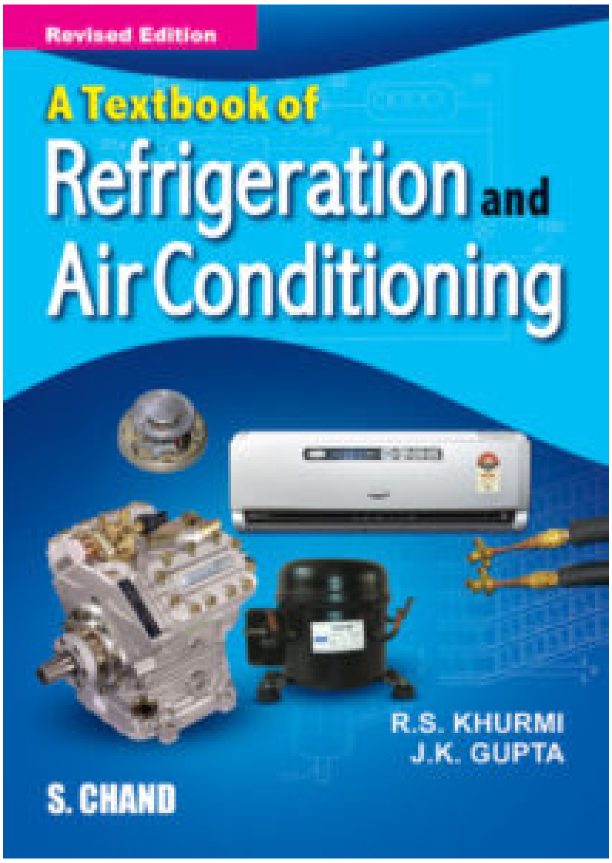
FULL Solution Manual Of Machine Design By Rs Khurmi Gupta



(ref). If we take the coefficient of friction as equal to 0.1 we get acceleration of -0.0001 m/s2. This is not enough to account for significant discrepancy in the readings of instruments and if the acceleration is too high then, the rate of change in the distance between the objects is not constant and there would be change in the velocity of the masses which would in turn cause a change in the acceleration of the masses. We also need to take into account the friction between the two masses. If we have assumed that there is no friction between the masses, then the acceleration of mass 3 will be equal to 0. If we use the value of friction for the two masses as equal to 0.02, we get acceleration of -0.0002 m/s2. We are now closer to the value of -0.0009 m/s2 that we get from the calculation using the static model. In order to calculate the acceleration of mass 1, we will use the formula: F = ma = mu * (m2-m1) * a. This gives the acceleration as follows: a1 = 0.0982 m/s2 - 0.01 m/s2 = -0.0969 m/s2 We can see that the acceleration of mass 1 has changed from -0.0001 m/s2 to -0.0969 m/s2. The change is very significant. It is more than the error in the readings. In order to account for this, we must change our assumptions. We must now assume that the force of friction is proportional to the normal force between the two masses and inversely proportional to the distance between them. The normal force is given by the formula: F = k * (m2-m1) * a. This gives: This formula is useful because it tells us the amount of friction. If we were to calculate the acceleration of mass 2 using this formula, we would get the same result as we calculated earlier -0.0002 m/s2. If we now try to use the formula above to calculate the acceleration of mass 1, we will get the following result: a1 = 0.0982 m/s2 - 0.03 * 0.0 = -0.068 m/s2 This is 0.068 m/s2 too low, which is the correct value. This means that we need 82157476af