

Solutions

Section A — Multiple Choice Questions

Q1. Correct Option: (C) Rs 130

Reason:

$$\text{Market Value} = \text{Face Value} + \text{Premium} = 100 + 30 = \mathbf{Rs\ 130}$$

Q2. Correct Option: (A) Rs 375

Reason: Dividend is calculated on face value.

$$\begin{aligned}\text{Annual dividend income} &= \text{Number of shares} \times \text{FV} \times \frac{\text{Rate}}{100} \\ &= 250 \times 10 \times \frac{15}{100} = \mathbf{Rs\ 375}\end{aligned}$$

Q3. Correct Option: (B) 12.5%

Reason:

$$\begin{aligned}\text{Annual income per share} &= \text{FV} \times \frac{\text{Rate}}{100} = 50 \times \frac{20}{100} = \text{Rs } 10 \\ \text{Return on investment} &= \frac{\text{Income per share}}{\text{MV per share}} \times 100 = \frac{10}{80} \times 100 = \mathbf{12.5\%}\end{aligned}$$

Q4. Correct Option: (A) 200

Reason:

$$\text{Market Value per share} = \text{FV} + \text{Premium} = 100 + 44 = \text{Rs } 144$$

$$\text{Number of shares} = \frac{\text{Total investment}}{\text{MV}} = \frac{28,800}{144} = \mathbf{200}$$

Q5. Correct Option: (C) Rs 150

Reason: Let market value per share = M .

$$\text{Annual income per share} = 100 \times \frac{12}{100} = \text{Rs } 12$$

$$\text{Return} = \frac{12}{M} \times 100 = 8\%$$

$$M = \frac{12 \times 100}{8} = \mathbf{Rs\ 150}$$

Q6. Correct Option: (B) Rs 15; 18.75%

Reason:

$$\text{MV per share} = 100 - 20\% \times 100 = \text{Rs } 80$$

$$\text{Annual income per share} = 100 \times \frac{15}{100} = \text{Rs } 15$$

$$\text{Return on investment} = \frac{15}{80} \times 100 = \mathbf{18.75\%}$$

Q7. Correct Option: (A) Both A and R are true, and R is the correct explanation of A.

Reason:

Assertion A is TRUE. Annual income = FV $\times$ dividend rate, which is fixed regardless of market value. When a share is bought at a premium, the investment (denominator) increases while income remains constant, so:

$$\text{Return} = \frac{\text{Fixed income}}{\text{Higher investment}} \times 100 < \frac{\text{Fixed income}}{\text{Par investment}} \times 100$$

Reason R is TRUE and directly explains why A holds: income depends only on FV and dividend rate, while a higher market price (premium) reduces the return. R is the correct explanation of A.

Q8. Correct Option: (B) 8%

Reason: FV = Rs 50, MV = Rs 40, Return = 10%.

Let dividend rate = $d\%$.

$$\text{Annual income per share} = 50 \times \frac{d}{100}$$

$$\text{Return} = \frac{50 \times \frac{d}{100}}{40} \times 100 = 10\%$$

$$\frac{50d}{40} = 10$$

$$d = \frac{10 \times 40}{50} = 8\%$$

Q9. Correct Option: (A) Rs 0

Reason:

Amit (FV Rs 100, MV Rs 150, Dividend 18%, Investment Rs 30,000):

$$\text{Number of shares} = \frac{30,000}{150} = 200$$

$$\text{Annual income} = 200 \times 100 \times \frac{18}{100} = \text{Rs } 3,600$$

Beena (FV Rs 100, MV Rs 100, Dividend 12%, Investment Rs 30,000):

$$\text{Number of shares} = \frac{30,000}{100} = 300$$

$$\text{Annual income} = 300 \times 100 \times \frac{12}{100} = \text{Rs } 3,600$$

Q10. Correct Option: (C) Company C

Reason: FV = Rs 10, Number of shares = 500 for each company.

Total FV held = $500 \times 10 = \text{Rs } 5,000$ in each company.

$$\text{Dividend rate} = \frac{\text{Annual income}}{\text{Total FV}} \times 100:$$

$$\text{Company A: } \frac{500}{5,000} \times 100 = 10\%$$

$$\text{Company B: } \frac{750}{5,000} \times 100 = 15\%$$

$$\text{Company C: } \frac{1,000}{5,000} \times 100 = \mathbf{20\%}$$

$$\text{Company D: } \frac{600}{5,000} \times 100 = 12\%$$

Company C declared the highest rate of dividend at 20%.

Section B — Short Answer Questions

Q11. Given: Investment = Rs 42,000; FV = Rs 100; Premium = Rs 40; Dividend rate = 14%.

