FLUID MECHANICS-II

Time Allowed: 03 hours. Maximum Marks: 100

Before answering the question paper the candidate should ensure that they have been supplied the correct question paper. Complaints in this regard, if any, shall not be entertained after the examination.

Note: Question No. 1 is Compulsory and attempt two questions from each section. All questions carry equal marks.

1(a) Explain Navier Stokes equation
(b) Explain Darcy Weisbach formula both in velocity form and discharge form
(c) What is hydraulic turbine?
(d) What is difference between isentropic and adiabatic flow.

SECTION-A

2(a) (i) Explain flow between parallel plates [5]
(ii) What is Wall Shear Stress [5]
(b) Derive expression for stress distribution for laminar flow between parallel plates. [10]

3(a) Describe about Pelton turbine? Derive the equation for work done on impulse turbine. [10]
(b) What is cavitation? How it can be avoided in reaction turbines? [10]
4. Water Flows From Reservoir To Series Of Pipes Joined As Shown In Figure Find Percentage Of Error In Discharge If Minor Losses Are Neglected? [20]

SECTION-B

5(a) Describe compressible flow through convergent divergent nozzle? How and where the shock waves does occurs in nozzle. [10]

(b) An aeroplane is flying at a height of 20 km where the temperature is -40 degree celsius. the speed of plane corresponding to m = 1.8. Find the speed of plane. [10]

6(a) A Flat Plate 1.5*1.5m Moves At 50km/Hr In Stationary Air Of Density 1.15kg/M3. If Co Efficient Of drag and lift are 0.15 And 0.75 Respectively, Determine

1. Lift force
2. Drag force
3. Resultant force [10]

(b) A circular disc 3m in diameter is held normal to a 26.4m/s wind density 0.0012gm/cc. find force required to hold it at rest. Assume coefficient of drag=1.1 [10]

7(a) Derive An Expression For Discharge Through Chezy Formula. [10]

(b) Explain The Terms:

1. Specific Energy Of Flowing Fluid
2. Critical Depth
3. Critical Velocity