1. **Distinguish between three different processes for the manufacturing of elemental sulfur (flow diagrams not required).**

* Frasch process
* Oxidation and reduction of H2S(Klaus process
* Finnish process-From iron pyrites

|  |  |  |  |
| --- | --- | --- | --- |
| Process | Frasch process | Klaus process | Finnish process |
| Raw Materials | Sulfur bearing salt domes and hot water | H2S from natural(sour) gas and petroleum refinery streams | Iron pyrites |
| Chemical reactions | none |  |  |
| Process description |  |  |  |

**2. What type of catalyst is being used for the production of sulfuric acid? Mention the catalyst loading and feed concentrations.**

Active metal on V2O5

7-8% loading of V2O5 on Al2O3

Feed conc:7-10 % So2

11-14% So2

**3. How can one synthesize vanadium pentaoxide supported on silica catalyst?**

1. Pre-treatment of the support
2. Finding suitable source for V2O5

**4. What are the drawbacks of Pt based catalyst for the synthesis of H2SO4?**

From notebook

**5. How can one differentiate between catalytic reforming and catalytic cracking? (mention the reactions along with catalysts, T, P, other reaction conditions if required)**

**6. Define polymerization with examples.**

**7. Differentiate between addition and condensation polymerization reaction mechanisms with relevant examples.  
8. What is gel/network polymerization? Give one example.**