

To start a big business or an industry, a large amount of money is needed. It is beyond the capacity of one or two persons to arrange such a huge amount. However, some persons associate together to form a company. They, then, draft a proposal, issue a prospectus (in the name of the company), explaining the plan of the project and invite the public to invest money in this project. They, thus, pool up the funds from the public, by assigning them *shares* of the company.

IMPORTANT FACTS AND FORMULAE

I. Stock-capital: The total amount of money needed to run the company is called the *stock-capital*.

II. Shares or Stock: The whole capital is divided into small units, called *shares* or *stock*.

For each investment, the company issues a *share-certificate*, showing the value of each share and the number of shares held by a person.

The person who subscribes in shares or stock is called a *shareholder* or *stockholder*.

III. Dividend: The annual profit distributed among shareholders is called *dividend*.

Dividend is paid annually as per share or as a percentage.

IV. Face Value: The value of a share or stock printed on the share-certificate is called its *Face Value* or *Nominal Value* or *Par Value*.

V. Market Value: The stocks of different companies are sold and bought in the open market through brokers at stock-exchanges. A share (or stock) is said to be :

(i) *At premium* or *Above par*, if its market value is more than its face value.

(ii) *At par*, if its market value is the same as its face value.

(iii) *At discount* or *Below par*, if its market value is less than its face value.

Thus, if a ₹ 100 stock is quoted at a premium of 16, then market value of the stock

$$= ₹ (100 + 16) = ₹ 116.$$

Likewise, if a ₹ 100 stock is quoted at a discount of 7, then market value of the stock

$$= ₹ (100 - 7) = ₹ 93.$$

VI. Brokerage: The broker's charge is called *brokerage*.

(i) When stock is purchased, brokerage is added to the cost price.

(ii) When stock is sold, brokerage is subtracted from the selling price.

Remember:

(i) The face value of a share always remains the same.

(ii) The market value of a share changes from time to time.

(iii) Dividend is always paid on the face value of a share.

(iv) Number of shares held by a person

$$= \frac{\text{Total Investment}}{\text{Investment in 1 Share}} = \frac{\text{Total Income}}{\text{Income from 1 Share}} = \frac{\text{Total Face Value}}{\text{Face value of 1 Share}}.$$

Thus, by a ₹ 100, 9% stock at 120, we mean that :

(i) Face Value (N.V.) of stock = ₹ 100.

(ii) Market Value (M.V.) of stock = ₹ 120.

(iii) Annual dividend on 1 share = 9% of face value = 9% of ₹ 100 = ₹ 9.

(iv) An investment of ₹ 120 gives an annual income of ₹ 9.

(v) Rate of interest p.a. = Annual income from an investment of ₹ 100.

$$= \left(\frac{9}{120} \times 100 \right) \% = 7\frac{1}{2}\%.$$

SOLVED EXAMPLES

Ex. 1. Find the cost of

- (i) ₹ 7200, 8% stock at 90 (ii) ₹ 4500, 8.5% stock at 4 premium
(iii) ₹ 6400, 10% stock at 15 discount

Sol. (i) Cost of ₹ 100 stock = ₹ 90.

$$\text{Cost of ₹ 7200 stock} = ₹ \left(\frac{90}{100} \times 7200 \right) = ₹ 6480.$$

(ii) Cost of ₹ 100 stock = ₹ (100 + 4) = ₹ 104.

$$\text{Cost of ₹ 4500 stock} = ₹ \left(\frac{104}{100} \times 4500 \right) = ₹ 4680.$$

(iii) Cost of ₹ 100 stock = ₹ (100 - 15) = ₹ 85.

$$\text{Cost of ₹ 6400 stock} = ₹ \left(\frac{85}{100} \times 6400 \right) = ₹ 5440.$$

Ex. 2. Find the cash required to purchase ₹ 3200, $7\frac{1}{2}\%$ stock at 107 (brokerage $\frac{1}{2}\%$).

Sol. Cash required to purchase ₹ 100 stock = ₹ $\left(107 + \frac{1}{2} \right) = ₹ \frac{215}{2}$.

$$\text{Cash required to purchase ₹ 3200 stock} = ₹ \left(\frac{215}{2} \times \frac{1}{100} \times 3200 \right) = ₹ 3440.$$

Ex. 3. Find the cash realised by selling ₹ 2440, 9.5% stock at 4 discount (brokerage $\frac{1}{4}\%$).

