

4M16 Nuclear Power Engineering 2010

Answers

Q1 (b)  $\phi(r, z) = \phi_0 J_0 \left( \frac{2.405r}{R} \right) \cos \left( \frac{\pi z}{H} \right)$  with  $\left( \frac{2.405}{R} \right)^2 + \left( \frac{\pi}{H} \right)^2 = B_m^2$

(c) 2.320

Q2 (a)  $0.940 \times 10^{15} \text{ m}^{-3} \text{ s}^{-1}$

(d) 1.72 years

Q3 (b)  $\psi_2 = 6 \text{ MWd kg}^{-1}$ ;  $\psi_3 = 8 \text{ MWd kg}^{-1}$

(c)  $T_3 = 9 \text{ MWd kg}^{-1}$ ;  $B_3 = 27 \text{ MWd kg}^{-1}$

(d) 0.5

Q4 (c) 490884.1 Bq; 9102.37 Bq; 3904.33 Bq