decrease in rate of heat of heat transfer at the surface of the region-I but reverse effect is seen at the upper surface.

Table 2a. Numerical values of shear stresses and Nusselt numbers at the lower surface for e_1=0.1, e_2=0.2, Re_1=0.2, Re_2=0.4, Gr_1=10, Gr_2=8, Pr_1=10, Pr_2=12, a=2, m=2, h=5, Q=4, k=0.3, Ec_1=Ec_2=0.01

Cases	σ_1*10^{-5}	Nu_1
M_1= 0.5, M_2= 3	1.249	11.33
M_1= 1.5, M_2= 3	1.88	14.59
M_1= 2, M_2= 3	1.94	14.88

Table 2b. Numerical values of shear stresses and Nusselt numbers at the upper surface for e_1=0.1, e_2=0.2, Re_1=0.2, Re_2=0.4, Gr_1=10, Gr_2=8, Pr_1=10, Pr_2=12, a=2, m=2, h=5, Q=4, k=0.3, Ec_1=Ec_2=0.01

Cases	Nu_2*10^{-3}	σ_2*10^{-4}
M_1= 2, M_2= 0.5	2.052	2.0504
M_1= 2, M_2= 2	1.696	0.014836
M_1= 2, M_2= 3	1.679	0.0085

Application of transverse magnetic field generates Lorentz force and its effects are exhibited through the non-dimensional parameters M_1 and M_2 respectively. During the enhancement of magnetic parameter, there is an increment of shearing stress or viscous drag at the surface of region I but it is seen that shearing at the region-II experiences a declined trend. During the application of magnetic field, a part of magnetic energy is converted into heat and this affects the rate of heat transfer. It can be concluded from table 2a and 2b that Nusselt number increases with magnetic parameter in the surface of region I but an opposite trend is experienced in the surface of the region-II

Table 3a. Numerical values of shear stresses and Nusselt numbers at the lower surface for e_1=0.1, e_2=0.2, M_1=2, M_2=3, Gr_1=10, Gr_2=8, Pr_1=10, Pr_2=12, a=2, m=2, h=5, Q=4, k=0.3, Ec_1=Ec_2=0.01

Cases	σ_1*10^{-6}	Nu_1
Re_1=0.1, Re_2=0.4	2.0315	34.1081
Re_1=0.2, Re_2=0.4	0.194	14.8849
Re_1=0.5, Re_2=0.4	0.003481	2.1163

Table 3a and 3b state that Increase in the values of the Reynolds number of the fluid in the region-I has a negative impact on the shearing stress and Nusselt number of the two fluids but an opposite effect is seen in case of the increase in the values of Reynolds number in the region-II.

Table 3b. Numerical values of shear stresses and Nusselt numbers at the upper surface for e_1=0.1, e_2=0.2, M_1=2, M_2=3, Gr_1=10, Gr_2=8, Pr_1=10, Pr_2=12, a=2, m=2, h=5, Q=4, k=0.3, Ec_1=Ec_2=0.01

Cases	σ_2	Nu_2*10^{-3}
Re_1=0.2, Re_2=0.2	6.0495	0.083775
Re_1=0.2, Re_2=0.4	85.9442	1.6787
Re_1=0.2, Re_2=0.5	615.1308	7.5091

5. CONCLUSIONS

Hydromagnetic convective flows of two immiscible non-Newtonian fluids through an inclined channel have been studied. Following points are concluded from the above work.

- To avoid damage or wear and tear at the surfaces, shearing stress should be minimized. To do that, visco-elasticity and magnetic parameter should be controlled.
- Visco-elasticity and magnetic parameter enhance the rate of heat transfer.
- Reynolds number helps to reduce the viscous drag at the surface.
- Impacts of visco-elasticity, magnetic parameter and Reynolds number are different at the surfaces of two regions

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NOMENCLATURE

u'_1, u'_2	Dimensional velocities
T_1, T_2	Dimensional tempeartures
g	gravitational acceleration, $m.s^{-2}$
B_0	strength of magnetic field
Nu	local Nusselt number along the heat source
k_{0i}	Visco-elasticities
c_{pi}	Specific heat capacities
k_i	Thermal conductivities
Q_i	External heat agents
M_i	Hartmann number
Re_i	Reynolds number
Ec_i	Eckert number
Pr_i	Prandtl number
Q_{Hi}	Dimensionless external heat agent
e_i	Dimensionless visco-elasticities
Gr_i	Grashof number

Greek symbols

α	Angle of inclination of the surface with vertical
σ_i	electrical conductivities
β_i	Co-efficient of volume expansion
ρ_i	densities
μ	dynamic viscosity, kg. $m^{-1}.s^{-1}$

Subscripts

i	1, 2