

(OLD COURSE)QP Code : **14330****(3 Hours)****Total Marks : 100**

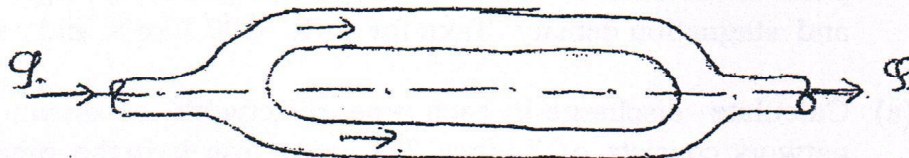
- N. B. :** (1) Question no.1 is **compulsory**.
 (2) Attempt any **Four** questions from the remaining questions.
 (3) Assume any suitable data wherever **necessary**.
 (4) Draw neat and clean sketches wherever required.

1. Attempt any **four** of the following questions. 20

- (a) Explain HGL and TEL.
 (b) What is siphon? Where it is used?
 (c) Prove that the velocity of sound wave in compressible fluid is given by,

$$C = \sqrt{K/\rho}$$
 where K = bulk modulus of fluid and ρ = density of fluid
 (d) Explain Prandtl's mixing length theory.
 (e) Derive Dupuits equation.
 (f) Explain Moody's diagram.

2. (a) The main pipe divides into two parallel pipes which again forms one pipe as 10 shown in fig. The data is as follows:-
 First parallel pipe:- length=1000m, dia. = 0.8m
 Second parallel pipe:-length=1000m, dia. = 0.6m
 Co-efficient of friction for each parallel pipe =0.005. If the total rate of flow in the main is $2 \text{ m}^3/\text{s}$. Find the rate of flow in each parallel pipe.



- (b) Two sharp ended pipes of diameter 50 mm and 100 mm resp., each of length 100 m are connected in parallel between two reservoirs which have a difference of level of 10 m. If the co-efficient of friction for each pipe is $(4f)$ 0.32 calculate the rate of flow for each pipe and also diameter of a single pipe 100m long which would give the same discharge if it were substituted for original two pipes.
3. (a) Water is flowing through a rough pipe of diameter 600 mm at the rate of 600 10 lit/sec. The wall roughness is 3mm. find the power lost for 1 km length of pipe.