PHAS1202 - Exam Summer 2014: Numerical Solutions

Section A

1) 1.44 solar masses or 3×10^{30}kg

4) Energy: 3.38×10^{-19} J.
Number of photons per second: 2.37×10^{20} per second

Section B

7b) Main sequence lifetime: 3.4×10^{14} s or approx. 10^{7} years

8b) approx. 20 orbits

8c) Redshift: 0.16
Distance: 640 Mpc

9b) electron: 7.3×10^{-4} m
football: 3.3×10^{-33} m

9f) A = 0.062

9g) probability: 0.46

10c) $R_H = 1.1 \times 10^{7}$ m^{-1}

11d) $C = 1.15 \times 10^{10}$ m^{-1}
U = 6.0 eV