1）36CI decays into 36S (35.967081 u) and 36Ar. **If** the energy release is 1.142 MeV to 36S and 0.709 MeV to 36Ar, calculate the masses of 36CI and 36Ar. Describe the modes of decay.

2）An initial number *NA(0)* of nuclei A decay into daughter nuclei **B,** which are also radioactive. The respective decay probabilities areλAand λB. **If**λB = *2*λA *,* calculate the time (in terms of λA*)*when NB is at its maximum. Calculate NB (max) in terms of *NA(0)*

3) The radionuclide 41Ar decays by *β-* emission to an excited level of 41K that is 1.293 MeV above the ground state. What is the maximum kinetic energy of the emitted *β-* particle?

4) The activity of a radioisotope is found to decrease by 30% in one week. What are the values of its (a) decay constant, (b) half-life, and (c) mean life?