Assignment-2

Note : Q1 and Q2 with 2 marks each, Q3 and Q4 with 3 marks each.

Q1. Solve : $(y^2 + z^2)u_x - xyu_y + ux = 0$

Where $u \equiv u(x, y)$ is the unknown function.

Q2. Solve : $(x^2 - y^2 - yz)u_x + (x^2 - y^2 - zx)u_y = (x - y)u$

Q3. A bar of 10 cm long with its ends A and B kept at 20^o and 40^o respectively until steady state conditions prevail. The temperature thin is suddenly raised to 50o at A and B is lowered to 10o .
Find the subsequent temperature distribution. Show that the temperature at middle point of the bar is unaltered for all time.

Q4. Find the steady state temperature distribution in a rectangular thin plate with its two surfaces insulated and with the condition
u(0,y) = 0, u(x,0) = 0, u(a,y) = g(y), u(x,b) = f(x)