**ASSIGNMENT**

**SUBMIT TO THE Email :** **rominiyiol@abuad.edu.ng** **/ engromslawani@yahoo.com**

**DEADLINE : 10 TH APRIL , 2020 ON OR BEFORE 12 MID NIGHT**

**NOTE : Any Assignment submitted after this given ultimatum will not be marked and graded. ( STAY SAFE)**

**QUESTION 1**

**(a)**

1. **Give three conditions for coutte flow**
2. **State four conditions that can be used to determine the nature of flow.**
3. **In tabular form differentiate between aerofoil and hydrofoil.**

**(b)**

**A liquid of 0.9 Centipoise is filled between two horizontal plate of 10mm apart. If the upper plate moves at I m/s relative to the lower plate which is stationary and the pressure difference between the two sections 60 mmm apart is 60 kN/m2 . Compute : (i) velocity distribution (ii) discharge per unit width**

**( iii) shear stress at the upper plate**

 **QUESTION 2**

**Laminar flow of a liquid in fig2, whose viscosity is 0.9 Ns/m2 and density of 1260 kg/m3 occurs between a pair of parallel plates of extensive width inclined at an angle 450 to the horizontal. The upper plate moved with a velocity of 1.5 m/s relative to the lower plate in a direction opposite to the fluid flow . Pressure gauges mounted at two points 1m vertically apart on the upper plate records a pressure of 250 kN /m2 and 80 kN /m2  respectively.**

 **Determine (a) Velocity and shear stress distribution between the plates**

 **(b) maximum flow velocity**

 **( c) Shear stress on the upper plate.**

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**FIG2**

**Ans : (a) (i) Velocity distribution ;**

 **(ii) Shear stress distribution**

 **(b) umax ( maximum velocity ) = 1.12 m/s ,**

 **( c) Shear stress at the upper plate : = - 0.78 N/m2**