Joseph Specht

Homework 6

NPRE 247

1) Yes

2a) U235_atom_density; 1.337e22 atoms/cc
U238_atom_density; 1.337e22 atoms/cc

b) U235 atom density; 1.345e22 atoms/cc
U238 atom density; 1.328e22 atoms/cc

3) E total; 22805.499 kwh
E total; 0.950 Mwd

4) Cf252 mass; 1.398e-5 g

5) Activity in bq; 2.035e9 bq
Activity in Ci; 0.0545 Ci

6a) frequency; 0.0005 Hz
Energy; 1.348 MeV

b) max E positron; 0.174 MeV
max f positron; 0.6531 Hz
max E electron; 0.39 MeV
max f electron; 0.5787 Hz

7a) A Sr90; 0.999 Gbq

A Y90; 0.971 Gbq

b) A Sr90; 0.497 Gbq

A Y90; 0.971 Gbq

8a) 28198.545 years

b) 1.142e19 bq

c) 7.411e18 bq

9) If Q>0, then there are no thresholds

Reaction	Q [MeV]	T Threshhold [MeV]	Min T [MeV]
1	7.251093291137473	0	7.251093291137473
2	0.0	0	0.0
3	-2.722866567050283	3.179459063706441	0.4565924966561581
4	-2.2087572643092686	2.5791397156649065	0.37038245135563796
5	4.783471353085346	0	4.783471353085346

10)

Reaction	Q [MeV]	T Thresh [MeV]	C Thresh [MeV]	Min T [MeV]
1	1.2683787915797184	0	0	0
2	-2.114149784593493	10.21190078237055	2.4229626165526343	8.097750997777057
3	2.0507257236534646	0	0	0
4	-10.4023164708921	54.16626164729698	2.4229626165526343	43.763945176404874

11) 1.907 MeV