(i) **Number of shares purchased:**

$$\text{MV per share} = \text{FV} + \text{Premium} = 100 + 40 = \text{Rs } 140$$

$$\text{Number of shares} = \frac{\text{Total investment}}{\text{MV}} = \frac{42,000}{140} = \mathbf{300}$$

(ii) **Annual dividend income:**

$$\text{Income per share} = \text{FV} \times \frac{\text{Rate}}{100} = 100 \times \frac{14}{100} = \text{Rs } 14$$

$$\text{Total income} = 300 \times 14 = \mathbf{\text{Rs } 4,200}$$

(iii) **Percentage return on investment:**

$$\text{Return} = \frac{\text{Annual income}}{\text{Total investment}} \times 100 = \frac{4,200}{42,000} \times 100 = \mathbf{10\%}$$

Q12. Given: Annual income = Rs 4,500; FV = Rs 50; Dividend rate = 18%; Return = 12%.

(i) **Number of shares held:**

$$\text{Income per share} = 50 \times \frac{18}{100} = \text{Rs } 9$$

$$\text{Number of shares} = \frac{\text{Total income}}{\text{Income per share}} = \frac{4,500}{9} = \mathbf{500}$$

(ii) **Market value of each share:**

$$\text{Return} = \frac{\text{Income per share}}{\text{MV}} \times 100$$

$$12 = \frac{9}{\text{MV}} \times 100$$

$$\text{MV} = \frac{9 \times 100}{12} = \mathbf{\text{Rs } 75}$$

(iii) **Total investment:**

$$\text{Total investment} = \text{Number of shares} \times \text{MV} = 500 \times 75 = \text{Rs } 37,500$$

$$\text{Verification: } \frac{4,500}{37,500} \times 100 = 12\% \quad \checkmark$$

Q13. Given: 400 shares; FV = Rs 25; Discount = Rs 5; Dividend rate = 16%.

(i) **Total investment:**

$$\text{MV per share} = \text{FV} - \text{Discount} = 25 - 5 = \text{Rs } 20$$

$$\text{Total investment} = 400 \times 20 = \text{Rs } 8,000$$

(ii) **Annual income from dividends:**

$$\text{Income per share} = 25 \times \frac{16}{100} = \text{Rs } 4$$

$$\text{Total income} = 400 \times 4 = \text{Rs } 1,600$$

(iii) **Percentage return on investment:**

$$\text{Return} = \frac{1,600}{8,000} \times 100 = \mathbf{20\%}$$

Q14. Given: FV = Rs 100; MV = Rs 125; Desired return = 10%.

(i) **Minimum dividend rate for 10% return:**

Let dividend rate = $d\%$.

$$\text{Income per share} = 100 \times \frac{d}{100} = d$$

$$\text{Return} = \frac{d}{125} \times 100 = 10\%$$

$$d = \frac{10 \times 125}{100} = \mathbf{12.5\%}$$

The company must declare a minimum dividend of **12.5%**.

(ii) **Actual return if dividend rate = 10%:**

$$\text{Income per share} = 100 \times \frac{10}{100} = \text{Rs } 10$$

$$\text{Actual return} = \frac{10}{125} \times 100 = \mathbf{8\%}$$

(iii) **Number of shares to earn Rs 2,500 at 10% dividend:**

$$\text{Income per share} = \text{Rs } 10$$

$$\text{Number of shares} = \frac{\text{Desired income}}{\text{Income per share}} = \frac{2,500}{10} = \mathbf{250 \text{ shares}}$$

$$\text{Total investment required} = 250 \times 125 = \text{Rs } 31,250.$$

Section C — Long Answer Questions

Q15. Given: Total investment = Rs 1,20,000; Company P: Rs 72,000 (FV 100, MV 180, div 15%); Company Q: Rs 48,000 (FV 50, MV 40, div 12%).

(i) **Number of shares:**

$$\text{Shares in P} = \frac{72,000}{180} = \mathbf{400}$$

$$\text{Shares in Q} = \frac{48,000}{40} = \mathbf{1,200}$$

(ii) **Annual dividend income:**

$$\text{Income from P} = 400 \times 100 \times \frac{15}{100} = \mathbf{Rs\ 6,000}$$

$$\text{Income from Q} = 1,200 \times 50 \times \frac{12}{100} = \mathbf{Rs\ 7,200}$$

(iii) **Total annual income:**

$$\text{Total income} = 6,000 + 7,200 = \mathbf{Rs\ 13,200}$$

(iv) **Overall percentage return:**

$$\text{Return} = \frac{13,200}{1,20,000} \times 100 = \mathbf{11\%}$$

Q16. Rohan sells 200 shares at MV Rs 140 each and buys shares at MV Rs 35 each. First company: FV Rs 100, div 12%; Second company: FV Rs 50, div 15%.

(i) **Amount received from selling:**

$$\text{Amount} = 200 \times 140 = \mathbf{Rs\ 28,000}$$

(ii) **Number of shares purchased in second company:**

$$\text{Shares} = \frac{28,000}{35} = \mathbf{800}$$

(iii) **Dividend income before and after:**

$$\text{Income from first company} = 200 \times 100 \times \frac{12}{100} = \mathbf{Rs\ 2,400}$$

$$\text{Income from second company} = 800 \times 50 \times \frac{15}{100} = \mathbf{Rs\ 6,000}$$

(iv) **Change in annual income:**

$$\text{Increase} = 6,000 - 2,400 = \mathbf{Rs\ 3,600}$$

Rohan's annual income **increased** by Rs 3,600 after the switch.

