



## UNIT - II

- 2 (a) Explain the procedure to transfer the energy in terms of lift and drag forces separately. 8
- (b) What do you mean by Blade Theory ? What is the application of Blade Theory in mechanical engineering ? 8

OR

- 2 (a) Explain cascade nomenclature and turbine cascade nomenclature also differentiate them. 10
- (b) Explain symmetrical and non-symmetrical aerofoil. 6

## UNIT - III

- 3 (a) A nozzle is fitted at the end of a pipe of length 300 mm and a diameter 100 mm. For the maximum transmission of power through the nozzle, find the diameter of nozzle. (Take  $f = 0.009$ ). 6
- (b) Derive the condition for maximum power transmission through a nozzle. 10

OR

- 3 (a) Define isentropic flow and derive the expression for steady isentropic flow in non-parallel side ducts neglecting friction. 10
- (b) What do you choked flow ? Explain the supersaturated flow in nozzle. 6

## UNIT - IV

- 4 (a) List out the differences between adiabatic flow and diabatic flow with practical examples for each. 8
- (b) Explain the flow with heat transfer and also explain the effect of change in stagnation temperature. 8

OR



- 4 (a) Explain the change in entropy and also explain the choking due to friction. 8
- (b) Define fanno lines. What is the necessity of fanno lines in fluid flow. 8

### UNIT - V

- 5 (a) Compare the Rankine-Hugoniot and isentropic curves for  $V = 1.4$ . Also express the final relation for change in entropy across a shock. 8
- (b) What do you mean by shock waves ? Explain the different types of shock waves graphically. 8

OR

- 5 Write short note on any four :
- (a) Angle of attack
  - (b) Rayleigh line
  - (c) Convergent-divergent nozzle
  - (d) Lift and drag coefficient
  - (e) Prandtl's relation
  - (f) Increase in entropy.

**4×4=16**

