Q.1 Explain the following Terms:

Ans Nozzle efficiency: It is defined as the ratio of the Actual enthalpy drop to the isentropic enthalpy drop b/w the same pre.

Nozzle efficiency = 'k' = $\frac{\text{Actual enthalpy drop}}{\text{Isentropic enthalpy drop}} = \frac{h_1 - h_f}{h_1 - h_2}$

When steam at entry to nozzle is dry saturated =

$= \frac{h_a - h_r}{h_a - h_s}$

Q.2 Explain the essential diff. in the fun. of moving blades in Impulse and reaction Turbine.

Ans

Impulse turbine	Reaction Turbine
1. The steam completly expands in the nozzle and its pre. remains constt. while passing through the blade passage.	1. The steam expands partialy i.e the fixed blades & further expansion take place in the moving blades
2. The relative velocity of steam remain const. while passing over moving blades	2. The relative velocity of steam increase as it expands while passing over the moving blades.
3. The shape of blade is of Profile type.	3. The shape of blades is of airfoil type.
4. The blade passage is of const. cross-sectional Area as there is No expansion.	4. The blade passage is of variable cross sectional area to allow expansion.
5. ~~The blades speed & steam speed~~ are large due to large pre. drop	5. The blade speeds & steams speed are small due to small Pre. drop
6. Less space is needed per unit Power	6. more space is needed per unit Power.
7. They are suitable for small Power	7. They are suitable for mediums & high Power.

Q.4 Define vaccume efficiency & condenser efficiency. Discuss the factor on which these are depends.

Ans vaccume efficiency :⇒ This is the ratio of the actual vaccume at perfect condensing plant. It means there should be no air present in the condenser & the pre. in it should be that due to exhaust steam alone at inlet to the condenser corresponding to the Saturation temp. of steam.

vaccume efficiency = $\frac{\text{Actual vaccume}}{\text{max. obtainable vaccume.}}$

Vaccume efficiency would be 100% if there is no air present in condenser.

* (condenser efficiency ⇒ It states that it is the ratio of the diff. b/w the outlet & inlet temp. of the cooling water.

Condenser efficiency = $\frac{\text{Rise in temp. of cooling water}}{\text{Temp. corres. to vaccume} - \text{inlet temp. of cooling water in the condenser.}}$

Q.6

Ans Velocity compounding: There are a no. of moving blades separated by ring of fixed blades keyed in series on a common shaft. The steam from the boiler is passed through