

# 3

# Shares and Dividend

## 3.1 Introduction :

To establish a big company, a large sum of money is required. It is sometimes not possible for an individual to invest such a big amount. Then some persons, interested in the company, join together. They divide the estimated value into small parts ranging from ₹ 1 to ₹ 100. Each part so obtained is called a **share** and the value fixed for each share is called its **original** or **nominal value** (N.V.). The persons who purchase shares are called **share-holders**.

1. The **nominal value** (N.V.) of a share is also called its **Register value**, **Printed value**, **Face value** (F.V.), etc. *The nominal value of a share does not change with time.*
2. The price of a share in the market, at any particular time, is called its **Market value** (M.V.) or **cash value**. *The market value of a share may change (decrease or increase) with time.*
3. The **market value** of a share can be the same, more or less than the **nominal value** of the share depending upon the performance and profits of the company.
  - (i) If the **market value** of a share is the *same as its nominal value*, the share is said to be **at par**.
  - (ii) If the **market value** of a share is *more than its nominal value*, the share is said to be **above par** or **at a premium**.
  - (iii) If the **market value** of a share is *less than its nominal value*, the share is said to be **below par** or **at a discount**.
- Thus,
  - (i) **At par means** : Market value = Nominal value i.e. M.V. = N.V.
  - (ii) **Above par or at a premium means** : M.V. > N.V.
  - (iii) **Below par or at a discount means** : M.V. < N.V.
4. The **profit**, which a **share-holder** gets (out of the profits of the company) from his investment in the company, is called **dividend**.
  - (i) The **dividend** is always expressed as a **percentage** of the nominal value of the share.
  - (ii) The dividend does not depend on the market value of the share.

## 3.2 Formulae :

$$1. \quad \text{Sum invested} = \text{No. of shares bought} \times \text{M.V. of 1 share.}$$

If the shares are available at par

$$\Rightarrow \text{M.V. of each share} = \text{N.V. of it}$$

$$2. \quad \text{No. of shares bought} = \frac{\text{Sum invested to buy the shares}}{\text{M.V. of 1 share}}$$

$$\begin{aligned} \text{Also, no. of shares bought} &= \frac{\text{Total dividend from these shares}}{\text{Dividend on 1 share}} \\ &= \frac{\text{Total income (profit)}}{\text{Income (profit) on 1 share}} \end{aligned}$$

3. Total dividend earned = No. of shares  $\times$  rate of dividend  $\times$  N.V. of a share

4. Return % = Income (profit) %

$$= \frac{\text{Income}}{\text{Investment}} \times 100\%$$

5. For a share holder :

Income = Return = Profit

= Dividend paid by the company

1 Calculate the money required to buy :

- (i) 350, ₹ 20 shares at a premium of ₹ 7.
- (ii) 275, ₹ 60 shares at a discount of ₹ 10.
- (iii) 50, ₹ 40 shares quoted at ₹ 38.50.

**Solution :**

(i) No. of shares to be bought = 350

₹ 20 shares at a premium of ₹ 7 means; nominal value of the share is ₹ 20 and its market value = ₹ 20 + ₹ 7 = ₹ 27.

∴ Money required to buy 1 share = ₹ 27

⇒ Money required to buy 350 shares =  $350 \times ₹ 27 = ₹ 9,450$  **Ans.**

(ii) Money required to buy 1 share = ₹ 60 - ₹ 10 = ₹ 50

⇒ Money required to buy 275 shares =  $275 \times ₹ 50 = ₹ 13,750$  **Ans.**

(iii) Quoted price of a share means its market value.

∴ Money required to buy 1 share = ₹ 38.50

⇒ Money required to buy 50 shares =  $50 \times ₹ 38.50 = ₹ 1,925$  **Ans.**

2 Rakhee invested ₹ 12,500 in shares of a company paying 6% dividend per annum. If she bought ₹ 50 shares for ₹ 62.50 each, find her income from the investment.

**Solution:**

Since, the market value of each share = ₹ 62.50 and the sum invested is ₹ 12,500

∴ No. of shares bought by Rakhee =  $\frac{12,500}{62.50} = 200$

$$\text{No. of shares bought} = \frac{\text{Sum invested}}{\text{M.V. of 1 share}}$$

Income (dividend) on one share = 6% of N.V. =  $\frac{6}{100} \times ₹ 50 = ₹ 3$

Therefore, her total income =  $200 \times ₹ 3 = ₹ 600$  **Ans.**

or, directly :

Income = No. of shares  $\times$  Rate of div.  $\times$  Face value (N.V.) of each share  
=  $200 \times 6\% \times ₹ 50 = ₹ 600$  **Ans.**

- 3** Ramesh buys ₹ 100 shares at ₹ 20 premium in a company paying 15% dividend. Find : (i) the market value of 600 shares; (ii) his annual income; (iii) his percentage income.

