DON BOSCO SCHOOL, RANCHI

MATHEMATICS

Chapter 1 - GST [Goods and Services Tax]

Exercise Ex. 1(A)

Question 1

For the following transaction within Delhi, fill in the blanks to find the amount of bill :

MRP = Rs. 12,000, Discount % = 30%, GST = 18%

Discount =

Selling price (discounted value) =

CGST =

SGST =

IGST =

Amount of Bill =

Solution 1

MRP = Rs. 12,000, Discount % = 30%, GST = 18%

Discount = 30% of 12,000 = $\frac{30}{100} \times 12000 = \text{Rs. } 3600$

Selling price (discounted value) = 12000 - 3600 = Rs. 8400

CGST = 9% of 8400 = Rs. 756

SGST = 9% of 8400 = Rs. 756

IGST = 0

Amount of Bill = Selling price + CGST + SGST = 8400 + 756 + 756 = Rs. 9912

Question 2

For the following transaction from Delhi to Jaipur, fill in the blanks to find the amount of bill :

MRP = Rs. 50,000, Discount % = 20%, GST = 28%

Discount =

Selling price (discounted value) =

CGST =

SGST =

IGST =

Amount of Bill =

Solution 2

MRP = Rs. 50,000, Discount % = 20%, GST = 28%

Discount = 20% of 50,000 = $\frac{20}{100} \times 50,000 = \text{Rs. } 10,000$

Selling price (discounted value) = 50,000 - 10,000 = Rs. 40,000

CGST = 0

SGST = 0

IGST = 28% of 40,000 = $\frac{28}{100} \times 40,000 = \text{Rs. } 11,200$

Amount of Bill = Selling price + IGST = 40,000 + 11,200 = Rs. 51,200

Question 3

A computer mechanic in Delhi charges repairing cost from five different persons A, B, C, D and E with certain discounts. The repairing costs and the corresponding discounts are as given below :

Name of the person	**A**	**B**	**C**	**D**	**E**
Repairing cost (in Rs.)	5500	6250	4800	7200	3500
Discount %	30	40	30	20	40

If the rate of GST is 18%, find the total money (including GST) received by the mechanic.

Solution 3

Name of the person	Repairing cost (in Rs.)	Discount %	Discount	Selling price	CGST (9%)	SGST (9%)
A	5500	30	1650	3850	346.5	346.5
B	6250	40	2500	3750	337.5	337.5
C	4800	30	1440	3360	302.4	302.4
D	7200	20	1440	5760	518.4	518.4
E	3500	40	1400	2100	189	189
Total				18,820	1693.8	1693.8

The total money (including GST) received by the mechanic is 18,820 + 1693.8 + 1693.8 = Rs. 22,207.6

Question 4

Find the amount of bill for the following intra-state transaction of goods/services. The GST rate is 5%.

Quantity (no. of items)	MRP of each item (in Rs.)	Discount %
18	150	10
24	240	20
30	100	30
12	120	20

Solution 4

Quantity	MRP	Total MRP	Discount %	Discounted price	Selling price	CGST 2.5%	SGST 2.5%
18	150	2700	10	270	2430	60.75	60.75
24	240	5760	20	1152	4608	115.2	115.2
30	100	3000	30	900	2100	52.5	52.5
12	120	1440	20	288	1152	28.8	28.8
Total					10,290	257.25	257.25

Amount of bill = Selling price + GST

= 10,290 + 257.25 + 257.25

= Rs. 10,804.5

Question 5

Find the amount of bill for the following inter-state transaction of goods/services. The GST rate is 18%.

Quantity (no. of items)	35	47	20
MRP of each item (in Rs.)	420	600	350
Discount %	10	10	20

Solution 5

Quantity	MRP	Total MRP	Discount %	Discounted price	Selling price	IGST 18%
35	420	14,700	10	1470	13,230	2381.4
47	600	28,200	10	2820	25,380	4568.4
20	350	7000	20	1400	5600	1008
Total					44,210	7961.76

Amount of bill = Selling price + IGST

= 44,210 + 7961.76

= Rs. 52,167.8

Question 6

Find the amount of bill for the following intra-state transaction of goods/services.

MRP (in Rs.)	12,000	15,000	9500	18,000
Discount %	30	20	30	40
CGST %	6	9	14	2.5

Solution 6

MRP (in Rs.)	Discount %	CGST %	Discounted value	Selling price	CGST	SGST
12,000	30	6	3600	8400	504	504
15,000	20	9	3000	12,000	1080	1080
9500	30	14	2850	6650	931	931
18,000	40	2.5	7200	10,800	270	270
				37,850	2785	2785

Amount of bill = Selling price + CGST + SGST

= 37,850 + 2785 + 2785 = Rs. 43,420

Question 7

Find the amount of bill for the following inter-state transaction of goods/services.

MRP (in Rs.)	12,000	15,000	9500	18,000
Discount %	30	20	30	40
CGST %	6	9	14	2.5

Solution 7

MRP (in Rs.)	Discount	Discounted value	Selling price	IGST	IGST
12,000	30	3600	8400	12	1008
15,000	20	3000	12,000	18	2160
9500	30	2850	6650	28	1862
18,000	40	7200	10,800	5	540
			37,850		5570

Amount of bill = Selling price + GST

= 37,850 + 5570

= Rs. 43,420

Question 8

A dealer in Mumbai supplied an item at the following prices to a dealer in Delhi. Find the total amount of the bill.

Rate per piece (in Rs.)	Quantity (no. of pieces)	Discount %	SGST %
180	10	Net	9
260	20	20	9
310	30	Net	9
175	20	30	9

Solution 8

Rate per piece (in Rs.)	Quantity (no. of pieces)	Discount %	MRP	Selling price	IGST @18%
180	10	Net	1800	1800	324
260	20	20	5200	4160	748.8
310	30	Net	9300	9300	1674
175	20	30	3500	2450	441
				17,710	3187.8

Amount of bill = Selling price + IGST

= 17,710 + 3187.8

= Rs. 20,897.8

Question 9

National Trading Company, Meerut (UP) made the supply of the following goods/services to Samarth Traders, Noida (UP). Find the total amount of bill if the rate of GST = 12%

Quantity (no. of pieces)	20	30	12	40
MRP (in Rs. per piece)	225	320	300	250
Discount %	40	30	50	40

Solution 9

MRP (in Rs. per piece)	**Quantity (no. of pieces)**	**Discount %**	**MRP**	**Selling price**	**SGST @ 6%**	**CGST @ 6%**
225	20	40	4500	2700	162	162
320	30	30	9600	6720	403.2	403.2
300	12	50	3600	1800	108	108
250	40	40	10,000	6000	360	360
				17,220	1033.2	1033.2

Amount of bill = Selling price + SGST + CGST

= 17,220 + 2066.4

= Rs. 19,286.4

Question 10

M/s Ram Traders, Delhi, provided the following services to M/s Geeta Trading Company in Agra (UP). Find the amount of bill :

Number of services	8	12	10	16
Cost of each service (in Rs.)	680	320	260	420
GST %	5	12	18	12

Solution 10

Number of services	**Cost of each service (in Rs.)**	**GST %**	**MRP**	**IGST**
8	680	5	5440	272
12	320	12	3840	460.8
10	260	18	2600	468
16	420	12	6720	806.4
			18,600	2007.2

Amount of bill = Selling price + IGST

= 18,600 + 2007.2

= Rs. 20,607.2

Question 11

For the following, find the amount of bill data :

Rate per piece (in Rs.)	Number of pieces	Discount %	GST%
18	360	10	12
12	480	20	18
12	120	5	12
28	150	20	28

Solution 11

Rate per piece (in Rs.)	Number of pieces	Discount %	MRP (in Rs.)	Selling price (in Rs.)	GST %	GST (in Rs.)
18	360	10	6480	5832	12	699.84
12	480	20	5760	4608	18	829.44
12	120	5	1440	1368	12	164.16
28	150	20	4200	3360	28	940.8
				15,168		2634.24

Amount of bill = Selling price + GST

= 15,168 + 2634.24

= Rs. 17,802.24

Question 12

The tax invoice of a telecom service in Meerut shows cost of services provided by it as Rs. 750. If the GST rate is 18%, find the amount of the bill.

Solution 12

According to the question,

GST = 18% of 750

$$= \frac{18}{100} \times 750 = \text{Rs. } 135$$

The amount of bill = 750 + 135 = Rs. 885

Question 13

Mr. Pankaj took Health Insurance Policy for his family and paid Rs. 900 as SGST. Find the total annual premium paid by him for this policy, rate of GST being 18%.

Solution 13

Let the total annual premium paid by Mr. Pankaj be Rs. x. According to the question, 18% of x = SGST + CGST 18% of x = 1800 $\because$ SGST = CGST $\frac{18}{100} \times x = 1800$ x = Rs. 10,000

Question 14

Mr. Malik went on a tour to Goa. He took a room in a hotel for two days at the rate of Rs. 5000 per day. On the same day, his friend John also joined him. Hotel provided an extra bed charging Rs. 1000 per day for the bed. How much GST, at the rate of 28% is charged by the hotel in the bill to Mr. Malik for both the days?

Solution 14

According to the question,

The amount of bill = 5000 × 2 + 1000 + 1000

= 10,000 + 2000

= Rs. 12,000

GST = 28% of 12,000

$$= \frac{28}{100} \times 12,000 = 3360$$

GST charged by Mr. Malik Rs. 3360.