Sol. By selling ₹ 100 stock, cash realised = ₹ $\left[(100 - 4) - \frac{1}{4} \right] = ₹ \frac{383}{4}$.

$$\text{By selling ₹ 2400 stock, cash realised} = ₹ \left(\frac{383}{4} \times \frac{1}{100} \times 2400 \right) = ₹ 2298.$$

Ex. 4. Find the annual income derived from ₹ 2500, 8% stock at 106.

Sol. Income from ₹ 100 stock = ₹ 8.

$$\text{Income from ₹ 2500 stock} = ₹ \left(\frac{8}{100} \times 2500 \right) = ₹ 200.$$

Ex. 5. Find the annual income derived by investing ₹ 6800 in 10% stock at 136.

Sol. By investing ₹ 136, income obtained = ₹ 10.

$$\text{By investing ₹ 6800, income obtained} = ₹ \left(\frac{10}{136} \times 6800 \right) = ₹ 500.$$

Ex. 6. Which is better investment? $7\frac{1}{2}\%$ stock at 105 or $6\frac{1}{2}\%$ stock at 94.

Sol. Let the investment in each case be ₹ (105 × 94).

Case I : $7\frac{1}{2}\%$ stock at 105 :

$$\text{On investing ₹ 105, income} = ₹ \frac{15}{2}.$$

$$\text{On investing ₹ (105 × 94), income} = ₹ \left(\frac{15}{2} \times \frac{1}{105} \times 105 \times 94 \right) = ₹ 705.$$

Case II : $6\frac{1}{2}\%$ stock at 94 :

$$\text{On investing ₹ 94, income} = ₹ \frac{13}{2}.$$

$$\text{On investing ₹ (105 × 94), income} = ₹ \left(\frac{13}{2} \times \frac{1}{94} \times 105 \times 94 \right) = ₹ 682.50.$$

Clearly, the income from $7\frac{1}{2}\%$ stock at 105 is more.

Hence, the investment in $7\frac{1}{2}\%$ stock at 105 is better.

Ex. 7. Find the cost of 96 shares of ₹ 10 each at $\frac{3}{4}$ discount, brokerage being $\frac{1}{4}$ per share.

Sol. Cost of 1 share = ₹ $\left[\left(10 - \frac{3}{4}\right) + \frac{1}{4}\right] = ₹ \frac{19}{2}$.

Cost of 96 shares = ₹ $\left(\frac{19}{2} \times 96\right) = ₹ 912$.

Ex. 8. Chinmay invested 25%, 30% and 20% of his savings in buying shares of three different companies P, Q and R which declared dividends 10%, 12% and 15% respectively. If his total income on account of dividends be ₹ 5460, find the amount he invested in buying shares of the company Q.

Sol. Let Chinmay's savings be ₹ x .

Then, amount invested in shares of company P = 25% of ₹ x ;

amount invested in shares of company Q = 30% of ₹ x ;

amount invested in shares of company R = 20% of ₹ x .

Total income = ₹ (10% of 25% of x + 12% of 30% of x + 15% of 20% of x)

$$= ₹ \left(\frac{250}{10000}x + \frac{360}{10000}x + \frac{300}{10000}x \right) = ₹ \frac{910}{10000}x.$$

$$\therefore \frac{910x}{10000} = 5460 \Rightarrow x = \frac{5460 \times 10000}{910} = 60000.$$

Hence, amount invested in shares of company Q = 30% of ₹ 60000 = ₹ 18000.

Ex. 9. Find the income derived from 88 shares of ₹ 25 each at 5 premium, brokerage being $\frac{1}{4}$ per share and the rate of dividend being $7\frac{1}{2}\%$ per annum. Also, find the rate of interest on the investment.

Sol. Cost of 1 share = ₹ $\left(25 + 5 + \frac{1}{4}\right) = ₹ \frac{121}{4}$.

Cost of 88 shares = ₹ $\left(\frac{121}{4} \times 88\right) = ₹ 2662$.

