**IB Physics**

**Pre Quiz 30.1**

Name

What you will miss the most about TuHS Physics

Murray Dedicated

**Show your work, circle your answers, and use sig figs to receive full credit.**

1 u = 1.6605E-27 kg = 931.5 MeV, (neutral atom masses: 11H = 1.007825 u, 21d = 2.014102 u,

31t = 3.016049 u, 42He = 4.002602 u) 10n = 1.008665 u

1. What is the binding energy of 13N? Z = 7, m = 13.005738 u (94.11 MeV)

2. Fill in the table (not all these decays or reactions occur)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Decay | Mass  Number (A) | Atomic Number (Z) | Reaction | ??? |  |
| 8339Y | 79 | 37 | 168O(,t)??? | 179F |  |
| 8339Y | 83 | 40 | ???(p,n)23994Pu | 23993Np |  |
| 8339Y | 83 | 38 | 168O(,???)1910Ne | 10n |  |
| 8339Y | 83 | 39 | 2814Si(,n)2815P | 11p |  |

3. What is the kinetic energy of the alpha particle that 208Po (m = 207.981222 u) gives off becoming 204Pb (m = 203.973020) in MeV? (5.216 MeV)

4. Find the Q value for this nuclear reaction: 73Li(p,n)74Be. Label the reaction as either energy requiring (endoergic) or energy releasing (exoergic) Li-7 = 7.016003 u, Be-7 = 7.016928 u (Endoergic – Q = -1.644 MeV)

5. The activity of a sample with a half-life of 23.5 minutes is 3.412 x 106 counts/second. What will it be in 6.00 hours? (83.5 counts/sec)