Question 15

Asharaf went to see a movie. He wanted to purchase a movie ticket for Rs. 80. As the ticket for Rs. 80 was not available, he purchased a ticket for Rs. 120 of upper class. How much extra GST did he pay for the ticket? (GST for a ticket below Rs. 100 is 18% and GST for a ticket above Rs. 100 is 28%)

Solution 15

According to the question,

GST on ticket of Rs. 80 = 18% of 80 = $\frac{18}{100} \times 80 = \text{Rs. } 14.40$

GST on ticket of Rs. 120 = 28% of 120 = $\frac{28}{100} \times 120 = \text{Rs. } 33.60$

Difference between both GST = 33.60 - 14.40 = Rs. 19.20

Chapter 1 - GST [Goods and Services Tax]

Exercise Ex. 1(B)

Question 1

Fill in the blanks :

When the goods/services are sold for Rs. 15,000 under intra-state transaction from station A to station B and the rate of GST is 12%.

As per GST System

a. S.P. at station A =
b. CGST = 6% of 15,000 =
   SGST = 6% of 15,000 =
c. C.P. at station B =
d. If profit = Rs. 5000
   S.P. at station B =
   Now the same goods/services are moved under inter-state transaction from station B to station C and the rate of tax is 12%.
e. GST =
f. C.P. at station C =

Solution 1

When the goods/services are sold for Rs. 15,000 under intra-state transaction from station A to station B and the rate of GST is 12%.

As per GST System

a. S.P. at station A = Rs. 15,000
b. CGST = 6% of 15,000 = Rs. 900
   SGST = 6% of 15,000 = Rs. 900
c. C.P. at station B = Rs. 15,000
d. If profit = Rs. 5000
   S.P. at station B = 15,000 + 5000 = Rs. 20,000
   Now the same goods/services are moved under inter-state transaction from station B to station C and the b rate of tax is 12%.
e. GST = 12% of 20,000 = Rs. 2400
f. C.P. at station C = Rs. 20,000

Question 2

Goods/services are sold from Agra (U.P.) to Kanpur (U.P.) for Rs. 20,000 and then from Kanpur to Jaipur (Rajasthan). If the rate of GST is 18% and the profit made at Kanpur is Rs. 5000, find:

i. the net GST payable by the dealer at Kanpur.

ii. the cost of goods/services at Jaipur.

Solution 2

When the product is sold from Agra to Kanpur (intra-state transaction)

For the dealer in Agra :

S. P. in Agra = Rs. 20,000

CGST = 9% of Rs. 20,000 = $\frac{9}{100} \times 20,000 = 1800$

SGST = 9% of Rs. 20,000 = $\frac{9}{100} \times 20,000 = 1800$

When product is sold from Kanpur to Jaipur (inter-state transaction)

For the dealer in Kanpur

Input-tax credit = 1800 + 1800 = Rs. 3600

C. P. = Rs. 20,000 and Profit = Rs. 5000

S.P. = 20,000 + 5000 = Rs. 25,000

IGST = 18% of 25,000 = Rs. 4500

i. Net GST paid by the dealer at Kanpur
   = Output GST - Input GST
   = 4500 - 3600
   = Rs. 900

ii. The cost of goods/services at Jaipur
= S. P. in Agra + IGST
= 25,000 + 18% of 25000
= 25,000 + 4500
= Rs. 29,500

Question 3

Goods/services are sold from Kota (Rajasthan) to Mumbai for Rs. 20,000 and then from Mumbai to Pune. If the rate of GST is 12% and the profit made at Mumbai is Rs. 5000; find the net GST paid at Pune, if the dealer at Pune is the end-user.

Solution 3

For the dealer in Mumbai (inter-state transaction)

CP = Rs. 20,000

IGST = 12% of Rs. 20,000 = $\frac{12}{100} \times 20,000 = \text{Rs. } 2400$

Profit = Rs. 5000

SP = Rs. 25,000

For the dealer in Pune (intra-state transaction)

CP = Rs. 25,000

CGST = 6% of 25,000 = Rs. 1500

SGST = 6% of 25,000 = Rs. 1500

GST payable by the end user at Pune = 1500 + 1500 = Rs. 3000

Question 4

A is a dealer in Banaras (U.P.). he supplies goods/services worth Rs. 8000 to a dealer B in Agra (U.P.). Dealer B, in turn, supplies the same goods/services to dealer C in Patna (Bihar) at a profit of Rs. 1200. Find the input and output taxes for the dealer C under GST system; if the rate of GST is 18% and C does not sell his goods/services further.

Solution 4

For the dealer A (intra-state transaction)

SP = Rs. 8,000

For the dealer B (intra-state transaction)

CP = Rs. 8,000

CGST = 9% of 8,000 = Rs. 720

SGST = 9% of 8,000 = Rs. 720

Profit = Rs. 1,200

SP = Rs. 9,200

For the dealer C (inter-state transaction)

CP = Rs. 9,200

IGST = 18 % of Rs. 9,200 = $\frac{18}{100} \times 9,200 = \text{Rs. } 1656$

Input Tax = Rs. 1,656

Since, the dealer in Patna does not sell the product.

Output GST (tax on sale) = Rs. 0

Question 5

A is a dealer in Meerut (U.P.). He supplies goods/services, worth Rs. 15,000 to a dealer B in Ratlam (M.P.). Dealer B, in turn, supplies the same goods/services to dealer C in Jabalpur (M.P.) at a profit of Rs. 3000. If rate of tax (under GST system) is 18%, find

i. The cost of goods/services to the dealer C in Jabalpur.
ii. Net tax payable by dealer B.

Solution 5

For A (case of inter-state transaction)

S.P. in Meerut = Rs. 15,000

For B (case of inter-state transaction)

C.P.= Rs. 15,000

IGST = 18% of 15,000 = $\frac{18}{100} \times 15,000 = \text{Rs. } 2700$

Input tax for B = Rs. 2,700

S.P. in Ratlam = 15,000 + 3000 = Rs. 18,000

For C (case of intra-state transaction)

C.P.= Rs. 18,000

CGST = 9% of 18,000 = $\frac{9}{100} \times 18,000 = \text{Rs. } 1620$

SGST = $\frac{9}{100} \times 18,000 = \text{Rs. } 1620$

Out put tax for B = Rs. 1620 + Rs. 1620 = Rs. 3240

Net GST payable by the dealer B

= Output tax - Input tax

= 1620 + 1620 - 2700

= Rs. 540

Cost for the dealer C in Jabalpur

= S.P. for the dealer in Ratlam + GST

= 18,000 + 1620 + 1620

= Rs. 21,240

Question 6

A dealer X in Hapur (U.P.) supplies goods/services, worth Rs. 50,000 to some other dealer Y in the same city. Now the dealer Y supplies the same goods/services to dealer Z in Calcutta at a profit of Rs. 20,000. Find

i. Output and input taxes for the dealer Y
ii. Net GST payable by dealer Y.
The rate of GST at each stage is 28%

Solution 6

For the dealer X (intra-state transaction)

SP = Rs. 50,000

For the dealer Y (intra-state transaction)

CP = Rs. 50,000

CGST = 14% of 50,000 = Rs. 7,000

SGST = 14% of 50,000 = Rs. 7,000

Input tax for dealer Y = Rs. 14,000

Profit = Rs. 20,000

SP = Rs. 70,000

For the dealer Z (inter-state transaction)

CP = Rs. 70,000

IGST = 28 % of Rs. 70,000 = $\frac{28}{100} \times 70,000 = \text{Rs. } 19,600$

∴ Input Tax = Rs. 19,600 which is the output tax for dealer Y.

Net GST payable for Y

= Output tax for Y - Input tax for Y

= 19,600 - 14,000

= Rs. 5600

Question 7

Consultancy services, worth Rs. 50,000, are transferred from Delhi to Calcutta at the rate of GST 18% and then from Calcutta to Nainital (with profit = Rs. 20,000) at the same rate of GST. Find the output tax at

i. Delhi
ii. Calcutta
iii. Nainital

Solution 7

i. Output tax in Delhi (interstate) :
IGST = 9% of 50,000 = Rs. 9000
Output tax in Delhi = Rs. 9000

ii. Output tax in Calcutta :
C.P. in Calcutta = Rs. 50,000 and Profit = Rs. 20,000
S.P. in Calcutta = 50,000 + 20,000 = Rs. 70,000
IGST = 18% of 70,000 = Rs. 12,600
Output tax in Calcutta = Rs. 12,600

iii. Since, the dealer in Nainital does not sell the product.
Output GST (tax on sale) = Rs. 0

Question 8

For a dealer A, the list price of an article is Rs. 9000, which he sells to dealer B at some lower price. Further, dealer B sells the same article to a customer at its list price. If the rate of GST is 18% and dealer B paid a tax, under GST, equal to Rs. 324 to the government, find the amount (inclusive of GST) paid by dealer B.

Solution 8

Let A sells to dealer B at Rs. x lower price.

According to the question,

Net Tax paid by dealer B is

⇒ Out put tax - Input Tax = Rs. 324

⇒ 18% of 9000 - 18% of (9000 - x) = 324

⇒ 1620 - 1620 + 18% of x = 324

⇒ 18% of x = 324

⇒ x = 1800

Hence, selling price of B = 9000 - 1800 = Rs. 7200

The amount (inclusive of GST) paid by dealer B

= 7200 + 18% of 7200

= 7200 + 1296

= Rs. 8496

Question 9

The marked price of an article is Rs. 6000. A wholesaler sells it to a dealer at 20% discount. The dealer further sells the article to a customer at a discount of 10% on the marked price. If the rate of GST at each stage is 18%, find the amount of tax (under GST) paid by the dealer to the government.

Solution 9

Initial marked price by manufacturer A is Rs. 6000

B bought the T.V. at a discount of 20%.

