uses of calcium oxide.
- E) Define nitrides. Give classification of nitrides.
- F) What are carbides? Describe general characteristics of carbides.
- G) What is common name & chemical formula of i) sodium carbonate ii) sodium hydroxide
iii) sodium bicarbonate iv) sodium chloride v) calcium oxide.
- H) Write a short note on Acid rain.

Q.2. Attempt any four:

[20]

- A) Explain i) optical isomers chain isomers ii) position isomers.
- B) Explain the Lowry-Bronsted acid and bases theory and give its applications.
- C) Define i) Enantiomers and ii) Diastereoisomers.
- D) Explain different types of Lewis acid and bases.
- E) Explain i) Erythro isomers ii) Threo isomers.
- F) What is Pearson's principle? Write down applications of HSAB concept.
- G) Explain hard and soft acid base concept.
- H) Explain Usanovich concept. Give advantages of it.

Q.3. Attempt any four:

[20]

- A) Explain with examples- i) Addition reaction ii) Elimination reaction.
- B) Explain mechanism of SN^1 reaction with energy profile diagram.
- C) What is Friedel-Craft's Alkylation? Explain its mechanism.
- D) Explain mechanism of free radical chlorination of propane.
- E) Give two methods of preparation of alkanes.
- F) What is E^1 reaction and give its mechanism.
- G) Explain Markownikoff's rule with suitable example.
- H) Write down the factors affecting SN^1 and SN^2 reactions.

Q.4. Attempt any three:

[15]

- A) Write the note on anomalous behavior of nitrogen.
- B) Write a note on Green house effect.
- C) Explain Lux-flood concept of acid and bases.
- D) Write a note on solvent-solute system.
- E) Draw energy profile diagram of SN^2 reaction mechanism.
- F) What is E^2 reaction and explain its mechanism.

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