\therefore Investment made = ₹ 2662.

Face value of 88 shares = ₹ $(88 \times 25) = ₹ 2200$.

Dividend on ₹ 100 = $\frac{15}{2}$. Dividend on ₹ 2200 = ₹ $\left(\frac{15}{2} \times \frac{1}{100} \times 2200\right) = ₹ 165$.

\therefore Income derived = ₹ 165.

Rate of interest on investment = $\left(\frac{165}{2662} \times 100\right) = 6.2\%$.

Ex. 10. Ravi invested ₹ 913 partly in 4% stock at ₹ 97 and partly in 5% stock at ₹ 107. If his income from both is equal, find the amount invested in each stock. (R.R.B., 2006)

Sol. Let the investment in 4% stock be ₹ x .

Then, investment in 5% stock = ₹ $(913 - x)$.

$$\frac{4}{97} \times x = \frac{5}{107} \times (913 - x) \Leftrightarrow \frac{4}{97}x \frac{4565}{107} - \frac{5x}{107} \Leftrightarrow \frac{4x}{97} + \frac{5x}{107} = \frac{4565}{107}$$

$$\Leftrightarrow \frac{428x + 485x}{97 \times 107} = \frac{4565}{107} \Leftrightarrow 913x = \frac{4565}{107} \times 97 \times 107$$

$$\Leftrightarrow x = \frac{4565 \times 97}{913} = 485.$$

Hence, amount invested in 4% stock = ₹ 485.

And, amount invested in 5% stock = ₹ $(913 - 485) = ₹ 428$.

Ex. 11. A man buys ₹ 25 shares in a company which pays 9% dividend. The money invested is such that it gives 10% on investment. At what price did he buy the shares? (G.B.O., 2007)

Sol. Suppose he buys each share for ₹ x .

$$\text{Then, } \left(25 \times \frac{9}{100}\right) = \left(x \times \frac{10}{100}\right) \text{ or } x = 22.50.$$

∴ Cost of each share = ₹ 22.50.

Ex. 12. A man sells ₹ 5000, 12% stock at 156 and invests the proceeds partly in 8% stock at 90 and 9% stock at 108. He thereby increases his income by ₹ 70. How much of the proceeds were invested in each stock? (M.A.T., 2005)

Sol. S.P. of ₹ 5000 stock = ₹ $\left(\frac{156}{100} \times 5000\right)$ = ₹ 7800.

$$\text{Income from this stock} = ₹ \left(\frac{12}{100} \times 5000\right) = ₹ 600.$$

Let investment in 8% stock be ₹ x and that in 9% stock = ₹ $(7800 - x)$.

$$\therefore \left(x \times \frac{8}{90}\right) + (7800 - x) \times \frac{9}{108} = (600 + 70)$$

$$\Leftrightarrow \frac{4x}{45} + \frac{7800 - x}{12} = 670 \Leftrightarrow 16x + 117000 - 15x = (670 \times 180) \Leftrightarrow x = 3600.$$

∴ Money invested in 8% stock at 90 = ₹ 3600.

Money invested in 9% at 108 = ₹ $(7800 - 3600)$ = ₹ 4200.

EXERCISE

(OBJECTIVE TYPE QUESTIONS)

Directions: Mark (✓) against the correct answer:

- The cost price of a ₹ 100 stock at 4 discount, when brokerage is $\frac{1}{4}\%$ is
(a) ₹ 95.75 (b) ₹ 96
(c) ₹ 96.25 (d) ₹ 104.25
- The cash realised on selling a 14% stock at ₹ 106.25, brokerage being $\frac{1}{4}\%$, is
(a) ₹ 105.50 (b) ₹ 106
(c) ₹ 106.50 (d) ₹ 113.75
- How many shares of market value ₹ 25 each can be purchased for ₹ 12750, brokerage being 2%?
(a) 450 (b) 500
(c) 550 (d) 600
- A man invests in a 16% stock at 128. The interest obtained by him is
(a) 8% (b) 12%
(c) 12.5% (d) 16%
- The income derived from a ₹ 100, 13% stock at ₹ 105, is
(a) ₹ 5 (b) ₹ 8
(c) ₹ 13 (d) ₹ 18