Cost price of B = 80% of 6000 = Rs. 4800 ….(i)

GST paid by B for purchase = 18% of 4800 = Rs. 864 ….(ii)

B sells T.V. at discount of 10% of market Price

Selling price for B = 6000 - 10% of 6000 = Rs. 5400 …(iii)

GST charged by B on selling of T.V. = 18% of 5400

= Rs. 972 …(iv)

GST paid by B to the government

= GST charged on selling price - GST paid against purchase price

= 972 - 864

= Rs. 108

Question 10

A is a manufacturer of T.V. sets in Delhi. He manufacturers a particular brand of T.V. set and marks it at Rs. 75,000. He then sells this T.V. set to a wholesaler B in Punjab at a discount of 30%. The wholesaler B raises the marked price of the T.V. set bought by 30% and then sells it to dealer C in Delhi. If the rate of GST = 5% find tax (under GST) paid by wholesaler B to the government.

Solution 10

Initial marked price by manufacturer A is Rs. 75,000

B bought the T.V. at a discount of 30%.

Cost price of B = 70% of 75,000 = Rs. 52,500 ….(i)

GST paid by B for purchase = 5% of 52,500 = Rs. 2625 ….(ii)

B sells T.V. by increasing marked price by 30%.

Selling price for B = 75,000 + 30% of 75,000 = Rs. 97,500 …(iii)

GST charged by B on selling of T.V. = 5% of 97,500

= Rs. 4875 …(iv)

GST paid by B to the government

= GST charged on selling price - GST paid against purchase price

= 4875 - 2625

= Rs. 2250

Question 11

For a trader, marked price of a refrigerator = Rs. 15,680 inclusive of GST at the rate of 12% on the marked price. Gagan, a customer for this refrigerator, asks the trader to reduce the marked price of the refrigerator to such extend that its reduced price plus GST on it is equal to marked price of the refrigerator. Find the required reduction.

Solution 11

Let the marked price be Rs. x.

x + 12% of x = 15,680

1.12x = 15,680

x = Rs. 14,000

Initial marked price = Rs. 14,000

Let Gagan asked for priced reduction of Rs. y.

New price = 14,000 - y

GST on new price = 12% of (14,000 - y)

According to the question,

14,000 - y + 0.12(14,000 - y) = 14,000

-1.12y + 1680 = 0

y = 1500

Required reduction in price is Rs. 1500.

Chapter 2 - Banking (Recurring Deposit Accounts)

Exercise Ex. 2(A)

Question 1

Manish opens a Recurring Deposit Account with the Bank of Rajasthan and deposits ₹ 600 per month for 20 months. Calculate the maturity value of this account, if the bank pays interest at the rate of 10% per annum.

Solution 1

Installment per month(P) = Rs. 600
Number of months(n) = 20
Rate of interest (r) = 10% p.a.

$$\therefore \quad S.I. = P \times \frac{n(n+1)}{2 \times 12} \times \frac{r}{100}$$

$$= 600 \times \frac{20(20+1)}{2 \times 12} \times \frac{10}{100}$$

$$= 600 \times \frac{420}{24} \times \frac{10}{100} = Rs1,050$$

The amount that Manish will get at the time of maturity
=Rs (600 x 20)+ Rs 1,050
=Rs 12,000+ Rs 1,050
= Rs 13,050 Ans.

Question 2

Mrs. Mathew opened a Recurring Deposit Account in a certain bank and deposited ₹ 640 per month for $4^1/_2$ years. Find the maturity value of this account, if the bank pays interest at the rate of 12% per year.

Solution 2

Installment per month(P) = Rs 640
Number of months(n) = 4.5 × 12 = 54
Rate of interest(r)= 12% p.a.

$$\therefore \quad S.I. = P \times \frac{n(n+1)}{2 \times 12} \times \frac{r}{100}$$

$$= 640 \times \frac{54(54+1)}{2 \times 12} \times \frac{12}{100}$$

$$= 640 \times \frac{2970}{24} \times \frac{12}{100} = Rs9,504$$

The amount that Manish will get at the time of maturity
=Rs (640 x 54)+ Rs 9,504
=Rs 34,560+ Rs 9,504
= Rs 44,064

Question 3

Each of A and B both opened recurring deposit accounts in a bank. If A deposited ₹ 1,200 per month for 3 years and B deposited ₹ 1,500 per month for $2\frac{1}{2}$ years; find, on maturity, who will get more amount and by how much? The rate of interest paid by the bank is 10% per annum.

Solution 3

For A

Installment per month(P) = Rs 1,200
Number of months(n) = 3 × 12 = 36
Rate of interest(r)= 10% p.a.

$$\therefore \quad S.I. = P \times \frac{n(n+1)}{2 \times 12} \times \frac{r}{100}$$

$$= 1,200 \times \frac{36(36+1)}{2 \times 12} \times \frac{10}{100}$$

$$= 1,200 \times \frac{1332}{24} \times \frac{10}{100} = Rs6,660$$

The amount that A will get at the time of maturity
=Rs (1,200 x 36)+ Rs 6,660
=Rs 43,200+ Rs 6,660
= Rs 49,860

For B

Installment per month(P) = Rs 1,500
Number of months(n) = 2.5 × 12 = 30
Rate of interest(r)= 10% p.a.

$$\therefore \quad S.I. = P \times \frac{n(n+1)}{2 \times 12} \times \frac{r}{100}$$

$$= 1,500 \times \frac{30(30+1)}{2 \times 12} \times \frac{10}{100}$$

$$= 1,500 \times \frac{930}{24} \times \frac{10}{100} = Rs5,812.50$$

The amount that B will get at the time of maturity
=Rs(1,500 x 30)+ Rs 5,812.50
=Rs 45,000+ Rs 5,812.50
= Rs 50,812.50
Difference between both amounts= Rs 50,812.50 - Rs 49,860
= Rs 952.50

Then B will get more money than A by Rs 952.50 Ans.

Question 4

Ashish deposits a certain sum of money every month is a Recurring Deposit Account for a period of 12 months. If the bank pays interest at the rate of 11% p.a. and Ashish gets ₹ 12,715 as the maturity value of this account, what sum of money did money did he pay every month?

Solution 4

Let Installment per month(P) = Rs y
Number of months(n) = 12

Rate of interest(r)= 11%p.a.

$$\therefore \quad S.I. = P \times \frac{n(n+1)}{2 \times 12} \times \frac{r}{100}$$

$$= y \times \frac{12(12+1)}{2 \times 12} \times \frac{11}{100}$$

$$= y \times \frac{156}{24} \times \frac{11}{100} = Rs0.715y$$

Maturity value= Rs (y x 12) + Rs 0.715 y = Rs 12.715 y
Given maturity value= Rs 12,715
Then Rs 12.715 y = Rs 12,715

$$\Rightarrow \quad y = \frac{12,715}{12.715} = \quad Rs1,000$$

Ans.

Question 5

A man has a Recurring Deposit Account in a bank for 3½ years. If the rate of interest is 12% per annum and the man gets ₹ 10,206 on maturity, find the value of monthly installments.

Solution 5

Let Installment per month(P) = Rs y
Number of months(n) = 3.5 × 12 = 42
Rate of interest(r) = 12% p.a.

$$\therefore \quad S.I. = P \times \frac{n(n+1)}{2 \times 12} \times \frac{r}{100}$$

$$= y \times \frac{42(42+1)}{2 \times 12} \times \frac{12}{100}$$

$$= y \times \frac{1806}{24} \times \frac{12}{100} = Rs9.03y$$

Maturity value= Rs(y x 42) + Rs 9.03y = Rs 51.03y
Given maturity value = Rs 10,206

Then Rs 51.03y = Rs 10206

$$\Rightarrow \quad y = \frac{10206}{51.03} = \quad Rs200$$

Ans.

Question 6

(i) Puneet has a Recurring Deposit Account in the Bank of Baroda and deposits ₹ 140 per month for 4 years. If he gets ₹ 8,092 on maturity, find the rate of interest given by the bank.
(ii) David opened a Recurring Deposit Account in a bank and deposited ₹ 300 per month for two years. If he received ₹ 7,725 at the time of maturity, find the rate of interest per annum.

Solution 6

(a)
Installment per month(P) = Rs 140
Number of months(n) = 4 × 12 = 48
Let rate of interest(r)= r %p.a.

$$\therefore \quad S.I. = P \times \frac{n(n+1)}{2 \times 12} \times \frac{r}{100}$$

$$= 140 \times \frac{48(48+1)}{2 \times 12} \times \frac{r}{100}$$

$$= 140 \times \frac{2352}{24} \times \frac{r}{100} = Rs\,137.20\,r$$

Maturity value= Rs (140 x 48) + Rs (137.20)r
Given maturity value= Rs 8,092
Then Rs(140 x 48)+Rs (137.20)r = Rs 8,092
$\Rightarrow$ 137.20r = Rs 8,092 - Rs 6,720

$$\Rightarrow r = \frac{1,372}{137.20} = 10\% \qquad \text{Ans.}$$

(b)
Installment per month(P) = Rs 300
Number of months(n) = 4 × 12 = 24
Let rate of interest(r)= r %p.a.

$$\therefore \quad S.I. = P \times \frac{n(n+1)}{2 \times 12} \times \frac{r}{100}$$

$$= 300 \times \frac{24(24+1)}{2 \times 12} \times \frac{r}{100}$$

$$= 300 \times \frac{600}{24} \times \frac{r}{100} = Rs(75)\,r$$

Maturity value= Rs (300 x 24)+Rs(75)r
Given maturity value = Rs 7,725

Then Rs(300 x 24) + Rs(75)r = Rs 7,725
$\Rightarrow$ 75 r = Rs 7,725 - Rs 7,200

$$\Rightarrow r = \frac{525}{75} = 7\% \qquad \text{Ans.}$$

Question 7

Amit deposited ₹ 150 per month in a bank for 8 months under the Recurring Deposit Scheme. What will be the maturity value of his deposits, if the rate of interest is 8% per annum and interest is calculated at the end of every month?

