



	b. If the rate of flow changes uniformly from 20 L/s to 40 L/s in 30 seconds, find the total acceleration at the middle of the pipe.	
Q 10	Derive Euler's equation of motion: $\frac{dp}{\rho} + gdz + vdv = 0$	<b>CO3</b>
Q 11	Derive the equation for Minor energy (head) loss in pipe flow due to sudden enlargement.	<b>CO3</b>
<b>Section C</b>		
<b>Each Question carries 20 Marks.</b>		
Q12	A horizontal pipe line 40 m long is connected to a water tank at one end and discharges freely into the atmosphere at the other end. For the first 25 m of its length from the tank, the pipe is 150 mm diameter and its diameter is suddenly enlarged to 300 mm. the height of water level in the tank is 8 m above the Centre of the pipe. Considering all losses of head which occur, determine the rate of flow. Take, coefficient of friction is 0.01 for both section of pipe.	<b>CO5</b>