- A wants to secure an annual income of ₹ 1500 by investing in 15% debentures of face value ₹ 100 each and available for ₹ 104 each. If the brokerage is 1%, then the sum of money he should invest is (M.A.T., 2002)
(a) ₹ 10504 (b) ₹ 10784
(c) ₹ 15000 (d) ₹ 19642
- A man invested ₹ 4455 in ₹ 10 shares quoted at ₹ 8.25. If the rate of dividend be 12%, his annual income is : (G.B.O., 2007)
(a) ₹ 207.40 (b) ₹ 534.60
(c) ₹ 648 (d) ₹ 655.60
- A man invested ₹ 14,400 in ₹ 100 shares of a company at 20% premium. If the company declares 5% dividend at the end of the year, then how much does he get? (R.R.B., 2008; Hotel Management, 2003)
(a) ₹ 500 (b) ₹ 600
(c) ₹ 650 (d) ₹ 720
- A person has deposited ₹ 13200 in a bank which pays 14% interest. He withdraws the money and invests in ₹ 100 stock at ₹ 110 which pays a dividend of 15%. How much does he gain or lose? (M.A.T., 2004)
(a) Loses ₹ 48 (b) Gains ₹ 48
(c) Loses ₹ 132 (d) Gains ₹ 132

10. A 6% stock yields 8%. The market value of the stock is
 (a) ₹ 48 (b) ₹ 75
 (c) ₹ 96 (d) ₹ 133.33
11. A 9% stock yields 8%. The market value of the stock is
 (a) ₹ 72 (b) ₹ 92
 (c) ₹ 112.50 (d) ₹ 116.50
12. A 12% stock yielding 10% is quoted at
 (a) ₹ 83.33 (b) ₹ 110
 (c) ₹ 112 (d) ₹ 120
13. By investing ₹ 3450 in a $4\frac{1}{2}\%$ stock, a man obtains an income of ₹ 150. Find the market price of the stock. (SCMHRD, 2002)
 (a) ₹ 103.50 (b) ₹ 105
 (c) ₹ 107.50 (d) ₹ 110
14. To produce an annual income of ₹ 1200 from a 12% stock at 90, the amount of stock needed is
 (a) ₹ 10,000 (b) ₹ 10,800
 (c) ₹ 14,400 (d) ₹ 16,000
15. In order to obtain an income of ₹ 650 from 10% stock at ₹ 96, one must make an investment of
 (a) ₹ 3100 (b) ₹ 6240
 (c) ₹ 6500 (d) ₹ 9600
16. By investing in $16\frac{2}{3}\%$ stock at 64, one earns ₹ 1500. The investment made is
 (a) ₹ 5640 (b) ₹ 5760
 (c) ₹ 7500 (d) ₹ 9600
17. A man invested ₹ 1552 in a stock at 97 to obtain an income of ₹ 128. The dividend from the stock is
 (a) 7.5% (b) 8%
 (c) 9.7% (d) None of these
18. A man bought 20 shares of ₹ 50 at 5 discount, the rate of dividend being $13\frac{1}{2}\%$. The rate of interest obtained is :
 (a) $12\frac{1}{2}\%$ (b) $13\frac{1}{2}\%$
 (c) 15% (d) $16\frac{2}{3}\%$