**Solution :**

$$(i) \text{ Market value of 1 share} = ₹ 100 + ₹ 20 = ₹ 120 \\ \Rightarrow \text{Market value of 600 shares} = 600 \times ₹ 120 = ₹ 72,000 \quad \text{Ans.}$$

$$(ii) \text{Annual income} = \text{No. of shares} \times \text{Rate of div.} \times \text{N.V. (F.V.) of 1 share} \\ = 600 \times \frac{15}{100} \times ₹ 100 = ₹ 9,000 \quad \text{Ans.}$$

(iii) ₹ 9,000 is the income obtained on investing ₹ 72,000

$$\therefore \text{Percentage income} = \frac{9,000}{72,000} \times 100\% = 12.5\% \quad \text{Ans.}$$

$$\begin{aligned} \text{Income \% on M.V.} &= \text{Dividend \% on N.V.} \\ \Rightarrow \text{Income \%} \times 120 &= 15\% \times 100 \\ \Rightarrow \text{Income \%} &= \frac{15\% \times 100}{120} = 12.5\% \end{aligned}$$

- 4** Rupees 67,200 are invested in ₹ 100 shares which are quoted at ₹ 120. Find the income if 12% dividend is declared on the shares.

**Solution :**

$$\begin{aligned} \because \text{Sum invested} &= ₹ 67,200 \\ \text{and M.V. of each share} &= ₹ 120 \\ \therefore \text{No. of shares bought} &= \frac{₹ 67,200}{₹ 120} = 560 \end{aligned}$$

$$\begin{aligned} \text{Given : dividend (income) on 1 share} &= 12\% \text{ of N.V.} \\ &= 12\% \text{ of } ₹ 100 = ₹ 12 \\ \therefore \text{Total income from the shares} &= 560 \times ₹ 12 = ₹ 6,720 \quad \text{Ans.} \end{aligned}$$

$$\begin{aligned} \text{Dividend (income)} &= \text{No. of shares} \times \text{Div. \%} \times \text{N.V. of each share} \\ &= 560 \times \frac{12}{100} \times 100 = ₹ 6720 \end{aligned}$$

- 5** Find the dividend due at the end of a year on 250 shares of ₹ 50 each, if the half-yearly dividend is 4% of the value of the share.

**Solution :**

$$\because \text{Half-yearly dividend on 1 share} = 4\% \text{ of } ₹ 50$$

$$\Rightarrow \text{The yearly dividend on 1 share} = 8\% \text{ of } ₹ 50 = \frac{8}{100} \times ₹ 50 = ₹ 4$$

$$\Rightarrow \text{Total dividend due at the end of the year} = 250 \times ₹ 4 = ₹ 1,000. \quad \text{Ans.}$$

- 6** A man bought 500 shares, each of face value ₹ 10, of a certain business concern and during the first year, after purchase, receives ₹ 400 as dividend on his shares. Find the rate of dividend on the shares.

**Solution:**

$$\begin{aligned}\therefore \text{Face value of each share} &= ₹ 10 \\ \text{and the number of shares bought} &= 500 \\ \therefore \text{Total sum invested in shares} &= 500 \times ₹ 10 = ₹ 5,000\end{aligned}$$

Since, total dividend in the first year = ₹ 400

$$\begin{aligned}\therefore \text{Rate of dividend} &= \frac{\text{Dividend}}{\text{Sum invested}} \times 100\% \\ &= \frac{₹ 400}{₹ 5,000} \times 100\% = 8\% \quad \text{Ans.}\end{aligned}$$

- 7** Mukul invests ₹ 9,000 in a company paying a dividend of 6% per annum when a share of face value ₹ 100 stands at ₹ 150. What is his annual income ? If he sells 50% of his shares at ₹ 200 each, what is his gain in this transaction ?

**Solution :**

$$\begin{aligned}\therefore \text{Mukul invests ₹ 9,000 and M.V. of each share} &= ₹ 150 \\ \Rightarrow \text{No. of shares bought by Mukul} &= \frac{₹ 9,000}{₹ 150} = 60 \\ \text{His annual income on 1 share} &= 6\% \text{ of N.V.} = 6\% \text{ of ₹ 100} = ₹ 6 \\ \Rightarrow \text{His total annual income} &= 60 \times ₹ 6 = ₹ 360 \quad \text{Ans.} \\ \because 50\% \text{ of shares} &= 50\% \text{ of } 60 = 30 \\ \Rightarrow \text{Money received on selling these shares} &= 30 \times ₹ 200 = ₹ 6,000 \\ \text{Also, for Mukul, cost of these shares} &= 30 \times ₹ 150 = ₹ 4,500 \\ \therefore \text{Mukul's gain in this transaction} &= ₹ 6,000 - ₹ 4,500 = ₹ 1,500 \quad \text{Ans.}\end{aligned}$$

- 8** A man wants to buy 62 shares available at ₹ 132 (par value being ₹ 100).
- How much he will have to invest ?
  - If the dividend is 7.5%, what will be his annual income ?
  - If he wants to increase his annual income by ₹ 150, how many extra shares should he buy ?
- [2002]

**Solution :**

$$\begin{aligned}(\text{i}) \quad \text{He will have to invest} &= 62 \times ₹ 132 = ₹ 8,184 \quad \text{Ans.} \\ (\text{ii}) \quad \text{Dividend on 1 share} &= 7.5\% \text{ of ₹ 100} = ₹ 7.50 \\ \Rightarrow \text{His annual income} &= 62 \times ₹ 7.50 = ₹ 465 \quad \text{Ans.} \\ (\text{iii}) \quad \because \text{The man wants to increase his income by ₹ 150} \\ &\text{and the income on one share} = ₹ 7.50 \\ \therefore \text{The no. of extra shares he must buy} &= \frac{₹ 150}{₹ 7.50} = 20 \quad \text{Ans.}\end{aligned}$$

