(C)	If the velocity distribution in a laminar boundary layer on a flat plate is $$\frac{u}{U}=a+b\left(\frac{y}{\delta}\right)+c\left(\frac{y}{\delta}\right)^{2}+d\left(\frac{y}{\delta}\right)^{3}$$ Determine the coefficient a, b, c and d. Here u is the velocity at the distance y from the surface of the flat plate and U be the free stream velocity at the boundary layer thickness δ.	05
(D)	Find the speed of sound in oxygen at a pressure of 100 kPa (abs) and 25^{0} C. Take R= 260 J/kg.K and k=1.4.	05
Q. 2(A)	An 80 mm diameter composite solid cylinder consists of an 80 mm diameter 20 mm thick metallic plate having specific gravity 4 attached at the lower end of an 80 mm diameter wooden cylinder of specific gravity 0.8. Find the limits of the length of the wooden portion so that the composite cylinder can float in stable equilibrium in water with its axis vertical.	10
(B)	The diameter of a pipe bend is 30 cm at inlet and 15 cm at outlet and the flow is turned through 120^{0} (angle measured in clockwise direction between direction of fluid flow at inlet and outlet) in a vertical plane. The axis at inlet is horizontal and the centre of the outlet section is 1.5 m below the centre of the inlet section. Total volume of water in the bend is 0.9 m^{3}. Neglecting friction, calculate the magnitude and direction of the force exerted on the bend by water flowing through it at 250 litres/s and when inlet pressure is 0.15 N/mm^{2}.	10
Q.3 (A)	Determine the maximum discharge of water that can be carried without cavitation by a horizontal 100 mm X 50 mm (inlet diameter 100 mm and throat diameter 50 mm) venturimeter, which has a	10