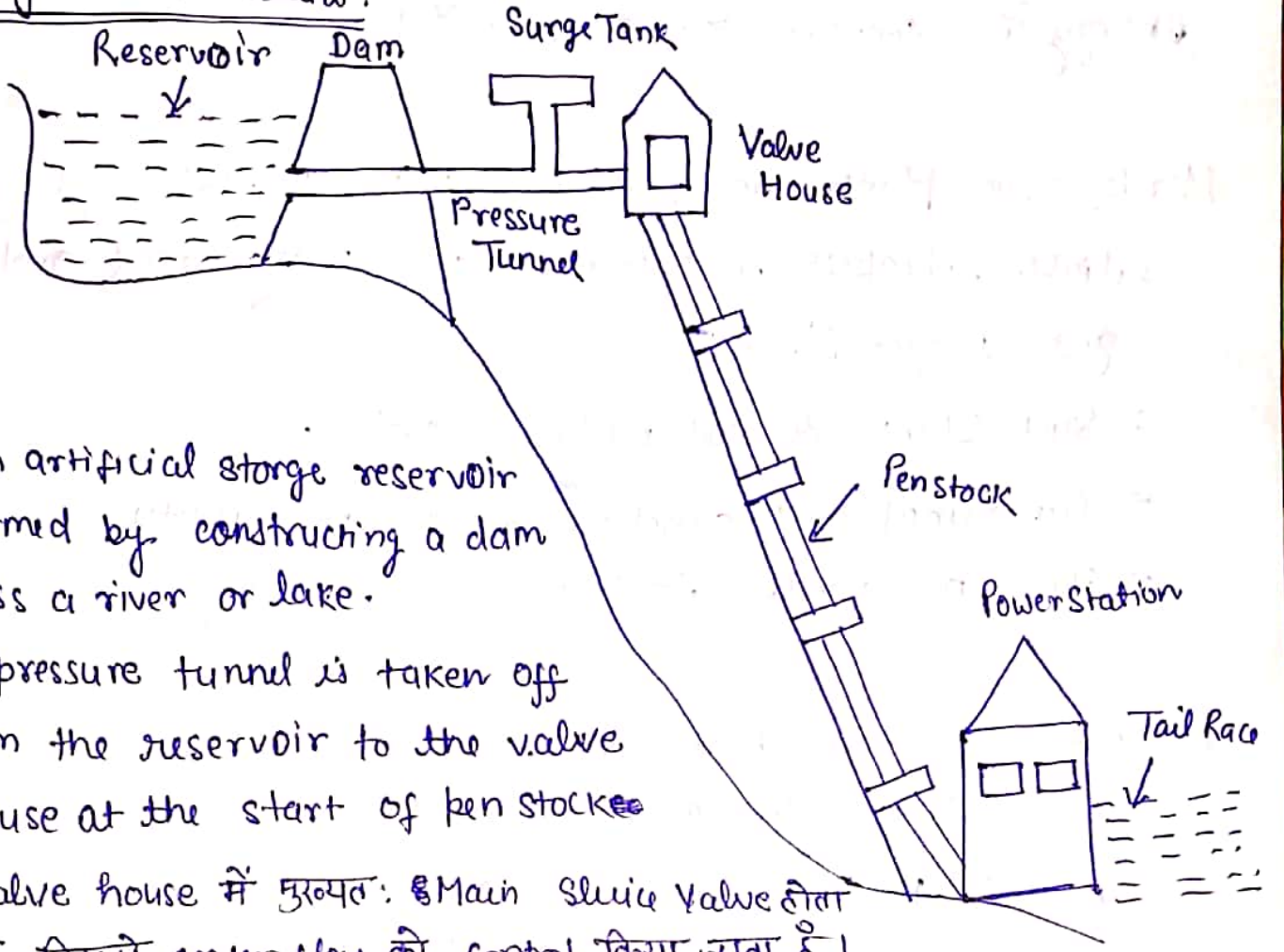
Hydro Power Plant:



⇒ An artificial storge reservoir is formed by constructing a dam across a river or lake.

⇒ A pressure tunnel is taken off from the reservoir to the valve house at the start of pen stock.

⇒ Valve house में मुख्यत: Main Sluice Valve होता है जिससे water flow को control किया जाता है।

⇒ इस Valve की सहायता से Penstock टूटने अथवा अन्य maintenance की स्थिति में water flow को बंद किया जा सकता है।

⇒ Water pressure को और अच्छी तरह maintain/regulate करने के लिए Valve house तथा dam के बीच में एक Surge tank की व्यवस्था होती है।

3/4/20

⇒ Reservoir से water को, pressure valve की सहायता से valve house तक तथा इसके बाद Penstock की सहायता से Power station तक पहुँचाया जाता है।

⇒ Power Station में आने वाला water pressure के साथ turbine blades पर गिरता है जिससे turbine blades, rotate करने लगते हैं।

⇒ यह turbine एक generator से जुड़ी होती है। जिससे turbine की mechanical energy generator द्वारा electrical energy में convert कर दी जाती है।

Merits:⇒ Such plants are neat and clean, robust, highly reliable, cheapest in operation and maintenance and got longer life.

⇒ Such plants do not need any fuel.

⇒ Can runup and synchronized in few minutes

⇒ Have no standby losses.

Demerits:- ⇒ It needs long area.

⇒ Very high construction cost

⇒ Reservoir of such a plant submerges huge areas, uproots large population and creates

⇒ Social and other problems.

⇒ Long dry season may effect the power supply.

Comparision between Thermal, Hydro or Neuclear Power Plant

Basis of Comparision	Thermal Power Plant	Hydro Power Plant	Neuclear Power Plant
Location	Where there is enough supply of water and coal	Where large reservoirs can be Obtained by dam construction	Where there is enough supply of wetter, but must not be too far away from populated areas.
Space requirement	Needs sufficient space for all equipment	Needs very large space for construction of dam.	Needs the least space, compared any other power station of equal capacity.
Initial cost	are lower than those of hydro and neuclear	Are very high because of dam construction	Highest due to complex neuclear reactors.
Running Cost	Higher than hydro and nuclear	Practically NIL; no fuel needed	second lowest
Efficiency	approx 25% efficient	approx 85% efficient	Approx 55% efficient
Maintenance Cost	High, Skilled staff required	Lowest	Highest, Highly skilled and specialized staff required.
Limit of source of power	Has most limited fuel Reserves	Has undependable water source due to whether variations	Has sufficient fuel reserves.

Cost of fuel	Maximum, due to constant demand of coal & transportation	Practically NILL.	Minimum due to small quantities of fuel required
Clean emission	Has highest polluting emission	Practically no emissions.	Has cleaner emissions compared to steam power stations but produces nuclear waste which is currently unsolved problem.
Starting time	Longest starting time	Shortest starting time.	Long starting time
Transmission and distribution Cost	Low, Plant is close to load center	Highest, Plant is furthest from load center	High. Plant is far from load center.