- 9** A company with 4000 shares of nominal value of ₹ 110 each declares an annual dividend of 15%. Calculate :
- the total amount of dividend paid by the company.
  - the annual income of Shah Rukh who holds 88 shares in the company ?
  - if he received only 10% on his investment, find the price Shah Rukh paid for each share.
- [2008]

**Solution :**

(i) Given              number of shares = 4000  
                         nominal value of each share = ₹ 110  
                         and,                      dividend = 15%

**Total amount of dividend paid by the company**

$$\begin{aligned} &= \text{Dividend on one share} \times \text{Number of shares} \\ &= (15\% \text{ of } ₹ 110) \times 4000 = ₹ 66,000 \end{aligned}$$

**Ans.**

**(ii) The annual income of Shah Rukh**

$$\begin{aligned} &= \text{Dividend on one share} \times \text{Number of shares} \\ &= (15\% \text{ of } ₹ 110) \times 88 = ₹ 1,452 \end{aligned}$$

**Ans.**

**(iii) Let Shah Rukh pays ₹  $x$  for each share**

$$\begin{aligned} \Rightarrow \text{For Shah Rukh, M.V. of 1 share} &= ₹ x \\ \therefore \text{Income \% on M.V.} &= \text{Dividend \% on N.V.} \\ \therefore 10\% \text{ of } x &= 15\% \text{ of } ₹ 110 \end{aligned}$$

$$\begin{aligned} \Rightarrow \frac{10x}{100} &= \frac{15 \times 110}{100} \\ \Rightarrow x &= 165 \end{aligned}$$

**∴ Shah Rukh paid for each share = ₹ 165**

**Ans.**

**EXERCISE 3(A)**

- How much money will be required to buy 400, ₹ 12.50 shares at a premium of ₹ 1 ?
- How much money will be required to buy 250, ₹ 15 shares at a discount of ₹ 1.50 ?
- A person buys 120 shares at a nominal value of ₹ 40 each, which he sells at ₹ 42.50 each. Find his profit and profit percent.
- Find the cost of 85 shares of ₹ 60 each when quoted at ₹ 63.25.
- A man invests ₹ 800 in buying ₹ 5 shares and when they are selling at a premium of ₹ 1.15, he sells all the shares. Find his profit and profit percent.
- Find the annual income derived from 125, ₹ 120 shares paying 5% dividend.
- A man invests ₹ 3,072 in a company paying 5 % per annum, when its ₹ 10 share can be bought for ₹ 16 each. Find :
  - his annual income;
  - his percentage income on his investment.
- A man invests ₹ 7,770 in a company paying 5 percent dividend when a share of nominal value of ₹ 100 sells at a premium of ₹ 5. Find :
  - the number of shares bought;
  - annual income;
  - percentage income.
- A man buys ₹ 50 shares of a company, paying 12 percent dividend, at a premium of ₹ 10. Find :
  - the market value of 320 shares;
  - his annual income;
  - his profit percent.

10. A man buys ₹ 75 shares at a discount of ₹ 15 of a company paying 20% dividend. Find:
- the market value of 120 shares;
  - his annual income;
  - his profit percent.
11. A man has 300, ₹ 50 shares of a company paying 20% dividend. Find his net income after paying 3% income tax.
12. A company pays a dividend of 15% on its ten-rupee shares from which it deducts income tax at the rate of 22%. Find the annual income of a man who owns one thousand shares of this company ?
13. A man invests ₹ 8,800 in buying shares of a company of face value of rupees hundred

each at a premium of 10%. If he earns ₹ 1,200 at the end of the year as dividend find :

- the number of shares he has in the company.
  - the dividend percent per share. [2001]
14. A man invests ₹ 1,680 in buying shares of nominal value ₹ 24 and selling at 12% premium. The dividend on the shares is 15% per annum. Calculate :
- the number of shares he buys;
  - the dividend he receives annually.
15. By investing ₹ 7,500 in a company paying 10 percent dividend, an annual income of ₹ 500 is received. What price is paid for each of ₹ 100 share ?

### 3.3 Miscellaneous Problems :

- 10** A man buys a ₹ 80 share in a company, which pays 20% dividend. He buys the share at such a price that his profit is 16% on his investment. At what price did he buy the share ?

**Solution :**

Dividend (profit) given by the company on 1 share = 20% of ₹ 80 = ₹ 16.

Suppose the man buys one share for ₹  $x$ .

$$\therefore \text{His profit} = 16\% \text{ of } ₹ x = ₹ \frac{16x}{100}$$

$$\text{According to the statement, } \frac{16x}{100} = 16 \Rightarrow x = ₹ 100$$

**∴ The man buys each share for ₹ 100**

**Ans.**

**or, directly :**

$$\text{Rate of dividend} \times \text{N.V.} = \text{Profit (return)} \% \times \text{M.V.}$$

In this example, N.V. of 1 share = ₹ 80, Rate of dividend = 20%, Profit % = 16% and we are required to find M.V.

$$\therefore \frac{20}{100} \times 80 = \frac{16}{100} \times \text{M.V.}$$

$$\Rightarrow \text{M.V.} = ₹ \frac{20}{100} \times 80 \times \frac{100}{16} = ₹ 100 \quad \text{Ans.}$$

- 11** Ajay owns 560 shares of a company. The face value of each share is ₹ 25. The company declares a dividend of 9%. Calculate :
- the dividend that Ajay will get.
  - the rate of interest on his investment, if Ajay had paid ₹ 30 for each share. [2007]

**Solution :**

$$\begin{aligned}
 \text{(i)} \quad \text{Dividend on each share} &= 9\% \text{ of } ₹ 25 = ₹ \frac{9 \times 25}{100} \\
 \Rightarrow \quad \text{Dividend that Ajay will get} &= \text{Dividend on 560 shares} \\
 &= ₹ \frac{9 \times 25}{100} \times 560 = ₹ 1,260 \quad \text{Ans.}
 \end{aligned}$$

(ii) Let rate of interest on his investment =  $x\%$ .

