

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. Sum invested = No. of shares bought × M.V. of 1 share.

If the shares are available at par

⇒ M.V. of each share = N.V. of it

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

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

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

$$4. \quad \begin{aligned} \text{Return \%} &= \text{Income (profit) \%} \\ &= \frac{\text{Income}}{\text{Investment}} \times 100\% \end{aligned}$$

5. **For a share holder :**

$$\begin{aligned} \text{Income} &= \text{Return} = \text{Profit} \\ &= \text{Dividend paid by the company} \end{aligned}$$

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

$$\Rightarrow \text{Money required to buy 350 shares} = 350 \times ₹ 27 = ₹ 9,450 \quad \text{Ans.}$$

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

$$\Rightarrow \text{Money required to buy 275 shares} = 275 \times ₹ 50 = ₹ 13,750 \quad \text{Ans.}$$

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

∴ Money required to buy 1 share = ₹ 38.50

$$\Rightarrow \text{Money required to buy 50 shares} = 50 \times ₹ 38.50 = ₹ 1,925 \quad \text{Ans.}$$

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

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

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

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

$$\text{Therefore, her total income} = 200 \times ₹ 3 = ₹ 600 \quad \text{Ans.}$$

or, directly :

$$\begin{aligned} \text{Income} &= \text{No. of shares} \times \text{Rate of div.} \times \text{Face value (N.V.) of each share} \\ &= 200 \times 6\% \times ₹ 50 = ₹ 600 \quad \text{Ans.} \end{aligned}$$

- 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) Market value of 1 share = ₹ 100 + ₹ 20 = ₹ 120
 \Rightarrow **Market value of 600 shares** = $600 \times ₹ 120 = ₹ 72,000$ **Ans.**

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

(iii) ₹ 9,000 is the income obtained on investing ₹ 72,000
 \therefore **Percentage income** = $\frac{9,000}{72,000} \times 100\% = 12.5\%$ **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 :

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

Given : dividend (income) on 1 share = 12% of N.V.
 $= 12\% \text{ of } ₹ 100 = ₹ 12$

\therefore **Total income from the shares** = $560 \times ₹ 12 = ₹ 6,720$ **Ans.**

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

- 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 :

\therefore Half-yearly dividend on 1 share = 4% of ₹ 50

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

\Rightarrow **Total dividend due at the end of the year** = $250 \times ₹ 4 = ₹ 1,000$. **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:

∴ Face value of each share = ₹ 10
 and the number of shares bought = 500
 ∴ Total sum invested in shares = $500 \times ₹ 10 = ₹ 5,000$
 Since, total dividend in the first year = ₹ 400

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

Ans.

- 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 :

∴ Mukul invests ₹ 9,000 and M.V. of each share = ₹ 150

$$\Rightarrow \text{No. of shares bought by Mukul} = \frac{₹ 9,000}{₹ 150} = 60$$

His annual income on 1 share = 6% of N.V. = 6% of ₹ 100 = ₹ 6

$$\Rightarrow \text{His total annual income} = 60 \times ₹ 6 = ₹ 360 \quad \text{Ans.}$$

∴ 50% of shares = 50% of 60 = 30

⇒ Money received on selling these shares = $30 \times ₹ 200 = ₹ 6,000$

Also, for Mukul, cost of these shares = $30 \times ₹ 150 = ₹ 4,500$

$$\therefore \text{Mukul's gain in this transaction} = ₹ 6,000 - ₹ 4,500 = ₹ 1,500 \quad \text{Ans.}$$

- 8** A man wants to buy 62 shares available at ₹ 132 (par value being ₹ 100).
 (i) How much he will have to invest?
 (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? [2002]

Solution :

(i) **He will have to invest** = $62 \times ₹ 132 = ₹ 8,184$ **Ans.**

(ii) Dividend on 1 share = 7.5% of ₹ 100 = ₹ 7.50

$$\Rightarrow \text{His annual income} = 62 \times ₹ 7.50 = ₹ 465 \quad \text{Ans.}$$

(iii) ∴ The man wants to increase his income by ₹ 150

and the income on one share = ₹ 7.50

$$\therefore \text{The no. of extra shares he must buy} = \frac{₹ 150}{₹ 7.50} = 20 \quad \text{Ans.}$$

9 A company with 4000 shares of nominal value of ₹ 110 each declares an annual dividend of 15%. Calculate :

- (i) the total amount of dividend paid by the company.
- (ii) the annual income of Shah Rukh who holds 88 shares in the company ?
- (iii) 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

$$\Rightarrow \text{For Shah Rukh, M.V. of 1 share} = ₹ x$$

$$\therefore \text{Income \% on M.V.} = \text{Dividend \% on N.V.}$$

$$\therefore 10\% \text{ of } x = 15\% \text{ of } ₹ 110$$

$$\Rightarrow \frac{10x}{100} = \frac{15 \times 110}{100}$$

$$\Rightarrow x = 165$$

$$\therefore \text{Shah Rukh paid for each share} = ₹ 165$$

Ans.