19. At what price should I buy a share the value of which is ₹ 100, paying a dividend of 8% so that my yield is 11%? (M.A.T., 2005)
 (a) ₹ 70 (b) ₹ 72.72
 (c) ₹ 75 (d) ₹ 84
20. A man buys ₹ 50 shares in a company which pays 10% dividend. If the man gets 12.5% on his investment, at what price did he buy the shares? (L.I.C.A.A.O., 2003)
 (a) ₹ 37.50 (b) ₹ 40
 (c) ₹ 48 (d) ₹ 52
21. The market value of a 10.5% stock, in which an income of ₹ 756 is derived by investing ₹ 9000, brokerage being $\frac{1}{4}\%$, is
 (a) ₹ 108.25 (b) ₹ 112.20
 (c) ₹ 124.75 (d) ₹ 125.25
22. Sakshi invests a part of ₹ 12,000 in 12% stock at ₹ 120 and the remainder in 15% stock at ₹ 125. If his total dividend per annum is ₹ 1360, how much does he invest in 12% stock at ₹ 120?
 (a) ₹ 4000 (b) ₹ 4500
 (c) ₹ 5500 (d) ₹ 6000
23. ₹ 9800 are invested partly in 9% stock at 75 and 10% stock at 80 to have equal amount of incomes. The investment in 9% stock is
 (a) ₹ 4800 (b) ₹ 5000
 (c) ₹ 5400 (d) ₹ 5600
24. A person wants to invest ₹ 140000 in two types of bonds. The annual return is 12% on bond A and 16% on bond B. One of the conditions requires that the investment in bond B cannot be more than 40% of the investment in bond A. What is the maximum return he can get per year? (S.S.C., 2002)
 (a) ₹ 15600 (b) ₹ 16800
 (c) ₹ 19200 (d) ₹ 20800
25. A man invests some money partly in 9% stock at 96 and partly in 12% stock at 120. To obtain equal dividends from both, he must invest the money in the ratio
 (a) 3 : 4 (b) 3 : 5
 (c) 4 : 5 (d) 16 : 15
26. Which is better investment — 11% stock at 143 or $9\frac{3}{4}\%$ stock at 117?
 (a) 11% stock at 143 (b) $9\frac{3}{4}\%$ stock at 117
 (c) Both are equally good
 (d) Cannot be compared, as the total mount of investment is not given
27. A person invests ₹ 5508 in 4% stock at 102. He afterwards sells out at 105 and reinvests in 5% stock at 126. What is the change in his income? (I.I.F.T., 2005)
 (a) ₹ 7 (b) ₹ 9
 (c) ₹ 10 (d) ₹ 20
28. A retired man sells out ₹ 7500 of a 10% stock at ₹ 105.50 and invests the proceeds in 14% stock at ₹ 124.50. What is the change in income if he pays a service charge of 0.5% of the face value on each transaction?
 (a) ₹ 95 (b) ₹ 114
 (c) ₹ 132 (d) None of these
29. Which is better investment, 12% stock at par with an income tax at the rate of 5 paise per rupee or