Since, Ajay paid ₹ 30 for each share, market value of each share = ₹ 30

**We know :**

$$\text{Interest on M.V.} = \text{Dividend on N.V.}$$

$$\Rightarrow x\% \text{ of } ₹ 30 = 9\% \text{ of } ₹ 25$$

$$\Rightarrow \frac{x}{100} \times 30 = \frac{9}{100} \times 25 \Rightarrow x = 7.5$$

∴ **The rate of interest = 7.5%**

**Ans.**

**12** How much should a man invest in ₹ 80 shares selling at ₹ 75 to obtain an annual income of ₹ 1,080, if the dividend declared is 15 percent ?

**Solution :**

$$\therefore \text{Dividend on 1 share} = 15\% \text{ of } ₹ 80 = ₹ 12$$

$$\therefore \text{Number of shares bought} = \frac{\text{Total dividend}}{\text{Div. on 1 share}} = \frac{₹ 1,080}{₹ 12} = 900$$

Since, market value of each share = ₹ 75

$$\therefore \text{Sum invested by the man} = 900 \times ₹ 75 = ₹ 67,500 \quad \text{Ans.}$$

**13** A dividend of 9% was declared on ₹ 100 share selling at a certain price. If the rate of return is 7.5%, calculate :

(i) the market value of the share;

(ii) the amount to be invested to obtain an annual dividend of ₹ 630. [2000]

**Solution :**

$$\begin{aligned}
 \text{(i)} \quad \because \quad \text{Rate of return} \times \text{M.V.} &= \text{Rate of dividend} \times \text{N.V.}
 \end{aligned}$$

$$\Rightarrow \frac{7.5}{100} \times \text{M.V.} = \frac{9}{100} \times ₹ 100 \Rightarrow \text{M.V.} = ₹ 120$$

$$\therefore \text{M.V. of a share} = ₹ 120$$

**Ans.**

$$\begin{aligned}
 \text{(ii)} \quad \because \quad \text{Annual income on 1 share} &= 9\% \text{ of } ₹ 100 = ₹ 9
 \end{aligned}$$

$$\begin{aligned}
 \text{Number of shares bought} &= \frac{\text{Total annual income}}{\text{Annual income on 1 share}} \\
 &= \frac{₹ 630}{₹ 9} = 70
 \end{aligned}$$

And, **the amount to be invested** = No. of shares bought × M.V. of 1 share

$$= 70 \times ₹ 120 = ₹ 8,400$$

**Ans.**

- 14 Which is a better investment : 12% ₹ 100 shares at 120 or 8% ₹ 100 shares at 90 ?

**Solution :**

Since, profit% on M.V. = Dividend% on N.V.

**In first case :**

$$P\% \text{ on } ₹ 120 = 12\% \text{ on } ₹ 100$$

$$\Rightarrow \frac{P}{100} \times ₹ 120 = \frac{12}{100} \times ₹ 100 \Rightarrow \text{Profit} = 10\%$$

**And, in second case :**

$$P\% \text{ on } ₹ 90 = 8\% \text{ on } ₹ 100$$

$$\Rightarrow \frac{P}{100} \times ₹ 90 = \frac{8}{100} \times ₹ 100 \Rightarrow \text{Profit} = 8.9\%$$

∴ The investment giving greater profit%, will be better.

∴ **The first investment is better.**

**Ans.**

- 15 A man sells 60, ₹ 15 shares of a company paying 12 percent dividend, at ₹ 21 each and invests the proceeds in ₹ 6 shares of another company at ₹ 9 each. Find his change in income, if the second company pays a dividend of 8 percent.

**Solution :**

**In the 1st case :**

No. of shares = 60, N.V. of 1 share = ₹ 15 and rate of dividend = 12%

∴ Income on 1 share = 12% of ₹ 15 = ₹ 1.80

⇒ Total income =  $60 \times ₹ 1.80 = ₹ 108$

Now, he sells all the shares for ₹ 21 each

∴ Money obtained by selling all the 60 shares =  $60 \times ₹ 21 = ₹ 1,260$ .

