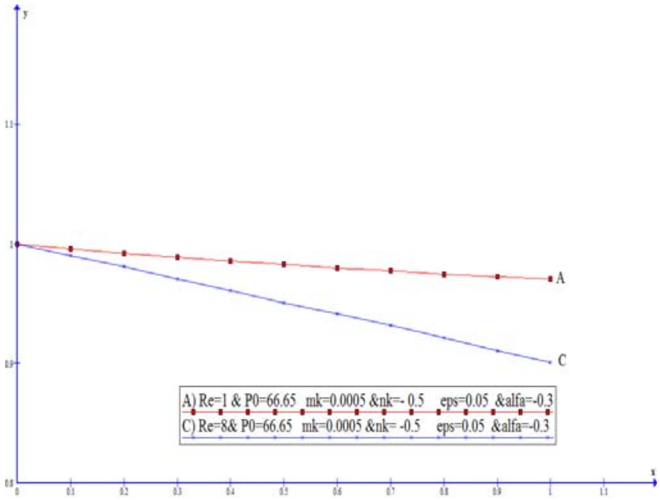

Figure 2: Flow rate Q vs axial distance X for convergent tube with uniformly decreasing permeability.

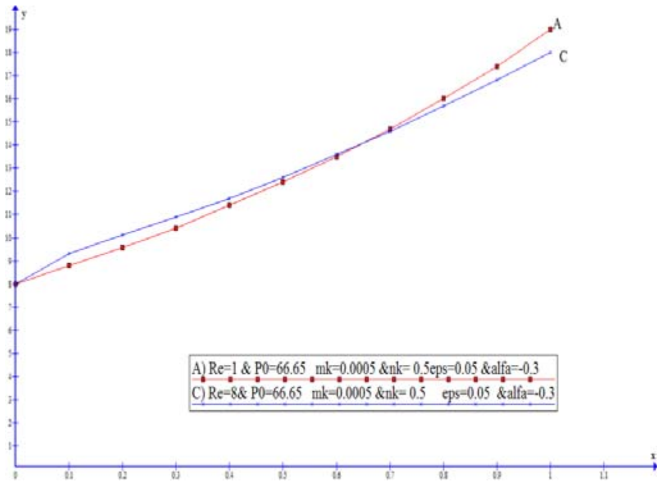

Figure 3: Wall shear stress Tw Vs axial X distance for convergent tube with uniformly increasing permeability.

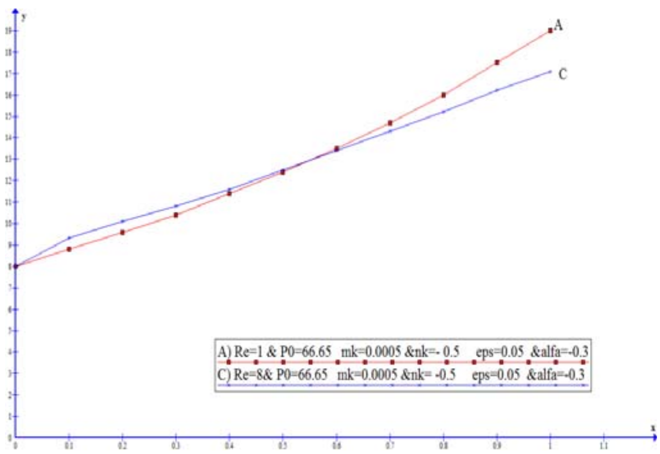

Figure 4: Wall shear stress Tw Vs axial X distance for convergent tube with uniformly decreasing permeability.

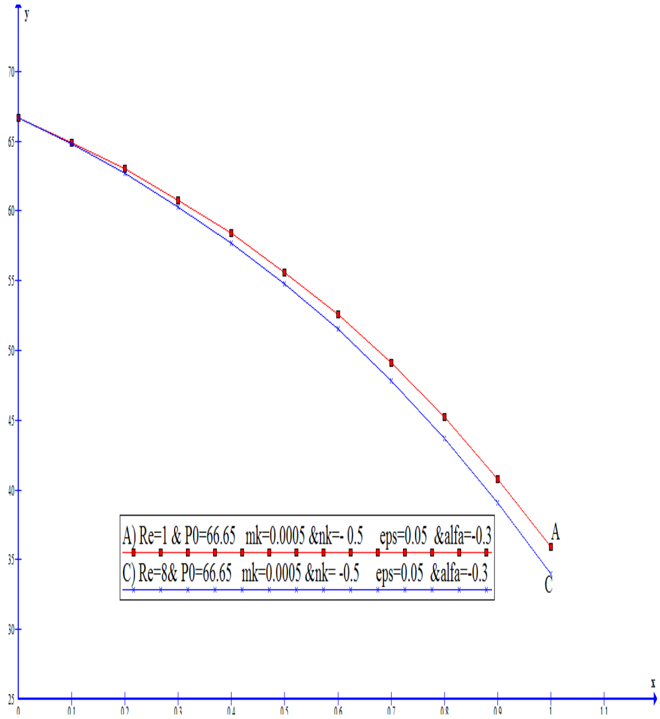

Figure 5: Pressure P Vs axial X distance for convergent tube with uniformly increasing permeability.

