STEP III 2012 Question 4 — Examiner Report

Just over 70% of the candidates attempted this, with marginally less success than question 3. Lots of attempts relied on manipulating series for e, and would have struggled had the first two results not been given, and even so, there were varying levels of success and conviction. This approach fell apart in the this part with the cubic term. Some candidates used a generating function method successfully with an $(x) = \sum_{n=1}^{\infty} \frac{n+1}{n!} x^n$. However, whilst this worked well for part (i), it got very nasty for part (ii). There were lots of sign errors with the log series in part (ii), having begun well with partial fractions.