**In the 2nd case :**

Sum invested = ₹ 1,260, N.V. of 1 share = ₹ 6; M.V. of 1 share = ₹ 9

and rate of dividend = 8%

∴ No. of shares bought =  $\frac{1,260}{9} = 140$

and dividend on 1 share = 8% of ₹ 6 = ₹ 0.48

⇒ Total income =  $140 \times ₹ 0.48 = ₹ 67.20$

∴ **Change (decrease) in income** = ₹ 108 - ₹ 67.20

= ₹ 40.80

**Ans.**

- 16** Mr. Ram Gopal invested ₹ 8,000 in 7% ₹ 100 shares at ₹ 80. After a year, he sold these shares at ₹ 75 each and invested the proceeds (including his dividend) in 18%, ₹ 25 shares at ₹ 41. Find :
- his dividend for the first year
  - his annual income in the second year
  - the percentage increase in his return on his original investment. [2006]

**Solution :**

Given : investment = ₹ 8,000, div. % = 7%, N.V. = ₹ 100 and M.V. = ₹ 80

$$(i) \text{ No. of shares} = \frac{\text{Investment}}{\text{M.V. of each share}} = \frac{\text{₹ } 8,000}{\text{₹ } 80} = 100$$

$$\therefore \text{Div. on 1 share} = 7\% \text{ of ₹ } 100 = ₹ 7$$

$$\therefore \text{His dividend for the first year} = ₹ 7 \times 100 = ₹ 700$$

**Ans.**

(ii) Since, each share is sold for ₹ 75

$$\therefore \text{The proceeds (including dividend)} = 100 \times ₹ 75 + ₹ 700 = ₹ 8,200$$

$$\text{Now the sum invested} = ₹ 8,200$$

$$\text{N.V. of each share} = ₹ 25$$

$$\text{M.V. of each share} = ₹ 41$$

$$\text{and, dividend} = 18\%$$

$$\therefore \text{No. of shares bought} = \frac{\text{₹ } 8,200}{\text{₹ } 41} = 200$$

$$\text{Div. on 1 share} = 18\% \text{ of ₹ } 25$$

$$= \frac{18}{100} \times ₹ 25 = ₹ 4.50$$

**∴ Annual dividend (income) in the second year**

$$= 200 \times ₹ 4.50 = ₹ 900$$

**Ans.**

(iii) Since, increase in return = ₹ 900 - ₹ 700 = ₹ 200

**∴ Percentage increase in return** (on the original investment)

$$= \frac{\text{₹ } 200}{\text{₹ } 8,000} \times 100\% = 2.5\%$$

**Ans.**

- 17** Ashok and Sandeep invest ₹ 18,000 each in buying shares of two different companies. Ashok buys 7.5% ₹ 100 shares at a discount of 20%, whereas Sandeep buys ₹ 50 shares at a premium of 20%. If both receive equal dividend at the end of the year, find the rate of dividend received by Sandeep.

**Solution :**

**For Ashok**

$$\text{Sum invested} = ₹ 18,000$$

$$\text{N.V. of each share} = ₹ 100$$

$$\therefore \text{Number of shares bought} = \frac{\text{₹ } 18,000}{\text{₹ } 80} = 225$$

$$\therefore \text{Dividend on 1 share} = 7.5\% \text{ of ₹ } 100 = \text{₹ } 7.50$$

$$\therefore \text{Total dividend received} = 225 \times \text{₹ } 7.50 = \text{₹ } 1687.50$$

### For Sandeep

$$\text{Sum invested} = \text{₹ } 18,000$$

$$\text{N.V. of each share} = \text{₹ } 50$$

$$\text{M.V. of each share} = \text{₹ } 50 + 20\% \text{ of ₹ } 50 = \text{₹ } 60$$

$$\therefore \text{Number of shares bought} = \frac{\text{₹ } 18,000}{\text{₹ } 60} = 300$$

Now, we have two methods of finding the rate of dividend.

### First method :

It is given that Ashok and Sandeep receive equal dividend.

$$\Rightarrow \text{Total dividend received by Sandeep} = \text{Total dividend received by Ashok} \\ = \text{₹ } 1687.50$$

$$\Rightarrow \text{Dividend on 300 shares} = \text{₹ } 1687.50$$

$$\text{and, } \text{dividend on each share} = \frac{\text{₹ } 1687.50}{300} = \text{₹ } \frac{45}{8}$$

$$\text{Since, N.V. of each share} = \text{₹ } 50$$

$$\Rightarrow \text{On ₹ } 50, \text{dividend} = \text{₹ } \frac{45}{8}$$

$$\Rightarrow \text{Rate of dividend} = \frac{45}{8 \times 50} \times 100\% = 11.25\% \quad \text{Ans.}$$

### Second Method :

Let the rate of dividend received by Sandeep =  $x\%$

$$\Rightarrow \text{Dividend on each share} = x\% \text{ of ₹ } 50$$

$$= \frac{x}{100} \times \text{₹ } 50 = \text{₹ } \frac{x}{2}$$

$$\Rightarrow \text{Dividend on 300 shares} = 300 \times \text{₹ } \frac{x}{2} = \text{₹ } 150x$$

Since, dividend received by both is the same

$$\therefore \text{₹ } 150x = \text{₹ } 1687.50$$

$$\Rightarrow x = \frac{1687.50}{150} = 11.25$$

$$\therefore \text{Rate of dividend received by Sandeep} = 11.25\% \quad \text{Ans.}$$

- 18 John had 1,000 shares of a company with a face value of ₹ 40 and paying 8% dividend. He sold some of these shares at a discount of 10% and invested the proceeds in ₹ 20 shares at a premium of 50% and paying 12% dividend. If the change in his income is ₹ 192, find the number of shares sold by John.

**Solution :**

Let the number of shares sold by John be  $x$ .