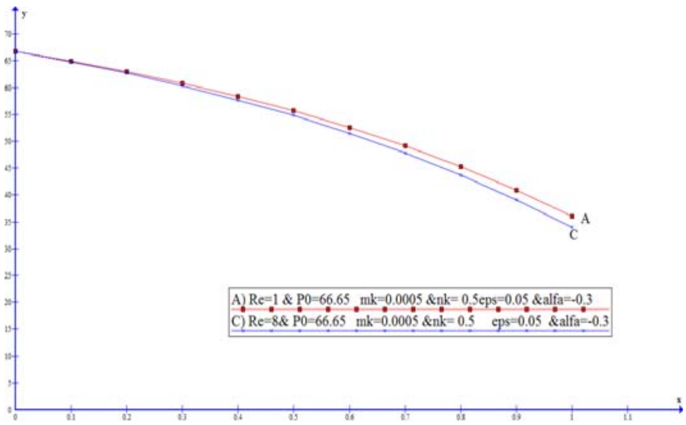

Figure 6: Pressure P Vs axial X distance for convergent tube with uniformly decreasing permeability.

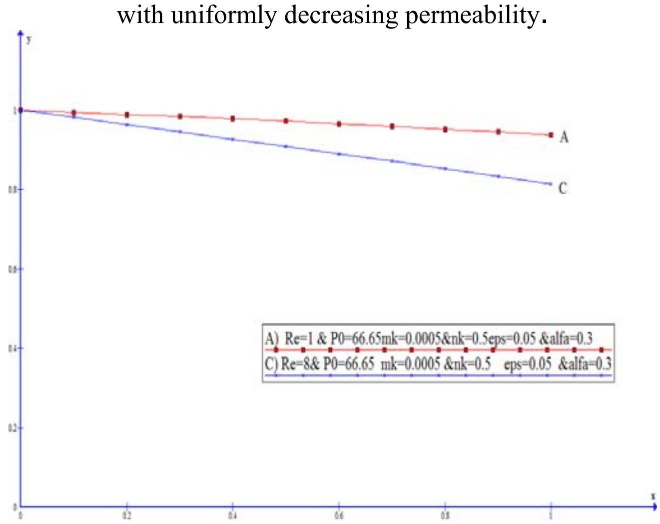

Figure 7: Flow rate Q vs axial distance X for divergent tube with uniformly increasing permeability.

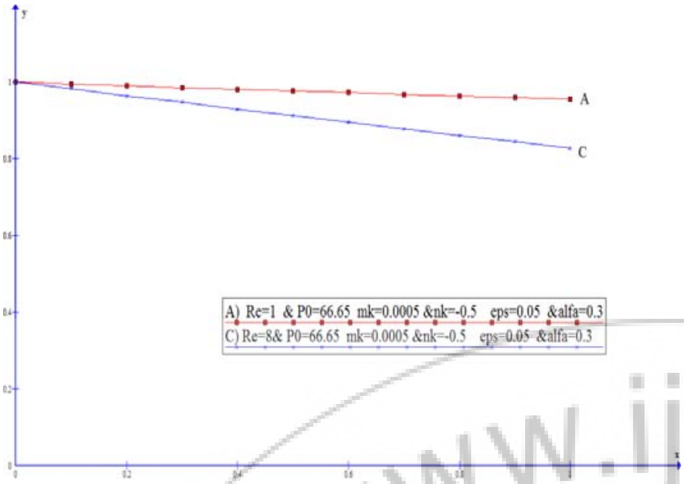

Figure 8: Flow rate Q vs axial distance X for divergent tube with uniformly decreasing permeability.

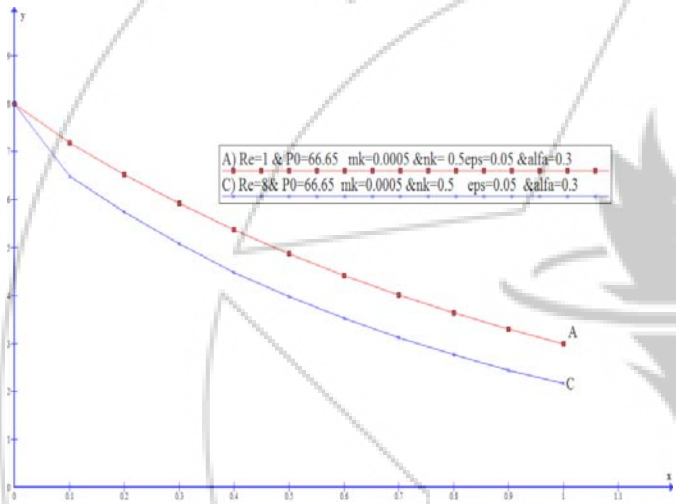

Figure 9: Wall shear stress Tw Vs axial X distance for divergent tube with uniformly increasing permeability.

