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Guess Paper – 2009
Class – XII
Subject – CHEMISTRY

p-BLOCK ELEMENTS (GROUP-16 REASONING)

Give reasons:

(i) Sulphuric acid has high boiling point and viscosity.
(ii) Oxygen almost invariably exhibits an oxidation state of -2 but the other members of the family exhibit negative as well as positive oxidation states of +2. +4 and +6.
(iii) Explain why SF_6 is known but OF_6 is not known.
(iv) An acidified $K_2Cr_2O_7$ paper turns green when exposed to SO_2.
(v) H_2S acts only as reducing agent while SO_2 can act both as a reducing agent and an oxidizing agent.
(vi) Ozone destroys mercury meniscus.
(vii) Sugar turns black on addition of conc. H_2SO_4.
(viii) SF_6 is known but SH_6 is not known.
(ix) SF_6 is not easily hydrolyzed.
(x) SO_3 has zero dipole moment.
(xi) $SOCl_2$ act as weak Lewis acid as well as weak Lewis base. Explain.
(xii) Sulphur dioxide is more powerful reducing agent in an alkaline medium than in acidic medium.
(xiii) Dry SO_2 does not bleach dry flowers.
(xiv) H_2S is stronger acid than H_2O.
(xv) Nitric acid cannot be used to prepare H_2S.
(xvi) The bond angle in H_2S is lower than in H_2O.
(xvii) Concentrated H_2SO_4 cannot be used for drying H_2.
(xviii) $KMnO_4$ should not be dissolved in conc. H_2SO_4.
(xix) Sulphur hexafluoride is used as a gaseous electrical insulator.
(xx) SCl_6 is not known but SF_6 is known.
(xxi) Conc. H_2SO_4 can be used as an oxidising agent.
(xxii) SO_2 acts as a reducing agent.
(xxiii) Bleaching of flowers by Cl_2 is permanent, while that by SO_2 is temporary.
(xxiv) Sulphur in vapour state exhibit paramagnetic behaviour.
(xxv) Sulphur exhibits greater tendency for catenation than selenium.
(xxvi) Sulphur disappears when boiled with an aqueous solution of sodium sulphite.
(xxvii) Among the hydrides of elements of group 16, water shows unusual physical properties.
(xxviii) Tendency to show -2 oxidation state diminishes from sulphur to polonium in group 16.
(xxix) Thermal stability of water is much higher than that of H_2S.
(xxx) SF_6 is much less reactive than SF_4.
(xxxi) Oxygen is a gas while sulphur is a solid.
(xxxii) Water is liquid while H_2S is a gas.
(xxxiii) In the manufacture of sulphuric acid by the contact process, sulphur trioxide is not directly dissolved in water.
(xxxiv) For the dilution of H_2SO_4, water should not be added to conc. H_2SO_4.
(xxxv) Liquid oxygen sticks to the magnet pole but liquid nitrogen does not.
(xxxvi) SO_2 acts as a bleaching agent.
(xxxvii) A white turbidity is obtained by passing H_2S in aqueous solution of SO_2.
(xxxviii) Ozone is used as sterilizing agent.
(xxxix) Ozone is more reactive than oxygen.
(xl) Oxygen is paramagnetic.
(xli) A fresh stain of iodine can be washed out with hypo solution.
(xlii) H_2S is a better reducing agent than water.
(xliii) Ozone is used in improving the atmosphere of crowded places such as cinema hall, tube railways, etc.

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(xliv) Sulphur in vapour state exhibit paramagnetic behaviour.
(xlv) Ozone is diamagnetic and O-O bond lengths are equal.
(xlvi) Ozone is thermodynamically unstable.
(xlvii) SO_2 decolourises acidified potassium dichromate solution.
(xlviii) Sulphurdioxide gives addition reactions with Cl_2, PbO_2, O_2 etc.

Q2 Zinc reacts with dil. H_2SO_4 to give H_2. It also reacts with concentrated H_2SO_4 to give SO_2. Explain these two different behaviours.

Q3 Explain why in spite of nearly the same electronegativity, oxygen forms hydrogen bonding while chlorine does not.

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