**In the first case :**

$$\therefore \text{N.V. of each share} = ₹ 40$$

$$\text{and rate of dividend} = 8\%$$

$$\therefore \text{Dividend on each share} = 8\% \text{ of } ₹ 40 = ₹ 3.20$$

$$\text{and, dividend on } x \text{ shares} = ₹ 3.20 x$$

$$\text{He sold each share for } ₹ 40 - 10\% \text{ of } ₹ 40 \text{ i.e. for } ₹ 36$$

$$\Rightarrow \text{Money obtained by selling } x \text{ shares} = ₹ 36 x$$

**In second case :**

$$\text{Sum invested} = ₹ 36 x$$

$$\text{N.V. of each share} = ₹ 20$$

$$\text{M.V. of each share} = ₹ 20 + 50\% \text{ of } ₹ 20 = ₹ 30$$

$$\therefore \text{Number of shares bought} = \frac{\text{Sum invested}}{\text{M.V. of each share}} = \frac{36x}{30} = \frac{6x}{5}$$

$$\text{Since, dividend on each share} = 12\% \text{ of } ₹ 20 = ₹ 2.40$$

$$\Rightarrow \text{Total dividend received} = \text{Div. on 1 share} \times \text{No. of shares}$$

$$= ₹ 2.40 \times \frac{6x}{5} = ₹ 2.88 x$$

$$\text{Given, change in income} = ₹ 192$$

$$\Rightarrow 3.20x - 2.88x = 192, \text{ this gives } x = 600$$

$$\therefore \text{Number of shares sold by John} = 600$$

**Ans.**

- 19** Divide ₹ 40,608 into two parts such that if one part is invested in 8% ₹ 100 shares at 8% discount and the other part is invested in 9% ₹ 100 shares at 8% premium, the annual incomes, from both the investments, are equal.

**Solution :**

Let the two parts be ₹  $x$  and ₹  $(40,608 - x)$ .

**For 1st part :**

$$\text{N.V. of each share} = ₹ 100$$

$$\text{M.V. of each share} = ₹ 100 - 8\% \text{ of } ₹ 100 = ₹ 92$$

$$\therefore \text{Number of shares bought} = \frac{x}{92} \quad [\because \text{Investment} = ₹ x]$$

$$\therefore \text{Dividend on each share} = 8\% \text{ of } ₹ 100 = ₹ 8 \quad [\because \text{Rate} = 8\%]$$

$$\Rightarrow \text{Total dividend} = ₹ 8 \times \frac{x}{92} = ₹ \frac{2x}{23}$$

**For 2nd part :**

$$\text{Investment} = ₹ (40,608 - x)$$

$$\text{N.V. of each share} = ₹ 100$$

$$\text{M.V. of each share} = ₹ 100 + 8\% \text{ of } ₹ 100 = ₹ 108$$

$$\therefore \text{Number of shares bought} = \frac{40,608 - x}{108}$$

$$\therefore \text{Dividend on each share} = 9\% \text{ of } ₹ 100 = ₹ 9 \quad [\because \text{Rate} = 9\%]$$

$$\Rightarrow \text{Total dividend} = ₹ 9 \times \frac{40,608 - x}{108} = ₹ \frac{40,608 - x}{12}$$

Given, that dividends (incomes) from both the investments are equal

$$\Rightarrow \frac{2x}{23} = \frac{40,608 - x}{12}$$

On solving, we get :

$$x = 19872 \text{ and } 40,608 - x = 40,608 - 19872 = 20736.$$

**∴ The two parts are ₹ 19,872 and ₹ 20,736**

**Ans.**

- 20** A man has a choice to invest in hundred-rupee shares of two companies A and B. Shares of company A are available at a premium of 20% and it pays 8% dividend whereas shares of company B are available at a discount of 10% and it pays 7% dividend. If the man invests equally in both the companies and the sum of the return from them is ₹ 936, find how much, in all, does he invest ?

**Solution :**

Let the man invests ₹  $x$  in each company.

**For company A :**

$$\text{N.V. of each share} = ₹ 100$$

$$\text{M.V. of each share} = ₹ 100 + 20\% \text{ of } ₹ 100 = ₹ 120$$

$$\therefore \text{Number of shares bought} = \frac{x}{120} \quad [\because \text{Investment} = ₹ x]$$

$$\therefore \text{Dividend on each share} = 8\% \text{ of } ₹ 100 = ₹ 8 \quad [\because \text{Rate} = 8\%]$$

$$\Rightarrow \text{Total dividend} = ₹ 8 \times \frac{x}{120} = ₹ \frac{x}{15}$$

**For company B :**

$$\text{N.V. of each share} = ₹ 100$$

$$\text{M.V. of each share} = ₹ 100 - 10\% \text{ of } ₹ 100 = ₹ 90$$

$$\therefore \text{Number of shares bought} = \frac{x}{90} \quad [\because \text{Investment} = ₹ x]$$

$$\therefore \text{Dividend on each share} = 7\% \text{ of } ₹ 100 = ₹ 7 \quad [\because \text{Rate} = 7\%]$$

$$\Rightarrow \text{Total dividend} = ₹ 7 \times \frac{x}{90} = ₹ \frac{7x}{90}$$

