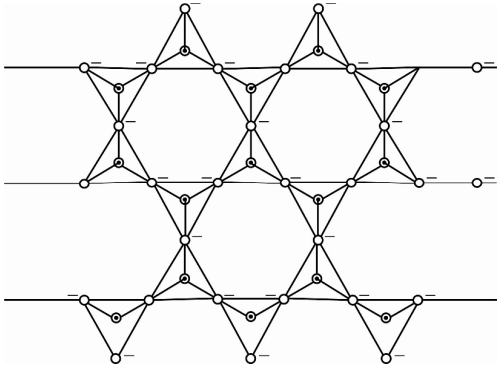
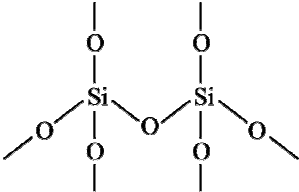
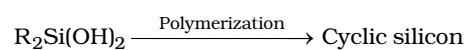
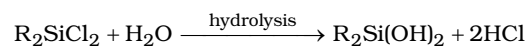


Level - 1	DTS-3
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- 31.(A)** Monosilane (e.g., SiH_4) on coming in contact with air burns with a luminous flame producing vortex ring. These rings are of silica. $\text{SiH}_4 + 2\text{O}_2 \longrightarrow \text{SiO}_2 + 2\text{H}_2\text{O}$
- 32.(D)** Zeolites are aluminosilicates having three dimensional open structure with four or six membered ring, they have cavities and can take up water and other small molecules.
- 33.(C)** MCl_2 oxidation state of $\text{M} = +2$; MCl_4 oxidation state of $\text{M} = +4$
Higher the oxidation state, smaller the size, greater the polarizing power and greater the covalent character. Hence, MCl_4 is more covalent and MCl_2 is more ionic.
- 34.(AB)** C-60 is called Buckminster fullerene. It is discovered in 1990 as a constituent of soot. Its shape is like a soccer ball. It is a covalent network solid.
- 35.(B)** Stannous chloride (SnCl_2) is a good reducing agent. It reduces HgCl_2 into Hg (grey precipitate), in two steps. $\text{SnCl}_2 + 2\text{HgCl}_2 \longrightarrow \text{SnCl}_4 + \underset{\text{white}}{\text{Hg}_2\text{Cl}_2} \downarrow$; $\text{SnCl}_2 + \underset{\text{white}}{\text{Hg}_2\text{Cl}_2} \longrightarrow \text{SnCl}_4 + \underset{\text{grey}}{2\text{Hg}} \downarrow$
- 36.(B)** The structure of silicates has been found with the help of X-ray diffraction technique. All silicates have tetrahedral SiO_4^{4-} ion as a basic building unit i.e., all silicates are composed of many units. Tetrahedral shape of $[\text{SiO}_4]^{4-}$ ion is due to sp^3 -hybridisation of Si-atom. Sheet silicates are formed when three oxygen (bridging O-atoms) of each $(\text{SiO}_4)^{4-}$ unit are shared. Hence general formula of sheet silicates is $(\text{Si}_2\text{O}_5)_n^{2n-}$.
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- 37.(D)**
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- 38.(A)** The correct decreasing order of catenation property of group 14 elements is as $\text{C} \gg \text{Si} > \text{Ge} = \text{Sn} > \text{Pb}$
Catenation property is directly proportional to the bond energy.
- 39.(A)** R_3SiCl on hydrolysis can only form a dimer.
- 40.(C)** Tin is oxidised to meta stannic acid when it is treated with nitric acid
 $\text{Sn} + 4\text{HNO}_3 \longrightarrow \text{H}_2\text{SnO}_3 + 4\text{NO}_2 + \text{H}_2\text{O}$
- 41.(A)** $(\text{CH}_3)_2\text{SiCl}_2$ undergoes hydrolysis but $(\text{CH}_3)_2\text{CCl}_2$ does not because in Si, low lying d-orbital is present.
- 42.(C)** The reluctance of the s-electrons of the valence shell to take part in bonding is called inert pair effect. It increases on moving down in a group. Hence, Pb shows most pronounced inert pair effect.

43.(B) B_2H_6 is electron deficient due to presence of $3c - 2e^-$ bond.

44.(D) Cyclic silicone is obtained by hydrolysis of R_2SiCl_2 .



45.(B) Due to smaller size and better overlapping.