## OPHW1-2 Soln)

Consider three mirrors, one each in the xy, yz, and zx planes. Now consider a ray with propagation direction vector  $\mathbf{V} = a\mathbf{i} + b\mathbf{j} + c\mathbf{k}$ . Now, reflection by the mirror in the xy plane will not affect the x and y components, but will reverse the z component. Reflection by the yz mirror will reverse only the x component, and reflection by the zx mirror will reverse only the y component. So, successive reflections by all three mirrors (in any order) will change the propagation vector from V to -V, *i.e.* reverse the direction although not necessarily along the exact original path.