Given, sum of dividend (return) from both the companies = ₹ 936

$$\Rightarrow \frac{x}{15} + \frac{7x}{90} = 936 \quad i.e., x = 6480$$

⇒ The man invests ₹ 6,480 in each of the two companies

$$\Rightarrow \text{The man invests in all} = ₹ 2 \times 6,480 = ₹ 12,960$$

**Ans.**

### EXERCISE 3(B)

1. A man buys 75, ₹ 100 shares paying 9 percent dividend. He buys shares at such a price that he gets 12 percent of his money. At what price did he buy the shares ?
2. By purchasing ₹ 25 gas shares for ₹ 40 each, a man gets 4 percent profit on his investment. What rate percent is the company paying ? What is his dividend if he buys 60 shares ?
3. Hundred rupee shares of a company are available in the market at a premium of ₹ 20. Find the rate of dividend given by the company when a man's return on his investment is 15 percent.
4. ₹ 50 shares of a company are quoted at a discount of 10%. Find the rate of dividend given by the company, the return on the investment on these shares being 20 percent.
5. A company declares 8 percent dividend to the share holders. If a man receives ₹ 2,840 as his dividend, find the nominal value of his shares.
6. How much should a man invest in ₹ 100 shares selling at ₹ 110 to obtain an annual income of ₹ 1,680, if the dividend declared is 12% ?
7. A company declares a dividend of 11.2% to all its share-holders. If its ₹ 60 share is available in the market at a premium of 25%, how much should Rakesh invest, in buying the shares of this company, in order to have an annual income of ₹ 1,680 ?
8. A man buys 400, twenty-rupee shares at a premium of ₹ 4 each and receives a dividend of 12%. Find :
  - (i) the amount invested by him.
  - (ii) his total income from the shares.
  - (iii) percentage return on his money.
9. A man buys 400, twenty-rupee shares at a discount of 20% and receives a return of 12% on his money. Calculate :
  - (i) the amount invested by him.
  - (ii) the rate of dividend paid by the company.
10. A company, with 10,000 shares of ₹ 100 each, declares an annual dividend of 5%.
  - (i) What is the total amount of dividend paid by the company ?
  - (ii) What should be the annual income of a man who has 72 shares in the company ?
11. A lady holds 1800, ₹ 100 shares of a company that pays 15% dividend annually. Calculate her annual dividend. If she had bought these shares at 40% premium, what is the return she gets as percent on her investment ?
 

[2008]
12. A man invests ₹ 11,200 in a company paying 6 percent per annum when its ₹ 100 shares can be bought for ₹ 140. Find :
  - (i) his annual dividend.
  - (ii) his percentage return on his investment.
13. Mr. Sharma has 60 shares of N.V. ₹ 100 and sells them when they are at a premium of 60%. He invests the proceeds in shares of nominal value ₹ 50, quoted at 4% discount, and paying 18% dividend annually. Calculate :
  - (i) the sale proceeds;
  - (ii) the number of shares he buys; and
  - (iii) his annual dividend from the shares.
14. A company with 10,000 shares of nominal value ₹ 100 declares an annual dividend of 8% to the share-holders.
  - (i) Calculate the total amount of dividend paid by the company.
  - (ii) Ramesh had bought 90 shares of the company at ₹ 150 per share. Calculate the dividend he receives and the percentage of return on his investment.
15. Which is the better investment :  
16% ₹ 100 shares at 80 or 20% ₹ 100 shares at 120 ?
16. A man has a choice to invest in hundred-rupee shares of two firms at ₹ 120 or at ₹ 132. The first firm pays a dividend of 5% per annum and the second firm pays a dividend of 6% per annum. Find :
  - (i) which company is giving a better return.
  - (ii) if a man invests ₹ 26,400 with each firm, how much will be the difference between the annual returns from the two firms ?
17. A man bought 360, ten-rupee shares of a company, paying 12 percent per annum. He sold the shares when their price rose to

₹ 21 per share and invested the proceeds in five-rupee shares paying 4.5 percent per annum at ₹ 3.50 per share. Find the annual change in his income.

18. A man sold 400 (₹ 20) shares of a company, paying 5% at ₹ 18 and invested the proceeds in (₹ 10) shares of another company paying 7% at ₹ 12. How many (₹ 10) shares did he buy and what was the change in his income ?
19. Two brothers A and B invest ₹ 16,000 each in buying shares of two companies. A buys

3% hundred-rupee shares at 80 and B buys ten-rupee shares at par. If they both receive equal dividend at the end of the year, find the rate percent of the dividend received by B.

20. A man invests ₹ 20,020 in buying shares of N.V. ₹ 26 at 10% premium. The dividend on the shares is 15% per annum. Calculate :
  - (i) the number of shares he buys.
  - (ii) the dividend he receives annually.
  - (iii) the rate of interest he gets on his money.

