

VIII, ex 11B, P 11

Solutions by Dev Anoop (Bathinda)

$$\textcircled{23} \quad \text{Population 3 years ago } (P_I) = 50000$$

$$r_1\% = 5 \text{ pa}, \quad r_2\% = 4, \quad r_3\% = 3 \text{ pa}$$

Present population (P_P)

$$= P_I \left(\frac{100+r_1\%}{100} \right) \left(\frac{100+r_2\%}{100} \right) \left(\frac{100+r_3\%}{100} \right)$$

$$= 50000 \left(\frac{105}{100} \right) \left(\frac{104}{100} \right) \left(\frac{103}{100} \right)$$

$$= 50000 \times \frac{21}{100} \times \frac{26}{100} \times \frac{103}{100}$$

$$= 56238$$

$$\textcircled{24} \quad \text{Population}_{2009} = 120000, \quad r_1 = 6\%, \quad r_2 = 5\% \text{ pa}$$

$$\text{Population}_{2011} = P_{2009} \left(\frac{100+r_1}{100} \right) \left(\frac{100-r_2}{100} \right)$$

$$= 120000 \times \frac{106}{100} \times \frac{95}{100}$$

$$= 120840$$

$$\textcircled{25} \quad \text{Bacteria count at the begin } (BC_I) = 500000$$

$$\text{Bacteria count after 2 hours } (BC_F)$$

$$= BC_I \left(1 + \frac{r}{100} \right)^n$$

$$= 500000 \left(\frac{102}{100} \right)^2$$

$$= 500000 \times \frac{102}{100} \times \frac{102}{100}$$

$$= 520200$$