74. Solution: E

First note R = 10/T . Then

$F_R(r) = P[R \le r] = P\left[\frac{10}{T} \le r\right] = P\left[T \ge \frac{10}{r}\right] = 1 - F_T\left(\frac{10}{r}\right)$. Differentiating with respect to

$r\ f_R(r) = F'_R(r) = d/dr \left(1 - F_T\left(\frac{10}{r}\right)\right) = -\left(\frac{d}{dt}F_T(t)\right)\left(\frac{-10}{r^2}\right)$

$\frac{d}{dt}F_T(t) = f_T(t) = \frac{1}{4}$ since T is uniformly distributed on [8, 12] .

Therefore $f_R(r) = \frac{-1}{4}\left(\frac{-10}{r^2}\right) = \frac{5}{2r^2}$.