QUESTION BANKS
5th SEMESTER
HYDRAULIC MACHINES AND INDUSTRIAL FLUID POWER (TH-3)
2 marks questions:

1.

a. Write down the definition of hydraulic turbine and give one example.
b. What is the mathematical formula for hydraulic efficiency of Francis turbine?
c. Write the formula for speed ratio of Kaplan turbine.
d. Define about suction lift and delivery lift for centrifugal pump.
e. Define about hydraulic pump.
f. Define positive slip and negative slip for reciprocating hydraulic pump.
g. Why air regulator is used in the pneumatic control system?
h. What is the function of flow control valve in pneumatics?
i. Write the purpose of using actuators in hydraulic control system.
j. Draw symbols for bi-directional motor and check valve of hydraulic control.
k. Which turbine has highest specific speed, low head and lowest specific speed, high head?
l. How are the turbine flow classified?
m. What is the purpose of a Draft tube in Reaction turbine?
n. Define specific speed of turbine?
o. Draw the velocity diagram of moving blades of Impuse turbine and Francis turbine.

5 marks questions:

2.

a. Distinguish between impulse and reaction turbine.
b. Write a short note about working of centrifugal hydraulic pump.
c. A single acting reciprocating pump running at 100 rpm delivers 0.012 m^3/sec of water. The diameter and stroke of the cylinder are 0.2 m and 0.3 m respectively. Calculate the coefficient of discharge and percentage of slip.
d. Explain briefly about air lubricator.
e. Write down short note on single-acting cylinder for pneumatic control.
f. Write about the advantages and limitations of hydraulic system.
g. Write briefly about direct acting relief valve.
h. Explain briefly filter-regulator-lubrication unit(FRL Unit)
i. Write briefly about pressure regulation valves.

10 marks questions:

3. The mean bucket speed of a pelton wheel is 10 m/s. Jet of water flows at the rate of 0.8 m³/sec under a head of 35m. The buckets deflect the jet through an angle of 165°. If the coefficient of velocity of the jet is 0.98, then find power developed by water in the turbine and hydraulic efficiency of turbine.

4. Find the manometric efficiency and vane angle at inlet of a centrifugal pump delivering water at the rate of 0.2 m³/s against a total head of 80m. The pump runs at 1450 rpm. The inner and outer diameter of the pump are 25 cm and 50 cm respectively. The area of flow through the impeller is 0.08m². The vanes are curved in backward direction at an angle of 30° at exit.

5. Explain in detail about construction and working of double acting reciprocating pump with neat sketch.

6. Explain in detail about 3/2 DCV and 5/2 DCV with proper diagrams for pneumatic control systems.

7. Explain about external and internal gear pumps used in hydraulic controls.