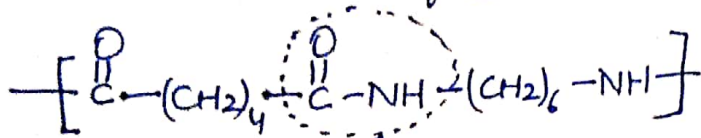


Questions from Synthetic polymers

Q1. Nylon stocking gets a hole with a drop of HCl, explain

Ans - Structure of Nylon-66 used in making elastic hosiery



the amide bond is hydrolysed by HCl

Q2. How rubber is vulcanized? How the vulcanization improves properties of natural rubber.

Ans - Natural rubber is soft and tacky, becomes brittle at low temperatures. It 285-335 K temp range, its elasticity is maintained.

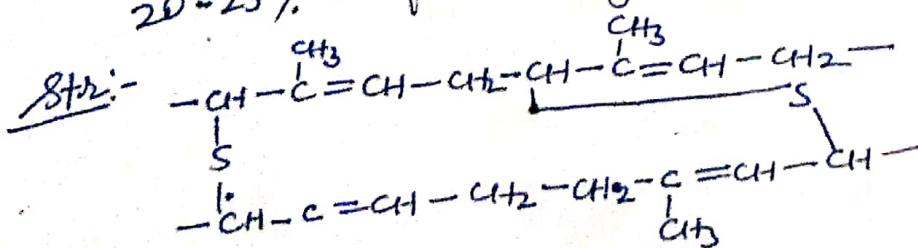
When raw rubber is heated with sulphur at 373-415 K it is vulcanized slowly. To accelerate the rate, some additives like 2-Mercaptobenzothiazole, C1=CC=C(S1)N=C(S)S used.

Vulcanised rubber has excellent elasticity  
low water absorption tendency, resistance to action of organic solvents and oxidising agents, hardness and stronger than tacky natural rubber.

HARDNESS depends upon the amount of sulphur added

5% S for making tyre rubber

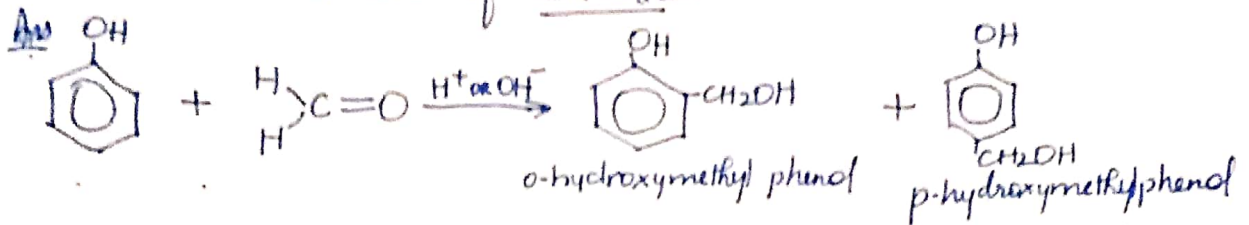
20-25% S for making EBONITE etc



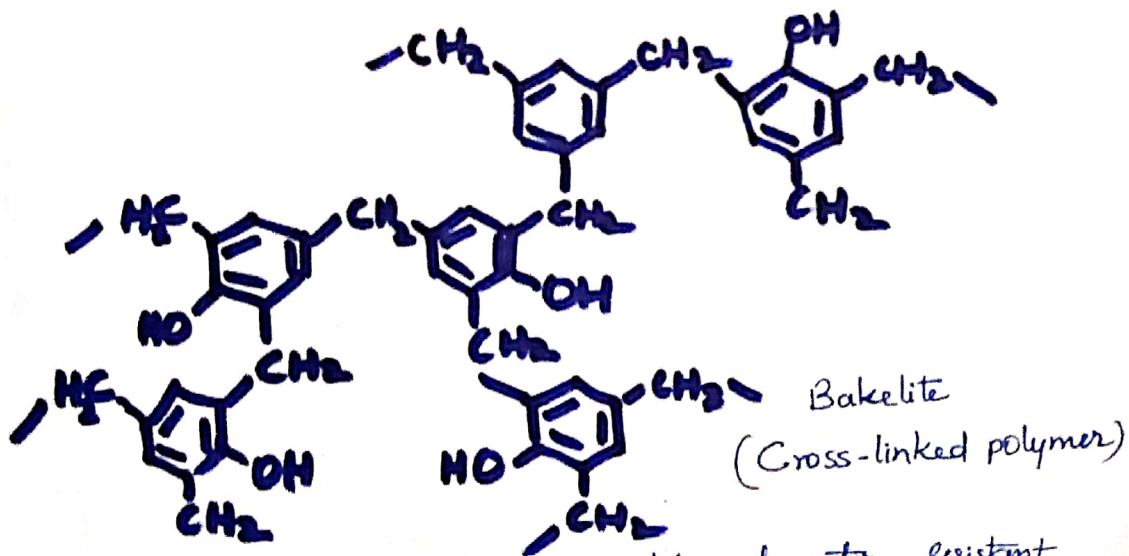
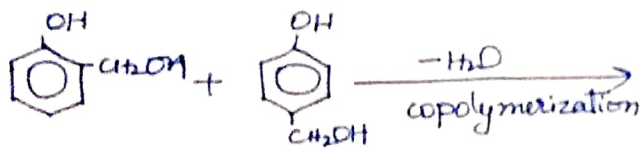
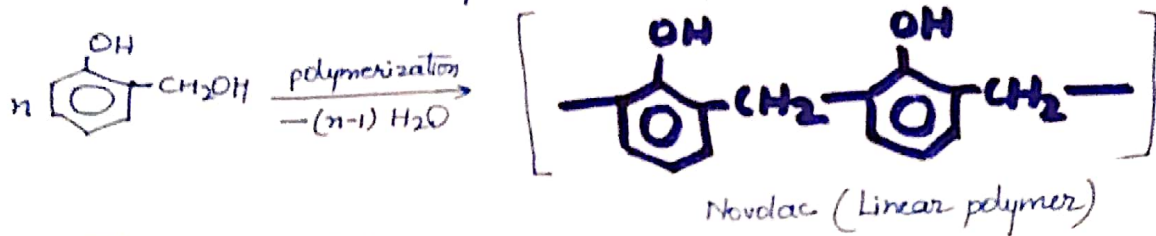
polysulphide bridges between polymer chains do not allow the chains to slip past each other when stretching force applied.

## SYNTHETIC POLYMERS (contd.) (Prof ERA GARG)

Q3 What are phenol-formaldehyde resins? Explain manufacture and industrial uses of Bakelite.



When phenol is treated with formaldehyde in +nce of an acid or basic catalyst, it undergoes condensation polymerization



- Uses:
- ① It is a thermosetting polymer, scratch and water resistant used for manufacture of combs, fountain pen barrels, gramophone records
  - ② excellent electrical insulating properties, used in making switches, plugs etc electrical goods.
  - ③ sulphonated bakelites used as ion exchange resins.