EXERCISE 3(A)

1. How much money will be required to buy 400, ₹ 12.50 shares at a premium of ₹ 1 ?
2. How much money will be required to buy 250, ₹ 15 shares at a discount of ₹ 1.50 ?
3. 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.
4. Find the cost of 85 shares of ₹ 60 each when quoted at ₹ 63.25.
5. 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.
6. Find the annual income derived from 125, ₹ 120 shares paying 5% dividend.
7. A man invests ₹ 3,072 in a company paying 5 % per annum, when its ₹ 10 share can be bought for ₹ 16 each. Find :
 - (i) his annual income;
 - (ii) his percentage income on his investment.
8. 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 :
 - (i) the number of shares bought;
 - (ii) annual income;
 - (iii) percentage income.
9. A man buys ₹ 50 shares of a company, paying 12 percent dividend, at a premium of ₹ 10. Find :
 - (i) the market value of 320 shares;
 - (ii) his annual income;
 - (iii) his profit percent.

10. A man buys ₹ 75 shares at a discount of ₹ 15 of a company paying 20% dividend. Find:
 (i) the market value of 120 shares;
 (ii) his annual income;
 (iii) 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 :
 (i) the number of shares he has in the company.
 (ii) 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 :
 (i) the number of shares he buys;
 (ii) 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 .

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

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

\therefore 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 :
 (i) the dividend that Ajay will get.
 (ii) the rate of interest on his investment, if Ajay had paid ₹ 30 for each share. [2007]

Solution :

(i) Dividend on each share = 9% of ₹ 25 = ₹ $\frac{9 \times 25}{100}$
⇒ **Dividend that Ajay will get** = Dividend on 560 shares
= ₹ $\frac{9 \times 25}{100} \times 560 = ₹ 1,260$ **Ans.**

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

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

We know :

Interest on M.V. = Dividend on N.V.

⇒ $x\%$ of ₹ 30 = 9% of ₹ 25

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

∴ **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 :

∴ Dividend on 1 share = 15% of ₹ 80 = ₹ 12

∴ 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

∴ **Sum invested** by the man = $900 \times ₹ 75 = ₹ 67,500$ **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 :

(i) ∴ Rate of return \times M.V. = Rate of dividend \times N.V.

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

∴ **M.V. of a share = ₹ 120** **Ans.**

(ii) ∴ Annual income on 1 share = 9% of ₹ 100 = ₹ 9

Number of shares bought = $\frac{\text{Total annual income}}{\text{Annual income on 1 share}}$

= $\frac{₹ 630}{₹ 9} = 70$

And, **the amount to be invested** = No. of shares bought \times 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%

$$\therefore \text{Income on 1 share} = 12\% \text{ of ₹ } 15 = ₹ 1.80$$

$$\Rightarrow \text{Total income} = 60 \times ₹ 1.80 = ₹ 108$$

Now, he sells all the shares for ₹ 21 each

$$\therefore \text{Money obtained by selling all the 60 shares} = 60 \times ₹ 21 = ₹ 1,260.$$

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%

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

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

$$\Rightarrow \text{Total income} = 140 \times ₹ 0.48 = ₹ 67.20$$

$$\therefore \text{Change (decrease) in income} = ₹ 108 - ₹ 67.20$$

$$= ₹ 40.80$$

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

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

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

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

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

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

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

$$\text{N.V. of each share} = \text{₹ 25}$$

$$\text{M.V. of each share} = \text{₹ 41}$$

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

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

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

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

\therefore Annual dividend (income) in the second year

$$= 200 \times \text{₹ 4.50} = \text{₹ 900} \quad \text{Ans.}$$

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

\therefore Percentage increase in return (on the original investment)

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

- 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

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

$$\text{N.V. of each share} = \text{₹ 100}$$

$$\text{M.V. of each share} = ₹ 100 - 20\% \text{ of } ₹ 100 = ₹ 80$$

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

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

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

For Sandeep

$$\text{Sum invested} = ₹ 18,000$$

$$\text{N.V. of each share} = ₹ 50$$

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

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

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

First method :

It is given that Ashok and Sandeep receive equal dividend.

