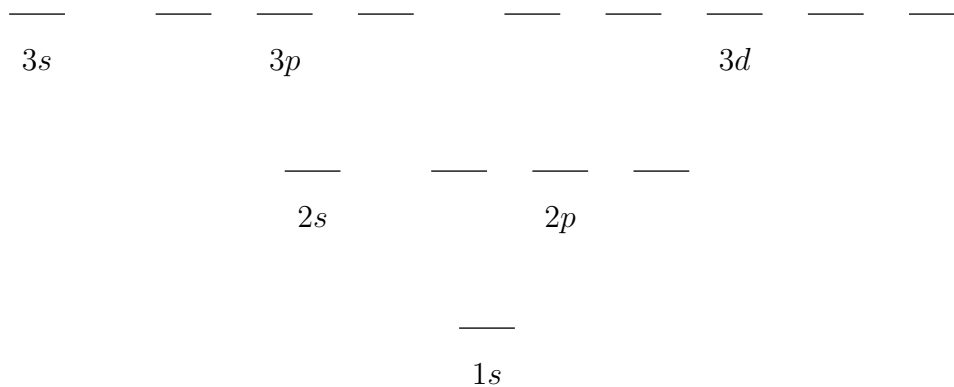


## Quiz 8.3 – Quantum Numbers

Name: \_\_\_\_\_

Below is the hydrogenic atom energy level diagram (which only applies for atoms with 1 electron). Two different possible electron states are shown.

**Question 1 (2 points)**

Give the four quantum numbers for each of the two electrons shown on the diagram above

**Question 2 (3 points)**

On the diagram above, draw electrons with the following quantum numbers:

- $n = 2, l = 1, m_l = 1, m_s = \frac{1}{2}$
- $n = 3, l = 2, m_l = 0, m_s = -\frac{1}{2}$
- $n = 1, l = 0, m_l = 0, m_s = -\frac{1}{2}$

*On Shakespeare. 1630*

By John Milton

What needs my Shakespeare for his honoured bones,  
The labor of an age in pilèd stones,  
Or that his hallowed relics should be hid  
Under a star-ypointing pyramid?  
Dear son of Memory, great heir of fame,  
What need'st thou such weak witness of thy name?  
Thou in our wonder and astonishment  
Hast built thyself a live-long monument.  
For whilst to th' shame of slow-endeavouring art,  
Thy easy numbers flow, and that each heart  
Hath from the leaves of thy unvalued book  
Those Delphic lines with deep impression took,  
Then thou, our fancy of itself bereaving,  
Dost make us marble with too much conceiving;  
And so sepulchred in such pomp dost lie,  
That kings for such a tomb would wish to die.

*Odes III: XXX (23 BCE)*

Horace

exegi monumentum aere perennius  
regalique situ pyramidum altius,  
quod non imber edax, non Aquilo inpotens  
possit diruere ...  
Non omnis moriar.

I have built a monument more lasting than bronze,  
higher than the Pyramids' regal structures,  
that no consuming rain, nor wild north wind  
can destroy ...  
I shall not wholly die.