Solution 7

Installment per month(P) = Rs 150
Number of months(n) = 8
Rate of interest(r)= 8% p.a.

$$\therefore \quad S.I. = P \times \frac{n(n+1)}{2 \times 12} \times \frac{r}{100}$$

$$= 150 \times \frac{8(8+1)}{2 \times 12} \times \frac{8}{100}$$

$$= 150 \times \frac{72}{24} \times \frac{8}{100} = Rs36$$

The amount that Manish will get at the time of maturity
=Rs (150 x 8)+ Rs 36
=Rs 1,200+ Rs 36
= Rs 1,236 Ans.

Question 8

Mrs. Geeta deposited ₹ 350 per month in a bank for 1 year and 3 months under the Recurring Deposit Scheme. If the maturity value of her deposits is ₹ 5,565; find the rate of interest per annum.

Solution 8

Installment per month(P) = Rs 350
Number of months(n) = 12 + 3 = 15
Let rate of interest(r)= r %p.a.

$$\therefore \quad S.I. = P \times \frac{n(n+1)}{2 \times 12} \times \frac{r}{100}$$

$$= 350 \times \frac{15(15+1)}{2 \times 12} \times \frac{r}{100}$$

$$= 350 \times \frac{240}{24} \times \frac{r}{100} = Rs(35)r$$

Maturity value= Rs (350 x 15) + Rs (35)r
Given maturity value= Rs 5,565
Then Rs (350 x 15) + Rs (35)r = Rs 5,565
$\Rightarrow$ 35r = Rs 5,565 - Rs 5,250

$$\Rightarrow r = \frac{315}{35} = 9\% \qquad \text{Ans.}$$

Question 9

A recurring deposit account of ₹ 1,200 per month has a maturity value of ₹ 12,440. If the rate of interest is 8% and the interest is calculated at the end of every month; find the time (in months) of this Recurring Deposit Account.

Solution 9

Installment per month(P) = Rs 1,200
Number of months(n) = n
Let rate of interest(r)= 8 %p.a.

$$\therefore \quad S.I. = P \times \frac{n(n+1)}{2 \times 12} \times \frac{r}{100}$$

$$= 1,200 \times \frac{n(n+1)}{2 \times 12} \times \frac{8}{100}$$

$$= 1,200 \times \frac{n(n+1)}{24} \times \frac{8}{100} = \text{Rs } 4n(n+1)$$

Maturity value= Rs (1,200 x n) + Rs 4n (n + 1)= Rs ($1200n + 4n^2 + 4n$)
Given maturity value= Rs 12,440
Then $1200n + 4n^2 + 4n = 12,440$

$$\Rightarrow 4n^2 + 1204n - 12440 = 0$$

$$\Rightarrow n^2 + 301n - 3110 = 0$$

$$\Rightarrow (n + 311)(n - 10) = 0$$

$$\Rightarrow n = -311 \text{ or } n = 10 \text{ months}$$

Then number of months = 10 Ans.

Question 10

Mr. Gulati has a Recurring Deposit Account of ₹ 300 per month. If the rate of interest is 12% and the maturity value of this account is ₹ 8,100; find the time (in years) of this Recurring Deposit Account.

Solution 10

Installment per month(P) = Rs 300
Number of months(n) = n
Let rate of interest(r)= 12 %p.a.

$$\therefore \quad S.I. = P \times \frac{n(n+1)}{2 \times 12} \times \frac{r}{100}$$

$$= 300 \times \frac{n(n+1)}{2 \times 12} \times \frac{12}{100}$$

$$= 300 \times \frac{n(n+1)}{24} \times \frac{12}{100} = \text{Rs } 1.5n(n+1)$$

Maturity value= Rs (300 x n) + Rs 1.5n(n + 1)
= Rs ($300n + 1.5n^2 + 1.5n$)
Given maturity value = Rs 8,100
Then $300n + 1.5n^2 + 1.5n = 8,100$

$$\Rightarrow 1.5n^2 + 301.5n - 8100 = 0$$

$$\Rightarrow n^2 + 201n - 5400 = 0$$

$$\Rightarrow (n + 225)(n - 24) = 0$$

$$\Rightarrow n = -225 \text{ or } n = 24 \text{ months}$$

Then time = 2 years

Question 11

Mr. Gupta opened a recurring deposit account in a bank. He deposited ₹ 2,500 per month for two years. At the time of maturity he got ₹ 67,500. Find:
(i) the total interest earned by Mr. Gupta
(ii) the rate of interest per annum.

Solution 11

(i)

Maturity value = Rs 67,500

Money deposited = Rs 2,500 x 24 = Rs 60,000

Then total interest earned = Rs 67,500 - Rs 60,000 = Rs 7,500 Ans.

(ii)

Installment per month(P) = Rs 2,500

Number of months(n) = 24

Let rate of interest(r)= r %p.a.

$$\therefore \quad S.I. = P \times \frac{n(n+1)}{2 \times 12} \times \frac{r}{100}$$

$$= 2500 \times \frac{24(24+1)}{2 \times 12} \times \frac{r}{100}$$

$$= 2500 \times \frac{600}{24} \times \frac{r}{100} = \text{Rs } 625\, r$$

Then 625 r = 7500

$$\Rightarrow r = \frac{7500}{625} = 12\% \qquad \text{Ans.}$$

Chapter 2 - Banking (Recurring Deposit Accounts)

Exercise Ex. 2(B)

Question 1

Pramod deposits ₹ 600 per month in a Recurring Deposit Account for 4 years. If the rate of interest is 8% per year; calculate the maturity value of his account.

Solution 1

Installment per month(P) = Rs 600

Number of months(n) = 4 × 12 = 48

Rate of interest(r)= 8%p.a.

$$\therefore \quad S.I. = P \times \frac{n(n+1)}{2 \times 12} \times \frac{r}{100}$$

$$= 600 \times \frac{48(48+1)}{2 \times 12} \times \frac{8}{100}$$

$$= 600 \times \frac{2352}{24} \times \frac{8}{100} = \text{Rs}4,704$$

The amount that Manish will get at the time of maturity

=Rs (600 x 48)+ Rs 4,704

=Rs 28,800+ Rs 4,704
= Rs 33,504 Ans.

Question 2

Ritu has a Recurring Deposit Account in a bank and deposits ₹ 80 per month for 18 months. Find the rate of interest paid by the bank if the maturity value of account is ₹ 1,554.

Solution 2

Installment per month(P) = Rs 80
Number of months(n) = 18
Let rate of interest(r)= r % p.a.

$$\therefore \quad S.I. = P \times \frac{n(n+1)}{2 \times 12} \times \frac{r}{100}$$

$$= 80 \times \frac{18(18+1)}{2 \times 12} \times \frac{r}{100}$$

$$= 80 \times \frac{342}{24} \times \frac{r}{100} = Rs(11.4r)$$

Maturity value= Rs (80 x 18) + Rs (11.4r)
Given maturity value= Rs 1,554
Then Rs (80 x 18)+Rs (11.4r) = Rs 1,554
$\Rightarrow$ 11.4r = Rs 1,554 - Rs 1,440

$$\Rightarrow r = \frac{114}{11.4} = 10\% \qquad \text{Ans.}$$

Question 3

The maturity value of a R.D. Account is ₹ 16,176. If the monthly installment is ₹ 400 and the rate of interest is 8%; find the time (period) of this R.D Account.

Solution 3

Installment per month(P) = Rs 400
Number of months(n) = n
Let rate of interest(r)= 8 %p.a.

$$\therefore \quad S.I. = P \times \frac{n(n+1)}{2 \times 12} \times \frac{r}{100}$$

$$= 400 \times \frac{n(n+1)}{2 \times 12} \times \frac{8}{100}$$

$$= 400 \times \frac{n(n+1)}{24} \times \frac{8}{100} = Rs\,\frac{4n(n+1)}{3}$$

Maturity value= Rs (400 x n)+ $Rs\,\frac{4n(n+1)}{3}$

Given maturity value= Rs 16,176

Then Rs (400 x n)+ $Rs\,\frac{4n(n+1)}{3}$ = Rs 16,176

$\Rightarrow 1200n + 4n^2 + 4n = Rs\ 48,528$

$\Rightarrow 4n^2 + 1204n = Rs\ 48,528$

$\Rightarrow n^2 + 301n - 12132 = 0$

$\Rightarrow (n + 337)(n - 36) = 0$

$\Rightarrow n = -337$ or $n = 36$

Then number of months = 36 months = 3 years Ans.

Question 4

Mr. Bajaj needs ₹ 30,000 after 2 years. What least money (in multiple of ₹ 5) must he deposit every month in a recurring deposit account to get required money after 2 years, the rate of interest being 8% p.a.?