(2003)

### EXERCISE 3(C)

1. By investing ₹ 45,000 in 10% ₹ 100 shares, Sharad gets ₹ 3,000 as divided. Find the market value of each share.
2. Mrs. Kulkarni invests ₹ 1,31,040 in buying ₹ 100 shares at a discount of 9%. She sells shares worth ₹ 72,000 at a premium of 10% and the rest at a discount of 5%. Find her total gain or loss on the whole.
3. A man invests a certain sum in buying 15% ₹ 100 shares at 20% premium. Find :
  - (i) his income from one share.
  - (ii) the number of shares bought to have an income, from the dividend, ₹ 6,480.
  - (iii) sum invested.
4. Gagan invested 80% of his savings in 10% ₹ 100 shares at 20% premium and the rest of his savings in 20% ₹ 50 shares at 20% discount. If his incomes from these shares is ₹ 5,600, calculate :
  - (i) his investment in shares on the whole.
  - (ii) the number of shares of first kind that he bought.
  - (iii) percentage return, on the shares bought, on the whole.
5. A company pays a dividend of 15% on its ₹ 100 shares from which income tax at the rate of 20% is deducted. Find :
  - (i) the net annual income of Gopal who owns 7,200 shares of this company.
  - (ii) the sum invested by Ramesh when the shares of this company are bought by him at 20% premium and the gain required by him (after deduction of income tax) is ₹ 9,000.
6. Mr. Joseph sold some ₹ 100 shares, paying 10% dividend, at a discount of 25% and

invested the proceeds in ₹ 100 shares, paying 16% dividend, at a discount of 20%. By doing so, his income was increased by ₹ 4,800. Find the number of shares originally held by Mr. Joseph.

7. Ashwarya bought 496, ₹ 100 shares at ₹ 132 each. Find :
  - (i) investment made by her.
  - (ii) income of Ashwarya from these shares, if the rate of dividend is 7.5%.
  - (iii) how much extra must Ashwarya invest in order to increase her income by ₹ 7,200 ?
8. Gopal has some ₹ 100 shares of company A, paying 10% dividend. He sells a certain number of these shares at a discount of 20% and invests the proceeds in ₹ 100 shares at ₹ 60 of company B paying 20% dividend. If his income, from the shares sold, increases by ₹ 18,000, find the number of shares sold by Gopal.
9. A man invests a certain sum of money in 6% hundred-rupee shares at ₹ 12 premium. When the shares fell to ₹ 96, he sold out all the shares bought and invested the proceed in 10%, ten-rupee shares at ₹ 8. If the change in his income is ₹ 540, find the sum invested originally.
10. Mr. Gupta has a choice to invest in ten-rupee shares of two firms at ₹ 13 or at ₹ 16. If the first firm pays 5% dividend and the second firm pays 6% dividend per annum, find :
  - (i) which firm is paying better.
  - (ii) if Mr. Gupta invests equally in both the firms and the difference between the returns from them is ₹ 30, find how much, in all, does he invest ?

11. A man invested ₹ 45,000 in 15% ₹ 100 shares quoted at ₹ 125. When the M.V. of these shares rose to ₹ 140, he sold some shares, just enough to raise ₹ 8,400. Calculate :  
 (i) the number of shares he still holds;  
 (ii) the dividend due to him on these remaining shares. [2004]
12. Mr. Tiwari invested ₹ 29,040 in 15% ₹ 100 shares quoted at a premium of 20%. Calculate:  
 (i) the number of shares bought by Mr. Tiwari.  
 (ii) Mr. Tiwari's income from the investment.  
 (iii) the percentage return on his investment.
13. A dividend of 12% was declared on ₹ 150 shares selling at a certain price. If the rate of return is 10%, calculate :  
 (i) the market value of the shares.  
 (ii) the amount to be invested to obtain an annual dividend of ₹ 1,350.
14. Divide ₹ 50,760 into two parts such that if one part is invested in 8% ₹ 100 shares at 8% discount and the other in 9% ₹ 100 shares at 8% premium, the annual incomes from both the investments are equal.
15. Mr. Shameem invested  $33\frac{1}{3}\%$  of his savings in 20% ₹ 50 shares quoted at ₹ 60 and the remainder of the savings in 10% ₹ 100 shares quoted at ₹ 110. If his total income from these investments is ₹ 9,200; find :  
 (i) his total savings  
 (ii) the number of ₹ 50 shares.  
 (iii) the number of ₹ 100 shares.
16. Vivek invests ₹ 4,500 in 8%, ₹ 10 shares at ₹ 15. He sells the shares when the price rises to ₹ 30, and invests the proceeds in 12% ₹ 100 shares at ₹ 125. Calculate :  
 (i) the sale proceeds  
 (ii) the number of ₹ 125 shares he buys.  
 (iii) the change in his annual income from dividend. [2010]
17. Mr. Parekh invested ₹ 52,000 on ₹ 100 shares at a discount of ₹ 20 paying 8% dividend. At the end of one year he sells the shares at a premium of ₹ 20. Find:  
 (i) the annual dividend.  
 (ii) the profit earned including his dividend. [2011]
18. Salman buys 50 shares of face value ₹ 100 available at ₹ 132.  
 (i) What is his investment ?  
 (ii) If the dividend is 7.5%, what will be his annual income ?  
 (iii) If he wants to increase his annual income by ₹ 150, how many extra shares should he buy ? [2013]
19. Salman invests a sum of money in ₹ 50 shares, paying 15% dividend quoted at 20% premium. If his annual dividend is ₹ 600, calculate :  
 (i) the number of shares he bought.  
 (ii) his total investment.  
 (iii) the rate of return on his investment. [2014]
20. Rohit invested ₹ 9,600 on ₹ 100 shares at ₹ 20 premium paying 8% dividend. Rohit sold the shares when the price rose to ₹ 160. He invested the proceeds (excluding dividend) in 10% ₹ 50 shares at ₹ 40. Find the :  
 (i) original number of shares.  
 (ii) sale proceeds.  
 (iii) new number of shares.  
 (iv) change in the two dividends. [2015]