$14\frac{2}{7}\%$ stock at 120 free from income tax?

- (a) 12% stock (b) $14\frac{2}{7}\%$ stock
(c) Both are equally good (d) Cannot be compared

30. A invested some money in 10% stock at 96. If B wants to invest in an equally good 12% stock, he must purchase a stock worth of :

- (a) ₹ 80 (b) ₹ 115.20
(c) ₹ 120 (d) ₹ 125.40

ANSWERS

1. (c) 2. (b) 3. (b) 4. (c) 5. (c) 6. (a) 7. (c) 8. (b) 9. (a) 10. (b)
11. (c) 12. (d) 13. (a) 14. (a) 15. (b) 16. (b) 17. (b) 18. (c) 19. (b) 20. (b)
21. (c) 22. (a) 23. (b) 24. (b) 25. (d) 26. (b) 27. (b) 28. (c) 29. (b) 30.

SOLUTIONS

- C.P. = ₹ $\left(100 - 4 + \frac{1}{4}\right)$ = ₹ 96.25.
- Cash realised = ₹ $(106.25 - 0.25)$ = ₹ 106.
- C.P. of each share = ₹ $(25 + 2\% \text{ of } 25)$ = ₹ 25.50.
∴ Number of shares = $\left(\frac{12750}{25.50}\right)$ = 500.
- By investing ₹ 128, income derived = ₹ 16.
By investing ₹ 100, income derived = ₹ $\left(\frac{16}{128} \times 100\right)$ = ₹ 12.5.
∴ Interest obtained = 12.5%.
- Income on ₹ 100 stock = ₹ 13.
- Income on each debenture = 15% of ₹ 100 = ₹ 15.
Number of debentures required = ₹ $\left(\frac{1500}{15}\right)$ = ₹ 100.
Cost of each debenture
= ₹ $(104 + 1\% \text{ of } 104)$ = $(104 + 1.04)$ = ₹ 105.04.
∴ Total investment = ₹ (105.04×100) = ₹ 10504.
- Number of shares = $\left(\frac{4455}{8.25}\right)$ = 540.
Face value = ₹ (540×10) = ₹ 5400.
Annual income = ₹ $\left(\frac{12}{100} \times 5400\right)$ = ₹ 648.
- Number of shares = $\left(\frac{14400}{120}\right)$ = 120.
Face value = ₹ (100×120) = ₹ 12000.
Annual income = ₹ $\left(\frac{5}{100} \times 12000\right)$ = ₹ 600.
- Income from bank = 14% of ₹ 13200 = ₹ 1848.
Number of shares purchased = ₹ $\left(\frac{13200}{110}\right)$ = ₹ 120.
Income from stock
= $(15\% \text{ of } ₹ 100) \times 120$ = ₹ (15×120) = ₹ 1800.
∴ Loss = ₹ $(1848 - 1800)$ = ₹ 48.
- For an income of ₹ 8, investment = ₹ 100.
For an income of ₹ 6, investment = ₹ $\left(\frac{100}{8} \times 6\right)$ = ₹ 75.
∴ Market value of ₹ 100 stock = ₹ 75.
- To obtain ₹ 8, investment = ₹ 100.
To obtain ₹ 9, investment = ₹ $\left(\frac{100}{8} \times 9\right)$ = ₹ 112.50.
- ∴ Market value of ₹ 100 stock = ₹ 112.50.
- To earn ₹ 10, money invested = ₹ 100.
To earn ₹ 12, money invested = ₹ $\left(\frac{100}{10} \times 12\right)$ = ₹ 120.
∴ Market value of ₹ 100 stock = ₹ 120.
- To earn ₹ 150, investment = ₹ 3450.
To earn ₹ 4.50, investment = ₹ $\left(\frac{3450}{150} \times 4.50\right)$ = ₹ 103.50.
∴ Market value of ₹ 100 stock = ₹ 103.50.
- For an income of ₹ 12, stock needed = ₹ 100.
For an income of ₹ 1200, stock needed
= ₹ $\left(\frac{100}{12} \times 1200\right)$ = ₹ 10,000.
- To obtain ₹ 10, investment = ₹ 96.
To obtain ₹ 650, investment = ₹ $\left(\frac{96}{10} \times 650\right)$ = ₹ 6240.
- To earn ₹ $\frac{50}{3}$, investment = ₹ 64.
To earn ₹ 1500, investment = ₹ $\left(64 \times \frac{3}{50} \times 1500\right)$ = ₹ 5760.
- By investing ₹ 1552, income = ₹ 128.
By investing ₹ 97, income = ₹ $\left(\frac{128}{1552} \times 97\right)$ = ₹ 8.
∴ Dividend = 8%.
- Investment = ₹ $[20 \times (50 - 5)]$ = ₹ 900.
Face value = ₹ (50×20) = ₹ 1000.
Dividend = ₹ $\left(\frac{27}{2} \times \frac{1000}{100}\right)$ = ₹ 135.
Interest obtained = $\left(\frac{135}{900} \times 100\right)\%$ = 15%.
- Dividend on ₹ 100 = 8% of ₹ 100 = ₹ 8.
₹ 11 is an income on ₹ 100.
∴ ₹ 8 is an income on ₹ $\left(\frac{100}{11} \times 8\right)$ = ₹ 72.72.
- Dividend on 1 share = ₹ $\left(\frac{10}{100} \times 50\right)$ = ₹ 5.
₹ 12.50 is an income on an investment of ₹ 100.
₹ 5 is an income on an investment of ₹ $\left(100 \times \frac{2}{25} \times 5\right)$ = ₹ 40.
∴ Cost of 1 share = ₹ 40.