Solution 4

Let installment per month = Rs P

Number of months(n) = 2 × 12 = 24

Rate of interest = 8%p.a.

$$\therefore \quad S.I. = P \times \frac{n(n+1)}{2 \times 12} \times \frac{r}{100}$$

$$= P \times \frac{24(24+1)}{2 \times 12} \times \frac{8}{100}$$

$$= P \times \frac{600}{24} \times \frac{8}{100} = Rs(2)P$$

Maturity value= Rs (P x 24) + Rs 2P = Rs 26P

Given maturity value = Rs 30,000

Then $26P = Rs30,000$

$$\Rightarrow \quad P = Rs\,\frac{30,000}{26} = Rs1153.84 = Rs1155(\text{multiple of } 5) \qquad \text{Ans.}$$

Question 5

Mr. Richard has a recurring deposit account in a post office for 3 years at 7.5% p.a. simple interest. If he gets Rs. 8,325 as interest at the time of maturity, find:

i. the monthly income

ii. the amount of maturity

Solution 5

Let the monthly deposit be P

Interest = Rs. 8,325

Rate of interest = 7.5%

Time = 3 years = 36 months

(i)

$$\text{Interest} = P \times \frac{n(n+1)}{2 \times 12} \times \frac{r}{100}$$

$$\Rightarrow 8325 = P \times \frac{36(36+1)}{2 \times 12} \times \frac{7.5}{100}$$

$$\Rightarrow P = \text{Rs. } 2,000$$

(ii)

$$\text{Maturity value} = \text{total sum deposited} + \text{interest}$$

$$= 2000 \times 36 + 8325$$

$$= 72000 + 8325$$

$$= \text{Rs } 80,325$$

Question 6

Gopal has a cumulative deposit account and deposits ₹ 900 per month for a period of 4 years he gets ₹ 52,020 at the time of maturity, find the rate of interest.

Solution 6

Installment per month(P) = Rs 900

Number of months(n) = 48

Let rate of interest(r) = r %p.a.

$$\therefore \quad \text{S.I.} = P \times \frac{n(n+1)}{2 \times 12} \times \frac{r}{100}$$

$$= 900 \times \frac{48(48+1)}{2 \times 12} \times \frac{r}{100}$$

$$= 900 \times \frac{2352}{24} \times \frac{r}{100} = \text{Rs. } 882\ r$$

Maturity value= Rs (900 x 48) + Rs (882)r

Given maturity value = Rs 52,020

Then Rs (900 x 48) + Rs(882)r = Rs 52,020

$\Rightarrow$ 882r = Rs 52,020 - Rs 43,200

$$\Rightarrow r = \frac{8820}{882} = 10\% \qquad \text{Ans.}$$

Question 7

Deepa has a 4-year recurring deposit account in a bank and deposits ₹ 1,800 per month. If she gets ₹ 1,08,450 at the time of maturity, find the rate of interest.

Solution 7

Installment per month(P) = Rs 1,800
Number of months(n) = 4 × 12 = 48
Let rate of interest(r)= r %p.a.

$$\therefore \quad S.I. = P \times \frac{n(n+1)}{2 \times 12} \times \frac{r}{100}$$

$$= 1,800 \times \frac{48(48+1)}{2 \times 12} \times \frac{r}{100}$$

$$= 1,800 \times \frac{2352}{24} \times \frac{r}{100} = Rs(1,764)\, r$$

Maturity value= Rs (1,800 x 48) + Rs(1,764)r
Given maturity value= Rs 1,08,450
Then Rs (1,800 x 48) + Rs(1764)r = Rs 1,08,450
$\Rightarrow$ 1764r = Rs 1,08,450 - Rs 86,400

$$\Rightarrow r = \frac{22,050}{1,764} = 12.5\% \qquad \text{Ans.}$$

Question 8

Mr. Britto deposits a certain sum of money each month in a Recurring Deposit Account of a bank. If the rate of interest is of 8% per annum and Mr. Britto gets Rs. 8,088 from the bank after 3 years, find the value of his monthly installment.

Solution 8

Let the value of the monthly installment be Rs. P.

Since rate of interest (r) = 8%,

Number of months, $n = 3 \times 12 = 36$

Maturity value (M.V.) = Rs. 8088

$$\therefore M.V. = P \times n + P \times \frac{n(n+1)}{2} \times \frac{r}{12 \times 100}$$

$$\Rightarrow 8088 = P \times 36 + P \times \frac{36 \times 37}{2} \times \frac{8}{12 \times 100}$$

$$\Rightarrow 8088 = 36P + 4.44P$$

$$\Rightarrow 8088 = 40.44P$$

$$\Rightarrow P = \frac{8088}{40.44} = 200$$

Thus, the value of his monthly installment is Rs. 200.

Question 9

Shahrukh opened a Recurring Deposit Account in a bank and deposited Rs. 800 per month for $1\frac{1}{2}$ years. If he received Rs. 15,084 at the time of maturity, find the rate of interest per annum.

Solution 9

Monthly deposit (P) = Rs. 800

$$n = \frac{3}{2} \times 12 \text{ months} = 18 \text{ months}$$

Maturity value (M.V.) = Rs. 15084

$$\text{Now, } M.V. = P \times n + P \times \frac{n(n+1)}{2 \times 12} \times \frac{r}{100}$$

$$\Rightarrow 15084 = 800 \times 18 + 800 \times \frac{18 \times 19}{24} \times \frac{r}{100}$$

$$\Rightarrow 15084 = 14400 + 114r$$

$$\Rightarrow 114r = 684$$

$$\Rightarrow r = \frac{684}{114} = 6\%$$

Thus, the rate of interest per anum is 6%.

Question 10

Katrina opened a recurring deposit account with a Nationalised Bank for a period of 2 years. If the bank pays interest at the rate of 6% per annum and the monthly installment is Rs. 1,000, find the :

(i) interest earned in 2 years

(ii) maturity value

Solution 10

(i) Monthly installment (P) = Rs. 1000

Number of installment (n) = 2 years = 2 × 12 months = 24 months

Rate of interest (r) = 6%

$$\text{Now, Interest} = P \times \frac{n(n+1)}{2 \times 12} \times \frac{r}{100}$$

$$= 1000 \times \frac{24 \times 25}{24} \times \frac{6}{100}$$

$$= \text{Rs. } 1500$$

Thus, the interest earned in 2 years is Rs. 1500.

(ii) Total money deposited in the bank = 24 × Rs. 1000 = Rs. 24000

∴ Maturity value = Total money deposited + Interest

= Rs. (24000 + 1500)

= Rs. 25500

Question 11

Mohan has a recurring deposit account in a bank for 2 years at 6% p.a. simple interest. If he gets Rs. 1,200 as interest at the time of maturity, find:
(i) the monthly instalment
(ii) the amount of maturity.

Solution 11

Interest, I = Rs. 1,200
Time, n = 2 years = 2 × 12 = 24 months
Rate, r = 6%
(i) To find: Monthly installment, P
Now,

$$I = P \times \frac{n(n+1)}{2 \times 12} \times \frac{r}{100}$$

$$\Rightarrow 1,200 = P \times \frac{24 \times 25}{24} \times \frac{6}{100}$$

$$\Rightarrow 1,200 = P \times \frac{3}{2}$$

$$\Rightarrow P = \frac{1,200 \times 2}{3}$$

$$\Rightarrow P = \text{Rs. } 800$$

So, the monthly installment is Rs. 800.

(ii) Total sum deposited = P × n = Rs. 800 × 24 = Rs. 19,200
∴ Amount of maturity = Total sum deposited + Interest on it
= Rs. (19,200 + 1,200)
= Rs. 20,400

Chapter 3 - Shares and Dividends

Exercise Ex. 3(A)

Question 1
How much money will be required to buy 400, Rs. 12.50 shares at a premium of Rs. 1?

Solution 1
Number of shares to be bought = 400
Rs. 12.50 shares at a premium of Re. 1 means;
nominal value of the share is Rs. 12.50 and
its market value = Rs. 12.50 + Re. 1 = Rs. 13.50
∴ Money required to buy 1 share = Rs. 13.50
⇒ Money required to buy 400 shares = 400 x Rs. 13.50 = Rs. 5400

Question 2
How much money will be required to buy 250, Rs.15 shares at a discount of Rs.1.50?

Solution 2
Number of shares to be bought = 250
Rs. 15 shares at a discount of Rs. 1.50 means;
nominal value of the share is Rs. 15 and
its market value = Rs. 15 – Rs. 1.50 = Rs. 13.50
∴ Money required to buy 1 share = Rs. 13.50
⇒ Money required to buy 250 shares = 250 x Rs. 13.50 = Rs. 3375

Question 3
A person buys 120 shares at a nominal value of Rs 40 each, which he sells at Rs 42.50 each. Find his profit and profit percent.

Solution 3
Nominal value of 120 shares = Rs 40 × 120= Rs 4,800
Market value of 120 shares= Rs 42.50 × 120= Rs 5,100
His profit = Rs 5,100 - Rs 4,800= Rs 300 Ans.

$$\text{Profit} = \frac{300}{4{,}800} \times 100\% = 6.25\%$$

Question 4
Find the cost of 85 shares of Rs 60 each when quoted at Rs 63.25.

Solution 4
Market value of 1 share= Rs 63.25
Market value of 85 shares= Rs 63.25 × 85= Rs 5,376.25 Ans.

Question 5

A man invests Rs 800 in buying Rs 5 shares and when they are selling at a premium of Rs 1.15, he sells all the shares. Find his profit and profit percent.

Solution 5

Nominal value of 1 share = Rs 5
Market value 1 share = Rs 5 + Rs 1.15 = Rs 6.15
Total money invested = Rs 800

$$\therefore \text{ No. of shares purchased} = \frac{800}{5} = 160$$

Market value of 160 shares= 160 x 6.15= Rs 984
His profit = Rs 984 - Rs 800= Rs 184 Ans.

$$\text{Profit} = \frac{184}{800} \times 100\% = 23\%$$

Question 6

Find the annual income derived from 125, Rs.120 shares paying 5% dividend.

