

**Question # 33****Answer: A**

$$q_x^{(i)} = q_x^{(\tau)} \left[ \frac{\ln p_x^{(i)}}{\ln p_x^{(\tau)}} \right] = q_x^{(\tau)} \left[ \frac{\ln e^{-\mu^{(i)}}}{\ln e^{-\mu^{(\tau)}}} \right]$$

$$= q_x^{(\tau)} \times \frac{\mu^{(i)}}{\mu^{(\tau)}}$$

$$\mu_x^{(\tau)} = \mu_x^{(1)} + \mu_x^{(2)} + \mu_x^{(3)} = 1.5$$

$$q_x^{(\tau)} = 1 - e^{-\mu^{(\tau)}} = 1 - e^{-1.5}$$

$$= 0.7769$$

$$q_x^{(2)} = \frac{(0.7769)\mu^{(2)}}{\mu^{(\tau)}} = \frac{(0.5)(0.7769)}{1.5}$$

$$= 0.2590$$

**Question # 34****Answer: D**

$${}_{2|2}A_{[60]} = v^3 \times {}_2P_{[60]} \times q_{[60]+2} +$$

$\downarrow$                        $\downarrow$                        $\downarrow$   
 pay at end          live          then die  
 of year 3          2 years      in year 3

$$+ v^4 \times {}_3P_{[60]} \times q_{60+3}$$

pay at end          live          then die  
 of year 4          3 years      in year 4

$$= \frac{1}{(1.03)^3} (1-0.09)(1-0.11)(0.13) + \frac{1}{(1.03)^4} (1-0.09)(1-0.11)(1-0.13)(0.15)$$

$$= 0.19$$