3. (b) A thin rod, AB, of negligible mass and length 60 cm is suspended at its ends by two identical springs each with a force constant of 20 Nm^{-1}. The rod is charged and the linear charge density at a point on the rod distance x from A is $0.9x$. The rod and the springs are placed in a uniform electric field of magnitude 24 Vm^{-1} and directed vertically downwards. What is the inclination of the rod to the horizontal when the system is in equilibrium? Assume that the springs remain vertical when the rod is inclined.

[6 marks]