Solution 6

$$\text{Nominal value of 1 share} = \text{Rs. } 120$$

$$\Rightarrow \text{Nominal value of 125 shares} = 125 \times \text{Rs. } 120 = \text{Rs. } 15000$$

$$\text{Now, Dividend} = 5\% \text{ of Rs. } 15000 = \frac{5}{100} \times 15000 = \text{Rs. } 750$$

Question 7

A man invests Rs 3,072 in a company paying 5% per annum, when its Rs 10 share can be bought for Rs 16 each. Find :
(i)his annual income
(ii)his percentage income on his investment.

Solution 7

Market value of 1 share= Rs 16
Nominal value of 1 share= Rs 10
Money invested= Rs 3,072

$$\therefore \text{ No. of shares purchased} = \frac{3072}{16} = 192$$

Nominal value of 192 shares= 10 x 192= Rs 1,920

$$\text{Annual income} = 5\% \text{ of Rs } 1{,}920$$
$$= \frac{5}{100} \times 1{,}920$$
$$= Rs 96$$

$$\text{Income\%} = \frac{96}{3{,}072} \times 100\% = 3.125\% = 3\frac{1}{8}\%$$

Question 8

A man invests Rs 7,770 in a company paying 5% dividend when a share of nominal value of Rs 100 sells at a premium of Rs 5. Find:
(i)the number of shares bought;
(ii)annual income;
(iii)percentage income.

Solution 8

Total money invested= Rs 7,770
Nominal value of 1 share= Rs 100
Market value of 1 share= Rs 100 + Rs 5= Rs 105

$$\therefore \text{ No. of shares purchased} = \frac{7770}{105} = 74$$

Nominal value of 74 shares= 74 x 100= Rs 7,400

$$\text{Annual income} = 5\% \text{ of Rs } 7{,}400$$
$$= \frac{5}{100} \times 7{,}400$$
$$= Rs 370$$

$$\text{Income\%} = \frac{370}{7{,}770} \times 100\% = 4.76\%$$

Question 9

A man buys Rs 50 shares of a company, paying 12% dividend, at a premium of Rs 10. Find:
(i)the market value of 320 shares;
(ii)his annual income;
(iii)his profit percent.

Solution 9

Nominal value of 1 share= Rs 50
Market value of 1 share= Rs 50 + Rs 10= Rs 60
Market value of 320 shares= 320 x 60 = Rs 19,200
Nominal value of 320 shares= 320 x 50= Rs 16,000

$$\text{Annual income} = 12\% \text{ of Rs } 16{,}000$$
$$= \frac{12}{100} \times 16{,}000$$
$$= \text{Rs}\,1{,}920$$

$$\text{Profit}\% = \frac{1{,}920}{19{,}200} \times 100\% = 10\%$$

Question 10

A man buys Rs 75 shares at a discount of Rs 15 of a company paying 20% dividend. Find:
(i)the market value of 120 shares;
(ii)his annual income;
(iii)his profit percent.

Solution 10

Nominal value of 1 share= Rs 75
Market value of 1 share= Rs 75 - Rs 15= Rs 60
Market value of 120 shares= 120 x 60= Rs 7,200
Nominal value of 120 shares= 120 x 75= Rs 9,000

$$\text{Annual income} = 20\% \text{ of Rs } 9{,}000$$
$$= \frac{20}{100} \times 9{,}000$$
$$= \text{Rs}\,1{,}800$$

$$\text{Profit}\% = \frac{1{,}800}{7{,}200} \times 100\% = 25\%$$

Question 11

A man has 300, Rs 50 shares of a company paying 20% dividend. Find his net income after paying 3% income tax.

Solution 11

Nominal value of 1 share= Rs 50
Nominal value of 300 shares= 300 x 50 = Rs 15,000

$$\therefore \quad \text{Dividend} = 20\% \text{ of Rs}\,15{,}000$$
$$= \frac{20}{100} \times 15{,}000 = \text{Rs}\,3{,}000$$

$$\therefore \quad \text{Income tax paid} = 3\% \text{ of Rs}\,3{,}000$$
$$= \frac{3}{100} \times 3{,}000 = \text{Rs}\,90$$

His net income= Rs 3,000 - Rs 90= Rs 2,910 Ans.

Question 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.

Solution 12

Nominal value of 1 share= Rs 10
Nominal value of 1000 shares= 1000 x 10 = Rs 10,000

$\therefore$ Dividend= 15% of Rs10,000

$$= \frac{15}{100} \times 10,000 = \text{Rs}1,500$$

$\therefore$ Income tax paid= 22% of Rs1,500

$$= \frac{22}{100} \times 1,500 = \text{Rs}330$$

His net income= Rs 1,500 - Rs 330= Rs 1,170 Ans.

Question 13

A man invests Rs 8,800 in buying shares of a company of face value of rupees hundred each at a premium of 10%. If he earns Rs 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.

Solution 13

Total investment= Rs 8,800
Nominal value of 1 share= Rs 100
Market value of 1 share= Rs 110

$\therefore$ No. of shares purchased $= \frac{8800}{110} = 80$

Nominal value of 80 shares= 80 x 100= Rs 8,000
Let dividend%= y%

then y% of Rs 8,000 = Rs 1,200

$$\Rightarrow \frac{y}{100} \times 8,000 = \text{Rs } 1,200$$

$$\Rightarrow y = 15\%$$

Question 14

A man invests Rs 1,680 in buying shares of nominal value Rs 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.

Solution 14

Nominal value of 1 share= Rs 24
Market value of 1 share= Rs 24+ 12% of Rs 24
= Rs 24+ Rs 2.88= Rs 26.88
Total investment= Rs 1,680

$\therefore$ No. of shares purchased $= \frac{1,680}{26.88} = 62.5$

Nominal value of 62.5 shares= 62.5 x 24= Rs 1,500

Dividend = 15% of Rs 1,500
= Rs 225

Question 15

By investing Rs 7,500 in a company paying 10 percent dividend, an annual income of Rs 500 is received. What price is paid for each of Rs 100 share ?

Solution 15

Total investment= Rs 7,500
Nominal value of 1 share= Rs 100
No. of shares purchased= y
Nominal value of y shares= 100 x y= Rs(100y)
Dividend%= 10%
Dividend = Rs 500

$\therefore$ 10% of 100y = Rs500

$\Rightarrow \frac{10}{100} \times 100y = Rs500$

$\Rightarrow y = \frac{500}{10} = 50 shares$

$\therefore$ Market value of 1 share $= \frac{7,500}{50} = Rs150$ Ans.

Chapter 3 - Shares and Dividends

Exercise Ex. 3(B)

Question 1

A man buys 75, Rs100 shares paying 9 percent dividend. He buys shares at such a price that he gets 12percent of his money. At what price did he buy the shares ?

Solution 1

Nominal value of 1share= Rs100
Nominal value of 75 shares= 100 × 75= Rs7,500
Dividend% = 9%

$\therefore$ Dividend= 9% of Rs7,500

$= \frac{9}{100} \times Rs7,500 = Rs675$

Let market price of 1 share= Rsy
Then market price of 75 shares= Rs75y
Profit% on investment= 12%

$12\%\ \text{of}\ 75y = \text{Rs}\ 657$

$\Rightarrow \frac{12}{100} \times 75y = \text{Rs}\ 657$

$\Rightarrow y = \text{Rs}\ 75$

Question 2

By purchasing Rs25 gas shares for Rs40 each, a man gets 4percent profit on his investment. What rate percent is the company paying? What is his dividend if he buys 60 shares?

Solution 2

Nominal value of 1 share= Rs25
Market value of 1 share= Rs40
Profit% on investment= 4%
Then profit on 1 share = 4% of Rs40= Rs1.60

$\therefore \quad \text{Dividend\%} = \frac{1.60}{25} \times 100\% = 6.4\%$ Ans.

No. of shares purchased= 60
Then dividend on 60 shares= 60 × Rs1.60= Rs96 Ans.

Question 3

Hundred rupee shares of a company are available in the market at a premium of Rs20. Find the rate of dividend given by the company, when a man's return on his investment is 15%.

Solution 3

Nominal value of 1 share= Rs100
Market value of 1 share= Rs100+ Rs20= Rs120
Profit% on investment of 1 share=15%
Then profit= 15% of Rs120= Rs18

$\therefore \quad \text{Dividend\%} = \frac{18}{100} \times 100\% = 18\%$ Ans.

Question 4

Rs 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.

Solution 4

Nominal value of 1 share= Rs50
Market value of 1 share= Rs50 - 10% of Rs50
= Rs50 - Rs5= Rs45
Profit % on investment= 20%
Then profit on 1 share= 20% of Rs45= Rs9

$\therefore \quad \text{Dividend\%} = \frac{9}{50} \times 100\% = 18\%$ Ans.

Question 5

A company declares 8 percent dividend to the share holders. If a man receives Rs2,840 as his dividend, find the nominal value of his shares.

Solution 5

Dividend% = 8%
Dividend = Rs2,840
Let nominal value of shares= Rsy

$$8\% \text{ of } y = \text{Rs } 2{,}840$$
$$\Rightarrow \frac{8}{100} \times y = \text{Rs } 2{,}840$$
$$\Rightarrow y = \text{Rs } 35{,}500$$

Question 6

How much should a man invest in Rs100 shares selling at Rs110 to obtain an annual income of Rs1,680, if the dividend declared is 12%?

