

This paper investigates unsteady two-dimensional MHD flow past a rotating semi-infinite plate with an inclined magnetic field with viscous dissipation, Ohmic and Joule heating. The fluid is assumed to be electrically conducting. The governing non-linear partial differential equations for mass, momentum, energy, concentration and magnetic field are transformed into a couple system by using appropriate dimensionless parameters and quantities. The coupled systems are then coded in MATLAB and solved simultaneously using the Gauss Seidel iteration technique. Various flow parameters and quantities are varied and their effects on velocity, temperature, and concentration profiles are investigated and discussed. It is observed that the transient velocity profiles increase with the increment of the Prandtl number, Grashof number, Hall parameter and Eckert number, while they decrease with the increase of the angle of inclination of the magnetic field and Hartman number. The temperature profiles rise with increasing the Grashof number, Hall parameter, Eckert number and Joule heating parameter while they decrease with increasing the Prandtl number, angle of inclination of magnetic field and Hartman number. The concentration profiles decline with increasing the Schmidt number and, the magnetic induction profiles decrease with increasing the magnetic Reynolds number and angle of inclination. The concept behind MHD is that the magnetic field induces current in a moving conductive fluid, which in turn generates a force on the fluid. This research is of great interest in applications such as MHD boats, pumps and magnetic material processing.