

a body is weightless at the centre of earth. why?

Because of the symmetry.

If the body is placed in the very center of the earth, each particle of the earth will create a gravitation force to our body. But for ANY particle of the earth there will be ANOTHER SAME particle from the opposite side and the same distance to our body. So. this opposite particle will create EXACTLY the SAME gravitational force but the opposite direction. And the sum of those two forces will be ZERO

Thus, sum of all of this forces will be ZERO.

If a total gravitational force is zero, then the weight is zero.