Solution 6

Nominal value of 1 share= Rs100
Market value of 1 share= Rs110
Let no. of shares purchased= n
Then nominal value of n shares= Rs(100n)
Dividend%= 12%
Dividend= Rs1,680

$$\therefore \quad 12\% \text{ of } 100n = \text{Rs}1{,}680$$
$$\Rightarrow \frac{12}{100} \times 100n = \text{Rs}1{,}680$$
$$\Rightarrow n = \frac{1{,}680 \times 100}{12 \times 100} = 140$$

Then market value of 140 shares= 140 × 110= Rs15,400 Ans.

Question 7

A company declares a dividend of 11.2% to all its share-holders. If its Rs60 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 Rs1,680?

Solution 7

Nominal value of 1 share= Rs60
Market value of 1 share= Rs60+ 25% of Rs60
= Rs60+ Rs15= Rs75
Let no. of shares purchased= n
Then nominal value of n shares= Rs(60n)
Dividend%= 11.2%
Dividend= Rs1,680

$$\therefore \quad 11.2\% \text{ of } 60n = \text{Rs}1{,}680$$
$$\Rightarrow \frac{11.2}{100} \times 60n = \text{Rs}1{,}680$$
$$\Rightarrow n = \frac{1{,}680 \times 100}{11.2 \times 60} = 250$$

Then market value of 250 shares= 250 × 75= Rs18,750 Ans.

Question 8

A man buys 400, twenty-rupee shares at a premium of Rs4 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.

Solution 8

Nominal value of 1 share= Rs20
Market value of 1 share= Rs20+Rs4= Rs24
No. of shares purchased= 400
Nominal value of 400 shares= 400 x 20= Rs8,000
(i)Market value of 400 shares= 400 x 24= Rs9,600
(ii)Dividend%= 12%
Dividend = 12% of Rs8,000

$$= \frac{12}{100} \times Rs8,000 = Rs960$$

(iii)

$$\therefore \text{ Percentage return} = \frac{\text{income}}{\text{investment}} \times 100\%$$

$$= \frac{960}{9,600} \times 100\% = 10\%$$

Question 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.

Solution 9

Nominal value of 1 share= Rs20
Market value of 1 share= Rs20 - 20% of Rs20
= Rs20 - Rs4 = Rs16
No. of shares purchased= 400
Nominal value of 400 shares= 400 x 20= Rs8,000
(i)Market value of 400 shares= 400 x 16= Rs6,400
(ii)Return%= 12%
Income= 12% of Rs6,400

$$= \frac{12}{100} \times Rs6,400 = Rs768$$

$$\text{Dividend\%} = \frac{Income}{Nominal\ value} \times 100\%$$

$$= \frac{768}{8,000} \times 100\% = 9.6\%$$

Question 10

A company, with 10,000 shares of Rs100 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.

Solution 10

Nominal value of 1 share= Rs100
Nominal value of 10,000shares =10,000 x Rs100= Rs10,00,000
(i)Dividend%= 5%
Dividend = 5% of Rs10,00,000

$$= \frac{5}{100} \times Rs10,00,000 = Rs50,000$$

(ii)Nominal value of 72 shares= Rs100 x 72= Rs7,200
Dividend= 5% of Rs7,200

$$= \frac{5}{100} \times Rs7,200 = Rs360$$

(iii)Let market value of 1 share= Rs y
Then market value of 10,000 shares= Rs(10,000y)
Return%= 4%

$$4\% \text{ of } Rs(10,000y) = Rs\ 50,000$$

$$\Rightarrow \frac{4}{100} \times 10,000y = Rs\ 50,000$$

$$\Rightarrow y = Rs\ 125$$

Question 11

A lady holds 1800, Rs100 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.

Solution 11

Nominal value of 1 share= Rs100
Market value of 1 share= Rs100+40% of Rs100
= Rs100+Rs40= Rs140
No. of shares purchased= 1800
Nominal value of 1800 shares= 1800 x 100= Rs1,80,000
Market value of 1800 shares= 1800 x 140 = Rs2,52,000
(i)Dividend%= 15%
Dividend = 15% of Rs1,80,000

$$= \frac{15}{100} \times Rs1,80,000 = Rs27,000$$ Ans.

(ii)

$$\therefore \text{Return\%} = \frac{\text{Income}}{\text{Investment}} \times 100\%$$
$$= \frac{27,000}{2,52,000} \times 100\% = 10.7\% = 11\% \quad \text{Ans.}$$

Question 12

A man invests Rs11,200 in a company paying 6 percent per annum when its Rs 100 shares can be bought for Rs140. Find:
(i)his annual dividend
(ii)his percentage return on his investment.

Solution 12

Nominal value of 1 share= Rs100
Market value of 1 share= Rs140
Total investment= Rs11,200

$$\therefore \text{No. of shares purchased} = \frac{11,200}{140} = 80 \text{shares}$$

Then nominal value of 80 shares= 80 x 100= Rs8,000
(i)Dividend%= 6%
Dividend= 6% of Rs8,000

$$= \frac{6}{100} \times \text{Rs}8,000 = \text{Rs}480$$

(ii)

$$\text{Return\%} = \frac{\text{Income}}{\text{Investment}} \times 100\%$$
$$= \frac{480}{11,200} \times 100\%$$
$$= 4.29\%$$

Question 13

Mr. Sharma has 60 shares of nominal value Rs100 and sells them when they are at a premium of 60%. He invests the proceeds in shares of nominal value Rs50, 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.

Solution 13

1st case
Nominal value of 1 share= Rs100
Nominal value of 60 shares= Rs100 x 60= Rs6,000
Market value of 1 share= Rs100+ 60% of Rs100
= Rs100+ Rs60= Rs160
Market value of 60 shares= Rs160 x 60= Rs9,600 Ans.
(ii)Nominal value of 1 share= Rs50
Market value of 1 share= Rs50 - 4% of Rs50
= Rs50 - Rs2= Rs48

$\therefore$ No. of shares purchased $= \frac{9,600}{48} = 200 \text{shares}$ Ans.

(iii)Nominal value of 200 shares=Rs50 x 200= Rs10,000
Dividend%= 18%
Dividend= 18% of Rs10,000

$= \frac{18}{100} \times Rs10,000 = Rs1,800$ Ans.

Question 14

A company with 10,000 shares of nominal value Rs100 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 Rs150 per share. Calculate the dividend he receives and the percentage of return on his investment.

Solution 14

(i)
Nominal value of 1 share= Rs100
Nominal value of 10,000 shares= Rs100 x 10,000= Rs10,00,000
Dividend%= 8%
Dividend = 8% of Rs10,00,000

$= \frac{8}{100} \times Rs10,00,000 = Rs80,000$

(ii)
Market value of 90 shares= Rs150 x 90= Rs13,500
Nominal value of 90 shares= Rs100 x 90= Rs9,000
Dividend = 8% of Rs9,000

$= \frac{8}{100} \times Rs9,000 = Rs720$

(iii)

$$\text{Return\%} = \frac{\text{Income}}{\text{Investment}} \times 100\%$$
$$= \frac{720}{13,500} \times 100\%$$
$$= 5\frac{1}{3}\%$$

Question 15

Which is the better investment :
16% Rs.100 shares at 80 or 20% Rs.100 shares at 120?

Solution 15

1st case
16%Rs.100 shares at 80 means;
Market value of 1 share= Rs80
Nominal value of 1 share= Rs100
Dividend= 16%
Income on Rs80= 16% of Rs100= Rs16

Income on Rs1 $= \frac{16}{80} = Rs0.20$

2nd case

20% Rs.100 shares at 120 means;
Market value of 1 share= Rs120
Nominal value of 1 share= Rs100
Dividend= 20%
Income on Rs120= 20% of Rs100= Rs20

Income on Rs1 $= \frac{20}{120} = Rs0.17$

Then 16% Rs.100 shares at 80 is better investment.

Question 16

A man has a choice to invest in hundred-rupee shares of two firms at Rs120 or at Rs132. 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 Rs26,400 with each firm, how much will be the difference between the annual returns from the two firms.

Solution 16

(i)

1st firm

Market value of 1 share= Rs120
Nominal value of 1 share= Rs100
Dividend= 5%
Income on Rs120= 5% of Rs100= Rs5

Income on Rs1 $= \frac{5}{120} = Rs0.041$

2nd firm

Market value of 1 share= Rs132
Nominal value of 1 share= Rs100
Dividend= 6%
Income on Rs132= 6% of Rs100= Rs6

Income on Rs1 $= \frac{6}{132} = Rs0.045$

Then investment in second company is giving better return Ans.

(ii)

Income on investment of Rs26,400 in first firm

$= \frac{5}{120} \times 26,400 = Rs1,100$

Income on investment of Rs26,400 in second firm

$= \frac{6}{132} \times 26,400 = Rs1,200$

$\therefore$ Difference between both returns= Rs1,200-Rs1,100
= Rs100 Ans.

Question 17

A man bought 360, ten-rupee shares of a company, paying 12% per annum. He sold the shares when their price rose to Rs21 per share and invested the proceeds in five-rupee shares paying 4.5 percent per annum at Rs3.50 per share. Find the annual change in his income.

Solution 17

1st case

Nominal value of 1 share= Rs10
Nominal value of 360 shares= Rs10 x 360= Rs3,600
Market value of 1 share= Rs21
Market value of 360 shares= Rs21 x 360= Rs7,560
Dividend%= 12%
Dividend= 12% of Rs3,600

$$= \frac{12}{100} \times 3,600 = Rs432$$

2nd case

Nominal value of 1 share= Rs5
Market value of 1 share= Rs3.50

$$\therefore \text{ No. of shares purchased} = \frac{7,560}{3.50} = 2160 \text{shares}$$

Nominal value of 2160 shares=Rs5 x 2160= Rs10,800
Dividend%= 4.5%
Dividend= 4.5% of Rs10,800

$$= \frac{4.5}{100} \times 10,800 = Rs486$$

Annual change in income= Rs486 - Rs432
= Rs54 increase Ans.

