SOLUTION

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COURSE NAME: ADVANCED FLUID MECHANICS

COURSE CODE: CVPA11181

(PATTERN 2018)

Solution and marking scheme

Q.1	Figure	2
	$\theta_1 = 0.322$ rad	1
	$\theta_2 = 0.785$ rad	1
	$\psi = -0.618\ m^2/s$	2
	$r_1 = 3.162$ m	1
	$r_2 = 1.414$ m	1
	$\varphi = 0.53\ m^2/s$	2
	OR	
Q.2	Theory	10
Q.3	$u_{av} = 0.038$ m/s	2
	$R_e = 40.375$, flow is laminar	2
	$p_1 - p_2 = 2432\ N/m^2$	2
	$dp/dx = -4.864\ N/m^2/m$	2
	$\tau_w = -0.2432\ N/m^2$	2
	OR	
Q.4	Boundary conditions	
	$y=0\ u = u_{max}$	1
	$y = H, u = 0$	1
	$y = -H, u = 0$	1
	$C=1$	1
	$B=0$	1
	$A = -1/H^2$	1
	$Q = 4u_{max}H/3$	2
	$U_{av}/u_{max} = 2/3$	2