21. For an income of ₹ 756, investment = ₹ 9000.
 For an income of ₹ $\frac{21}{2}$, investment = ₹ $\left(\frac{9000}{756} \times \frac{21}{2}\right)$ = ₹ 125.
 \therefore For a ₹ 100 stock, investment = ₹ 125.
 Market value of ₹ 100 stock = ₹ $\left(125 - \frac{1}{4}\right)$ = ₹ 124.75.
22. Let investment in 12% stock be ₹ x . Then, investment in 15% stock = ₹ $(12000 - x)$.
 $\frac{12}{120} \times x + \frac{15}{125} \times (12000 - x) = 1360$
 $\Leftrightarrow \frac{x}{10} + \frac{3}{25} (12000 - x) = 1360$
 $\Leftrightarrow 5x + 72000 - 6x = 1360 \times 50 \Leftrightarrow x = 4000$.
23. Let the investment in 9% stock be ₹ x .
 Then, investment in 10% stock = ₹ $(9800 - x)$.
 $\frac{9}{75} \times x = \frac{10}{80} \times (9800 - x) \Leftrightarrow \frac{3x}{25} = \frac{9800 - x}{8}$
 $\Leftrightarrow 24x = 9800 \times 25 - 25x$
 $\Leftrightarrow 49x = 9800 \times 25 \Leftrightarrow x = 5000$.
24. Let the investment in Bond A be ₹ x . Then, investment in Bond B = ₹ $(140000 - x)$.
 For maximum return, we have :
 $140000 - x = 40\% \text{ of } x \Rightarrow 140000 - x = \frac{2}{5}x$
 $\Rightarrow \frac{7}{5}x = 140000 \Rightarrow x = \frac{140000 \times 5}{7} = 100000$.
 So, investment in Bond A = ₹ 100000;
 Investment in Bond B = ₹ $(140000 - 100000)$ = ₹ 40000.
 \therefore Maximum return = 12% of ₹ 100000 + 16% of ₹ 40000
 = ₹ $(12000 + 4800)$ = ₹ 16800.
25. For an income of ₹ 1 in 9% stock at 96,
 Investment = ₹ $\left(\frac{96}{9}\right)$ = ₹ $\frac{32}{3}$.
 For an income of ₹ 1 in 12% stock at 120, investment
 ₹ $\left(\frac{120}{12}\right)$ = ₹ 10.
 \therefore Ratio of investments = $\frac{32}{3} : 10 = 32 : 30 = 16 : 15$.
26. Let investment in each case be ₹ (143×117) .
 Income in 1st case = ₹ $\left(\frac{11}{143} \times 143 \times 117\right)$ = ₹ 1287.
 Income in 2nd case = ₹ $\left(\frac{39}{4 \times 117} \times 143 \times 117\right)$ = ₹ 1394.25.
 Clearly, $9\frac{3}{4}\%$ stock at 117 is better.
27. Number of shares purchased = $\frac{5508}{102} = 54$.
 Income from each share = 4% of ₹ 100 = ₹ 4.
 \therefore Original income = ₹ (54×4) = ₹ 216.
 Money incurred from sale of share
 = ₹ (105×54) = ₹ 5670.
 Number of new shares purchased = $\left(\frac{5670}{126}\right) = 45$.
 New income = ₹ (45×5) = ₹ 225.
 \therefore Change in income = ₹ $(225 - 216)$ = ₹ 9.
28. Number of shares sold = $\frac{7500}{100} = 75$.
 Proceeds from sale of ₹ 7500 stock
 = ₹ $[(105.50 - 0.5) \times 75]$ = ₹ 7875.
 Number of new shares purchased
 = $\left(\frac{7875}{124.50 + 0.50}\right) = \left(\frac{7875}{125}\right) = 63$.
 Original income = 10% of ₹ 7500 = ₹ 750.
 New income = 14% of ₹ 6300 = ₹ $\left(\frac{14}{100} \times 6300\right)$ = ₹ 882.
 \therefore Change in income = ₹ $(882 - 750)$ = ₹ 132.
29. Let investment in each case = ₹ (100×120) .
 Income from 12% stock = ₹ $\left(\frac{12}{100} \times 100 \times 120\right)$ = ₹ 1440.
 Net income = ₹ $\left(1440 - \frac{5}{100} \times 1440\right)$ = ₹ 1368.
 Income from $14\frac{2}{7}\%$ stock = ₹ $\left(\frac{100}{7 \times 20} \times 100 \times 120\right)$
 = ₹ 1428.57.
 Clearly, $14\frac{2}{7}\%$ stock is better.
30. For an income of ₹ 10, investment = ₹ 96.
 For an income of ₹ 12, investment
 = ₹ $\left(\frac{96}{10} \times 12\right)$ = ₹ 115.20.