

UNIT-IV

UNIT NAME: Flow Through the Pipes

S.No	Questions	BT	CO	PO
Part – A (Short Answer Questions)				
1	Explain about Darcy's Weisbach equation with necessary data	1	4	1
2	What is meant by energy loss in a pipe?	1	4	1
3	What is compound pipe or pipe in series?	1	4	1
4	What is mean by parallel pipe and write down governing equation	1	4	1
5	Define equivalent pipe and write the equation to obtain equivalent pipe diameter	1	4	1
6	What do you understand by the terms a) minor losses b) major losses	1	4	1
7	What are the basic equations to solve the problems in flow through the branched pipes	2	4	1
8	Mention the general characteristics of laminar flow	2	4	1
9	Define Reynolds number with governing equation	1	4	1
10	Give an expression for the loss of head due to the obstruction in the pipe flow	2	4	1
Part – B (Long Answer Questions)				
11	a) Derive an expression for the Darcy's weisbach equation	3	4	2

	b)	Find the loss of head when a pipe of dia 200mm is suddenly enlarged to 400mm. The rate of flow of water through the pipe is 250 L/sec	1	4	3
12	a)	The difference in water surface level in two tank which are connected by three pipes in series of length: 300m, 170m, 210m and of diameter 300mm, 200mm and 400mm respectively is 12m. Determine the rate of flow if coefficient of friction are 0.005, 0.0052, 0.0048 respectively. Considering minor losses and major losses	5	4	3
13	a)	The main pipe is divided into two parallel pipes which again forms as one pipe the length and diameters for first parallel pipe are 2000m and 1m respectively. While the length and diameter of 2 nd parallel pipe are 2000m and 0.8m. Find the rate of flow in each parallel pipe if rate of flow in the main is 3 m ³ /sec but coefficient of friction of each parallel pipe is same as 0.005	5	4	3
	b)	Define parallel pipes with necessary data	1	4	1
14	a)	Three reservoirs A, B and C are connected by pipe system. Find the discharge from the reservoir B and C. If rate of flow from the reservoir A is 60 l/sec. Find the height of water level in the reservoir and $f=0.006$	5	4	3
15	a)	Diagram shows three pipes connected in parallel conveying a total discharge of 4.5 cumec. Calculate the discharge through each pipe having the lengths of $L_1=1800m$, $L_2=1500m$, $L_3=1900m$, diameters are 1.25m, 1.0m and 1.4m having friction 0.006, 0.006 and 0.008	5	4	3
		Q1 Q2 Q3			
16	a)	A pipe diameter 300mm and length 3500m is used for the transmission of power by water. The total head at the inlet of the pipe is 500m. Find the maximum power available at the outlet of the pipe, if the value of $f=0.006$ and maximum efficiency of transmission of power	5	4	3
	b)	What is water hammer and its control measures	2	4	1