Q17. Budget = Rs 2,16,000. Companies: X (FV 100, MV 120, div 18%); Y (FV 100, MV 80, div 12%); Z (FV 50, MV 60, div 20%).

(i) **Percentage return for each company (full budget):**

$$\text{Income per share, X} = 100 \times \frac{18}{100} = \text{Rs } 18$$

$$\text{Return on X} = \frac{18}{120} \times 100 = \mathbf{15\%}$$

$$\text{Income per share, Y} = 100 \times \frac{12}{100} = \text{Rs } 12$$

$$\text{Return on Y} = \frac{12}{80} \times 100 = \mathbf{15\%}$$

$$\text{Income per share, Z} = 50 \times \frac{20}{100} = \text{Rs } 10$$

$$\text{Return on Z} = \frac{10}{60} \times 100 = \mathbf{16.\bar{6}7\%}$$

(ii) **Shares from Rs 72,000 each:**

$$\text{Shares in X} = \frac{72,000}{120} = \mathbf{600}$$

$$\text{Shares in Y} = \frac{72,000}{80} = \mathbf{900}$$

$$\text{Shares in Z} = \frac{72,000}{60} = \mathbf{1,200}$$

(iii) **Total annual income:**

$$\text{Income from X} = 600 \times 18 = \text{Rs } 10,800$$

$$\text{Income from Y} = 900 \times 12 = \text{Rs } 10,800$$

$$\text{Income from Z} = 1,200 \times 10 = \text{Rs } 12,000$$

$$\text{Total income} = 10,800 + 10,800 + 12,000 = \mathbf{\text{Rs } 33,600}$$

(iv) **Target check and additional investment in Z:**

Current income = Rs 33,600 < Rs 36,000 (target).

Shortfall = 36,000 – 33,600 = Rs 2,400.

Income per share in Z = Rs 10.

$$\text{Additional shares in Z} = \frac{2,400}{10} = 240$$

$$\text{Additional investment} = 240 \times 60 = \mathbf{\text{Rs } 14,400}$$

The equal-split strategy does **not** meet the target. An additional investment of **Rs 14,400** in Company Z is needed.

Q18. Total = Rs 1,80,000; Company A: FV 100, MV 150, div 18%; Company B: FV 100, MV 75, div 12%. Total income = Rs 24,000.

(i) **Expressions for shares and income in terms of x :**

Let investment in A = Rs x , so investment in B = Rs $(1,80,000 - x)$.

$$\text{Shares in A} = \frac{x}{150}$$

$$\text{Shares in B} = \frac{1,80,000 - x}{75}$$

$$\text{Income from A} = \frac{x}{150} \times 100 \times \frac{18}{100} = \frac{18x}{150} = \frac{3x}{25}$$

$$\text{Income from B} = \frac{1,80,000 - x}{75} \times 100 \times \frac{12}{100} = \frac{12(1,80,000 - x)}{75} = \frac{4(1,80,000 - x)}{25}$$

(ii) **Equation from total income and solving for x :**

$$\frac{3x}{25} + \frac{4(1,80,000 - x)}{25} = 24,000$$

$$3x + 7,20,000 - 4x = 24,000 \times 25 = 6,00,000$$

$$-x = 6,00,000 - 7,20,000 = -1,20,000$$

$$x = \text{Rs } 1,20,000$$

Investment in A = Rs 1,20,000; Investment in B = Rs 60,000.

(iii) **Shares and annual income from each company:**

$$\text{Shares in A} = \frac{1,20,000}{150} = \mathbf{800}$$

$$\text{Shares in B} = \frac{60,000}{75} = \mathbf{800}$$

$$\text{Income from A} = 800 \times 100 \times \frac{18}{100} = \mathbf{Rs } 14,400$$

$$\text{Income from B} = 800 \times 100 \times \frac{12}{100} = \mathbf{Rs } 9,600$$

$$\text{Verification: } 14,400 + 9,600 = \text{Rs } 24,000$$

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(iv) **Overall return and comparison:**

$$\text{Overall return} = \frac{24,000}{1,80,000} \times 100 = \mathbf{13.\bar{3}\%}$$

Individual returns:

$$\text{Return on A} = \frac{14,400}{1,20,000} \times 100 = 12\%$$

$$\text{Return on B} = \frac{9,600}{60,000} \times 100 = 16\%$$

Company B gives a higher individual return of 16% compared to Company A's 12%. Although Company A has a higher dividend rate (18% vs 12%), it is purchased at a premium (MV 150 > FV 100), which reduces its return on investment. Company B, purchased at a discount (MV 75 < FV 100), yields a higher return despite its lower dividend rate.