

SECTION-B

2. With neat sketch explain working of torque convertor.
3. A water jet of 30 mm diameter strikes a hinged square plate at its center with velocity of 20 m/s. If the plate is not allowed to swing, calculate the force 'P' required (as shown in Fig.1) to keep the plate in vertical position.

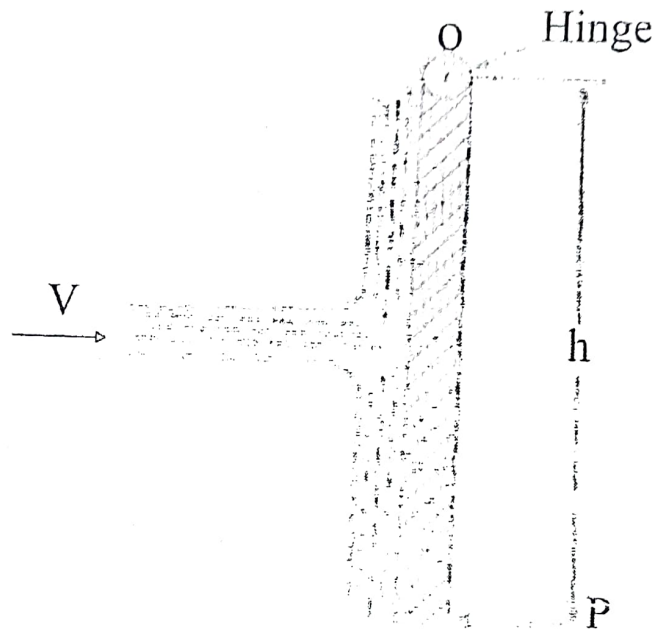


Fig. 1

4. A jet of water of diameter 60 mm, having velocity 30 m/s strikes a curved vane which is moving with velocity of 15 m/s in direction of jet. The jet leaves the vane at an angle of 60° to the direction of motion of vane at outlet. Determine:
 - a. Force exerted by jet on the vane in direction of motion,
 - b. Work done per second by jet.
5. A single acting reciprocating pump running at 60 rpm, delivers 0.015 cubic meter of water. The diameter of the piston is 250 mm and stroke length 450 mm. Determine: (i) theoretical discharge of pump, (ii) Coefficient of discharge, (iii) Slip and percentage slip of the pump.
6. What is multi-staging of pumps? Explain series and parallel arrangement.

SECTION-C

7. Calculate power and efficiency of a jet striking on unsymmetrical curved vane tangentially on one of its tips.
8. Describe two stage reciprocating pump and calculate work done and power required for it. Explain function of air vessels.
9. **Write short notes on any four :**
 - a. Classification of turbo machines on basis of operating principle
 - b. Need and types of draft tubes
 - c. Priming and priming devices
 - d. Trouble shootings, causes and remedies of centrifugal pump
 - e. Application of NPSH in determining pump setting