PHAS1511 – problem sheet 1

1. From a given point on the Earth's surface, briefly describe why the view of the night sky on a clear night changes

a) over the course of a night [1]
b) over the course of a year [1]
c) over the course of thousands of years [3]

2. Describe how the part of the night sky that you can see depends on where you are on the Earth's surface. [3]

3. a) What is meant if a star or astronomical object is described as *circumpolar*? [2]
b) If you are at a latitude of 60 degrees north, circumpolar objects will have a declination higher than what value? [2]
c) If you are at a latitude of 20 degrees south, circumpolar objects will have a declination higher than what value? [2]

4.a) Describe one piece of evidence that light behaves like a wave [2]
b) Describe one piece of evidence that light behaves like a particle [3]

5. Describe what is meant by a *black body*. With the use of diagrams if necessary, describe how the temperature of a black body is related to its spectrum. [5]

6.Hydrogen is the most common chemical element in the universe. What is the *Balmer Series* of Hydrogen? What does this series tell us about the structure of the hydrogen atom? [6]

Total: [30]

Please hand in by **14 December**
(in person, to my pigeonhole, or e-mail to rwesson@star.ucl.ac.uk)