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

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

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

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

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

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

Second Method :

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

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

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

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

Since, dividend received by both is the same

$$\therefore ₹ 150x = ₹ 1687.50$$

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

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

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 :

$$\begin{aligned} \therefore \quad & \text{N.V. of each share} = ₹ 40 \\ & \text{and rate of dividend} = 8\% \\ \therefore \quad & \text{Dividend on each share} = 8\% \text{ of } ₹ 40 = ₹ 3.20 \\ & \text{and, dividend on } x \text{ shares} = ₹ 3.20 x \end{aligned}$$

He sold each share for ₹ 40 – 10% of ₹ 40 i.e. for ₹ 36

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

In second case :

$$\begin{aligned} \text{Sum invested} &= ₹ 36 x \\ \text{N.V. of each share} &= ₹ 20 \\ \text{M.V. of each share} &= ₹ 20 + 50\% \text{ of } ₹ 20 = ₹ 30 \\ \therefore \quad \text{Number of shares bought} &= \frac{\text{Sum invested}}{\text{M.V. of each share}} = \frac{36 x}{30} = \frac{6 x}{5} \end{aligned}$$

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

$$\begin{aligned} \Rightarrow \quad \text{Total dividend received} &= \text{Div. on 1 share} \times \text{No. of shares} \\ &= ₹ 2.40 \times \frac{6 x}{5} = ₹ 2.88 x \end{aligned}$$

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

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

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

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 :

$$\begin{aligned} \text{N.V. of each share} &= ₹ 100 \\ \text{M.V. of each share} &= ₹ 100 - 8\% \text{ of } ₹ 100 = ₹ 92 \\ \therefore \quad \text{Number of shares bought} &= \frac{x}{92} \quad [\because \text{Investment} = ₹ x] \\ \therefore \quad \text{Dividend on each share} &= 8\% \text{ of } ₹ 100 = ₹ 8 \quad [\because \text{Rate} = 8\%] \\ \Rightarrow \quad \text{Total dividend} &= ₹ 8 \times \frac{x}{92} = ₹ \frac{2x}{23} \end{aligned}$$

For 2nd part :

$$\begin{aligned} \text{Investment} &= ₹ (40,608 - x) \\ \text{N.V. of each share} &= ₹ 100 \\ \text{M.V. of each share} &= ₹ 100 + 8\% \text{ of } ₹ 100 = ₹ 108 \end{aligned}$$

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

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

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

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

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

On solving, we get :

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

\therefore 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

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

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

\Rightarrow 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 ?
 - (iii) If he received only 4% of his investment, find the price he paid for each share.
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 ?

Give your answer to the nearest integer.
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

[2008]

- ₹ 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 :
- the number of shares he buys.
 - the dividend he receives annually.
 - the rate of interest he gets on his money.

(2003)

EXERCISE 3(C)

- By investing ₹ 45,000 in 10% ₹ 100 shares, Sharad gets ₹ 3,000 as dividend. Find the market value of each share.
- 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.
- A man invests a certain sum in buying 15% ₹ 100 shares at 20% premium. Find :
 - his income from one share.
 - the number of shares bought to have an income, from the dividend, ₹ 6,480.
 - sum invested.
- 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 :
 - his investment in shares on the whole.
 - the number of shares of first kind that he bought.
 - percentage return, on the shares bought, on the whole.
- A company pays a dividend of 15% on its ₹ 100 shares from which income tax at the rate of 20% is deducted. Find :
 - the net annual income of Gopal who owns 7,200 shares of this company.
 - 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.
- 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.
- Ashwarya bought 496, ₹ 100 shares at ₹ 132 each. Find :
 - investment made by her.
 - income of Ashwarya from these shares, if the rate of dividend is 7.5%.
 - how much extra must Ashwarya invest in order to increase her income by ₹ 7,200 ?
- 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.
- 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.
- 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 :
 - which firm is paying better.
 - 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 :
- the number of shares he still holds;
 - 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:
- the number of shares bought by Mr. Tiwari.
 - Mr. Tiwari's income from the investment.
 - 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 :
- the market value of the shares.
 - 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 :
- his total savings
 - the number of ₹ 50 shares.
 - 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 :
- the sale proceeds
 - the number of ₹ 125 shares he buys.
 - 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:
- the annual dividend.
 - the profit earned including his dividend. [2011]
18. Salman buys 50 shares of face value ₹ 100 available at ₹ 132.
- What is his investment ?
 - 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 ? [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 :
- the number of shares he bought.
 - his total investment.
 - 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 :
- original number of shares.
 - sale proceeds.
 - new number of shares.
 - change in the two dividends. [2015]