

BACHELOR OF CIVIL ENGINEERING (EVENING) EXAMINATION 2017
(1st Year, 1st Semester Supplementary)

FLUID MECHANICS II
Time: Three hours (Answer any FIVE questions) Marks: 100

Different parts of the same question should be answered together. All symbols carry their usual meanings unless otherwise mentioned. Assume any relevant data if necessary.

1.	a) What is orifice meter? Derive an expression for the discharge through an Orifice meter.	10
	b) A Venturimeter of diameter (30 cm x 15 cm) is installed in pipe through which a fluid of sp. gravity is 0.9 is flowing. The pressure head measured using a differential mercury manometer is 60 cm. Calculate the discharge when the co-efficient of discharge of the meter is 0.95. Draw the schematic of the Venturimeter.	10
2.	a) Derive the expression for the loss of head of a viscous fluid flowing through a circular pipe.	10
	b) An oil of viscosity 0.1Ns/m^2 and sp. gravity 0.8 is flowing through a circular pipe of diameter 60 mm and length 200 m. Calculate the pressure drop in a length of 200m and the shear stress at the pipe wall if the discharge through the pipe is 4 litres/s.	10
3.	a) Derive the expression for the head loss due to sudden enlargement.	12
	b) A 200 mm diameter pipe reduces in diameter abruptly to 100 mm diameter. Calculate the pressure loss across the contraction if flow through the pipe is 40 litres/s. Assume co-efficient of contraction as 0.7.	8
4.	a) Find an expression for the power transmission through pipes. What is the condition for maximum transmission of power and corresponding efficiency of transmission?	10
	b) A 80 mm diameter pipe carries water under a head of 10 m with a velocity of 6 m/s. If the axis of the pipe turns through 45° , calculate the magnitude and direction of the resultant force at the bend.	10

