

Tidal Power generation:-

To utilize tidal energy, water must be trapped at high tide behind a dam or barrage and then made of drive turbines as it returns to sea during low tides. The available energy is proportional to the square of the amplitude.

Components of tidal power plant:-

- Main component of a tidal power plant are.
- (a) Barrage
 - (b) Sluice gates
 - (c) Turbines
 - (d) Basin

Working of tidal power plants-

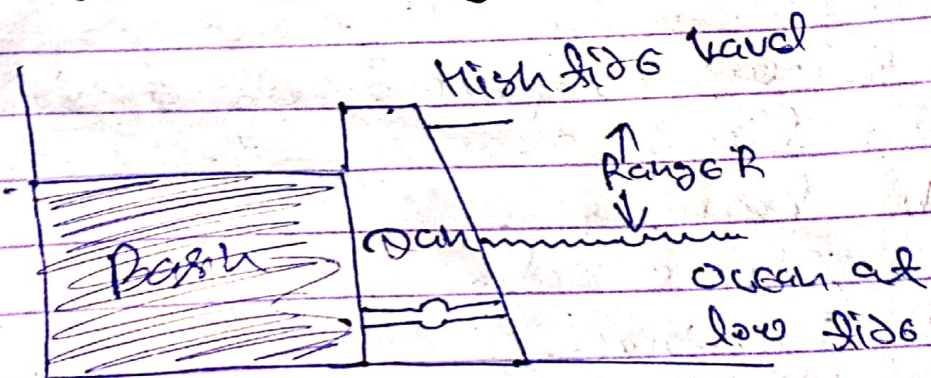
The working is described according to the type of basin

- (a) Single basin system
- (b) Double basin system

Working -

When the water level in upper basin is maximum during high tide. The inlet sluice is closed and the level of water in lower basin keeps on rising due to discharge in the water by the sluice.

Single Basin System -



$R = \text{Tidal range}$

$$\partial w = \partial H \partial m$$

$$\partial m = -\partial A \partial H$$

$$\partial w = -\partial A \partial H \partial m$$

$$W = \int_R^0 \partial w = \int_R^0 -\rho A g H \partial H$$

$$W = \frac{1}{2} \rho A R^2$$

$$W \propto R^2$$

$$\boxed{P_{avg} = \frac{W}{t}}$$