UNIT–III

UNIT NAME: Flow Measurement in Pipes

S.No		Questions		BT	CO	PO
		Part – A (Short Answer Questions)				
1		Describe the practical applications of Bernoulli's equation	1	2	3	1
2		Define venturimeter	1	1	3	1
3		Define vena contracta	1	1	3	1
4		Define pitot tube	1	1	3	1
5		Write down Bernoulli's equation of real fluids	1	2	3	1
6		Define the terms Nappe and Crest.	1	1	3	1
7		Write down discharge for trapezoidal section of the notch	1	2	3	1
8		What is velocity of approach	1	1	3	1
9		What is end contractions.	1	1	3	1
10		What are classifications of notches	1	1	3	1
		Part – B (Long Answer Questions)				
11	a)	Derive an expression for determining the discharge flowing through the pipe by using venturimeter.	2	3	3	2
	b)	What are practical applications of Bernoulli's equation	1	2	3	1
12	a)	Obtain an expression of the forces exerted when the pipe is bend	3	3	3	2
	b)	A pipe of 300mm dia conveying 0.3m^3/sec of water as a right angled bent in a horizontal plane find the resultant force exerted on the bent. If the pressure at inlet and outlet are 24.525N/cm^2 and 23.544 N/cm^2.	5	5	3	3
13	a)	Obtain an expression for trapezoidal notch or weir for determination of the discharge	3	3	3	3
	b)	Define the terms Nappe, crest	1	1	3	1
14	a)	A rectangular notch of crest width is 0.4m is used to measure the flow of water in a rectangular channel of 0.6m and 0.45m d. if water level in the channel is 0.225m above the crest weir. Find the discharge in the channel for the notch assume cd as 0.63 and take velocity of approach consideration?	5	5	3	3
	b)	Define velocity of approach?	1	1	3	1
15	a)	An orifice meter with orifice diameter 10cm is inserted in a pipe of 20cm diameter. The pressure gauges fitted upstream and downstream of the orifice meter gives readings of 19.62N/cm^2 and 9.81N/cm^2 respectively. Coefficient of discharge for the orifice meter is given as 0.6. find the discharge of water through pipe	5	5	3	3
	b)	A horizontal venturi meter with diameter 30cm and 15cm is used to measure the flow of water readings of differential manometer is 20cm of mercury. Determine the rate of flow.	5	5	3	3
16	a)	A weir of 36m long is divided inti 12 equal bays by vertical post is 60cm wide. Determine the discharge over weir if the head over the crest is 1.2m and velocity of approach	5	5	3	3
	b)	A discharge of 3000 m^3/sec is to pass over a rectangular weir. The weir is divided into number of openings. Each of span 10m. if velocity of approach is 4m/sec. find the number of openings needed in order the head of water over the crest is not to exceed 2m.	5	5	3	3