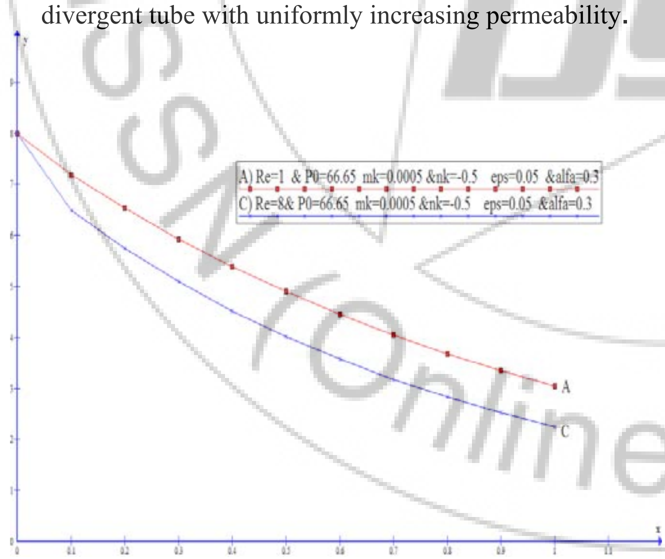

Figure 10: Wall shear stress Tw Vs axial X distance for divergent tube with uniformly decreasing permeability.

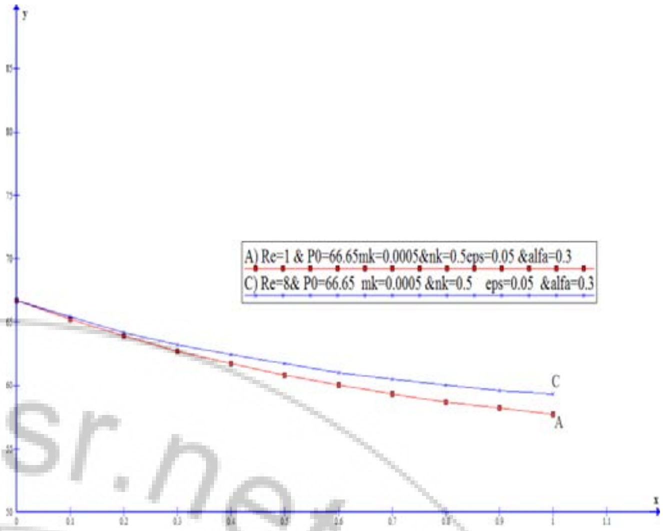

Figure 11: Pressure P Vs axial X distance for divergent tube with uniformly increasing permeability.

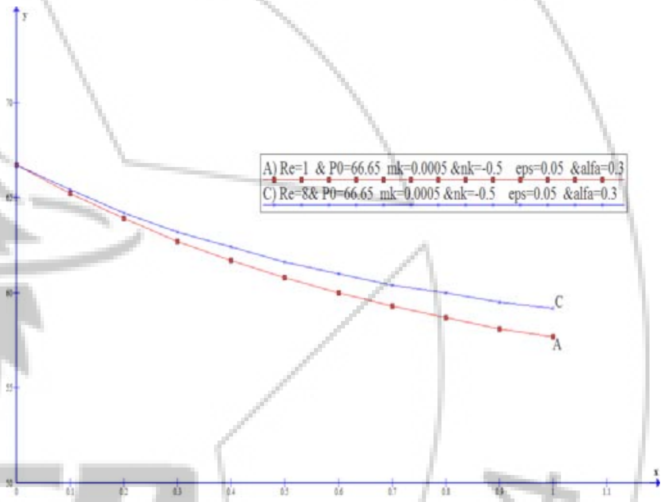

Figure 12: Pressure P Vs axial X distance for divergent tube with uniformly decreasing permeability.

7. Conclusion

Using numerical values of $P^{(0)}$ and $P^{(1)}$ and their derivatives, value of flow rate (Q) and wall shear stress (ITwI) are calculated. We have taken ϵ=0.05 for numerical calculation. The numerical solutions obtain by fourth order using R-k method.

In this paper, we have considered effect of wall permeability (Kp) and Reynolds number Re on wall shear stress, pressure and flow flux for convergent and divergent tube. The flow flux decreases in both convergent and divergent tube as permeability increases or decreases. The pressure drop decreases as permeability increases or decreases. However, wall shear stress ITwI increases in convergent tube and decreases in divergent tube as axial distance increases and pressure drop become decreases.

For convergent tube for small value of Re wall shear stress increases as Re increases wall shear stress oscillates .but in divergent tube as Re increases wall shear stress decreases.

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