Question 18

A man sold 400 (Rs20) shares of a company, paying 5% at Rs18 and invested the proceeds in (Rs10) shares of another company paying 7% at Rs12. How many (Rs10) shares did he buy and what was the change in his income?

Solution 18

1st case

Nominal value of 1 share= Rs20
Nominal value of 400 shares= Rs20 x 400= Rs8,000
Market value of 1 share= Rs18
Market value of 400 shares= Rs18 x 400= Rs7,200
Dividend%= 5%
Dividend= 5% of Rs8,000

$$= \frac{5}{100} \times 8,000 = Rs400$$

2nd case

Nominal value of 1 share= Rs10
Market value of 1 share= Rs12

$$\therefore \text{ No. of shares purchased} = \frac{7,200}{12} = 600 \text{shares}$$ Ans.

Nominal value of 600 shares=Rs10 x 600= Rs6,000
Dividend%= 7%
Dividend= 7% of Rs6,000

$$= \frac{7}{100} \times 6,000 = Rs420$$

Annual change in income= Rs420 - Rs400
= Rs20 increase Ans.

Question 19

Two brothers A and B invest Rs16,000 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 per cent of the dividend received by B.

Solution 19

For A
Total investment= Rs16,000
Nominal value of 1 share= Rs100
Market value of 1 share= Rs80

$$\therefore \text{ No. of shares purchased} = \frac{16,000}{80} = 200 \text{shares}$$

Nominal value of 200 shares= Rs100 x 200= Rs20,000
Dividend%= 3%
Dividend = 3% of Rs20,000

$$= \frac{3}{100} \times Rs20,000 = Rs600$$

For B
Total investment= Rs16,000
Nominal value of 1 share= Rs10
Market value of 1 share= Rs10

$$\therefore \text{ No. of shares purchased} = \frac{16,000}{10} = 1600 \text{shares}$$

Nominal value of 1600shares= 10 x 1600= Rs16,000
Dividend received by B= Dividend received by A
= Rs600

$$\text{Dividend\%} = \frac{\text{Dividend}}{\text{Nominal value}} \times 100\%$$
$$= \frac{600}{16,000} \times 100\%$$
$$= 3.75\%$$

Question 20

A man invests Rs20,020 in buying shares of nominal value Rs26 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.

Solution 20

Total investment= Rs20,020
Nominal value of 1 share= Rs26

Market value of 1 share= Rs26+ 10% of Rs26
= Rs26+ Rs2.60= Rs28.60

$\therefore$ No. of shares purchased $= \frac{20,020}{28.60} = 700 \text{shares}$ Ans.

Nominal value of 700 shares= Rs26 x 700= Rs18,200
Dividend%= 15%
Dividend= 15% of Rs18,200

$= \frac{15}{100} \times 18,200 = Rs2,730$ Ans.

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

$= \frac{2,730}{20,020} \times 100\% = \frac{150}{11}\% = 13\frac{7}{11}\%$ Ans.

Chapter 3 - Shares and Dividends

Exercise Ex. 3(C)

Question 1
By investing Rs.45,000 in 10% Rs.100 shares, Sharad gets Rs.3,000 as dividend. Find the market value of each share.

Solution 1

Annual income from 1 share = 10% of Rs. 100 = Rs. 10

Total annual income = Rs. 3000

$\therefore$ Number of shares bought $= \frac{\text{Total annual income}}{\text{Annual income from 1 share}} = \frac{3000}{10} = 300$

$\Rightarrow$ Market value of one share $= \frac{\text{Total investment}}{\text{Number of shares}} = \frac{45000}{300} = \text{Rs. } 150$

Question 2
Mrs. Kulkarni invests Rs.1, 31,040 in buying Rs.100 shares at a discount of 9%. She sells shares worth Rs.72,000 at a premium of 10% and the rest at a discount of 5%. Find her total gain or loss on the whole.

Solution 2

Investment = Rs. 131040

N.V. of 1 share = Rs. 100

Discount = 9% of Rs. 100 = Rs. 9

∴ M.V. of 1 share = Rs. 100 – Rs. 9 = Rs. 91

$$\therefore \text{Number of shares purchased} = \frac{\text{Investment}}{\text{M.V. of 1 share}} = \frac{131040}{91} = 1440$$

$$\text{Number of shares worth Rs. 72000} = \frac{72000}{100} = 720$$

∴ Mrs. Kulkarni sells 720 shares at a premium of 10%

M.V. of 1 share = Rs. 100 + Rs. 10 = Rs. 110

∴ Selling price of 720 shares = 720 × Rs. 110 = Rs. 79200

Number of remaining shares = 1440 – 720 = 720

She sells 720 shares at a discount of 5%

M.V. of 1 share = Rs. 100 – Rs. 5 = Rs. 95

∴ Selling price of 720 shares = 720 × Rs. 95 = Rs. 68400

∴ Total selling price = Rs. (79200 + 68400) = Rs. 147600

∴ Total gain = Total selling price – Total investment

= Rs. (147600 – 131040)

= Rs. 16560

Question 3

A man invests a certain sum on buying 15% Rs.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, Rs.6480
(iii) Sum invested

Solution 3

(i) Dividend on one share = 15% of Rs. 100

$$= \text{Rs. } \left(\frac{15}{100} \times 100\right)$$

$$= \text{Rs. } 15$$

So, the income from one share is Rs. 15.

(ii) Number of shares bought by the man

$$= \frac{\text{annual income}}{\text{dividend on one share}}$$

$$= \frac{6480}{15}$$

$$= \text{Rs. } 432$$

(iii) Since the man bought shares of Rs. 100 at 20% premium, the market value of one share

$$= \text{Rs. } \left(1 + \frac{20}{100}\right) \times 100$$

$$= \text{Rs. } \left(\frac{120}{100} \times 100\right)$$

$$= \text{Rs. } 120$$

$\therefore$ His total investment = number of shares $\times$ market value of one share

$$= 432 \times 120$$

$$= \text{Rs. } 51,840$$

Question 4

Gagan invested Rs.80% of his savings in 10% Rs.100 shares at 20% premium and the rest of his savings in 20% Rs.50 shares at Rs.20% discount. If his incomes from these shares is Rs.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.

Solution 4

(i) Let the total savings be Rs. x.

For 1st part:

N.V. of each share = Rs. 100

$$\text{M.V. of each share} = 100 + \frac{20}{100}(100) = \text{Rs. } 120$$

$$\text{Number of shares bought} = \frac{0.8x}{120} \quad \text{...(Investment = Rs. } x\text{)}$$

Dividend on each share = 10% of 100 = Rs. 10 ...(Rate = 10%)

$$\text{Total dividend} = 10 \times \frac{0.8x}{120} = \text{Rs.} \frac{0.8x}{12}$$

For 2nd part:

N.V. of each share = Rs. 50

$$\text{M.V. of each share} = 50 - \frac{20}{100}(50) = \text{Rs. } 40$$

$$\text{Number of shares bought} = \frac{0.2x}{40} \quad \text{...(Investment = Rs. } x\text{)}$$

Dividend on each share = 20% of 50 = Rs. 10 ...(Rate = 20%)

$$\text{Total dividend} = 10 \times \frac{0.2x}{40} = \frac{0.2x}{4}$$

Given that dividends (incomes) from both the investments are is Rs. 5600.

$$\Rightarrow \frac{0.8x}{12} + \frac{0.2x}{4} = 5600$$

$$\Rightarrow \frac{0.8x + 0.6x}{12} = 5600$$

$$\Rightarrow x = \frac{5600 \times 12}{1.4}$$

$$\Rightarrow x = 48,000$$

Thus, his investment in shares on the whole is Rs. 48,000.

$$\text{(ii) So, number of shares bought} = \frac{0.8x}{120} = \frac{0.8 \times 48,000}{120} = \text{Rs. } 320$$

$$\text{(iii) The total dividend (return)} = \frac{0.8x}{12} + \frac{0.2x}{4}$$

$$= \frac{0.8(48,000)}{12} + \frac{0.2(48,000)}{4}$$

$$= 0.8 \times 4,000 + 0.2 \times 12,000$$

$$= \text{Rs. } 5600$$

$$\text{Percentage return} = \frac{5600}{48,000} \times 100 = 11\frac{2}{3}\%$$

Question 5

Ashwarya bought 496, Rs.100 shares at Rs.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 Rs.7,200

Solution 5

(i) N.V. of each share = Rs. 100

M.V. of each share = Rs. 132

Investment made by her = 496×132 = Rs. 65, 472

(ii) Dividend on 1 share = 7.5% of Rs. 100 = Rs. 7.5

So, income of Ashwarya from these shares = 496×7.5 = Rs. 3,720

(iii) If she wants to increase her income by Rs. 7,200,

the number of shares she should buy = $\frac{\text{increase in the income}}{\text{income of one share}} = \frac{7,200}{7.5}$ = Rs. 960

So, she should invest = 960×7.5 = Rs. 1,26,720

Question 6

Gopal has some Rs.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 Rs.100 shares at Rs.60 of company B paying 20% dividend. If his income, from the shares sold, increases by Rs.18,000, find the number of shares sold by Gopal.

Solution 6

Let the number of shares the man sold be x.

N.V. of share = Rs.100

Rate of dividend = 10%

Dividend on each share = 10% of Rs. 100 = Rs.10

So, the dividend on x shares = Rs. $10 \times x$ = Rs. $10x$

Selling price of each share = Rs.100 – 20% of Rs. 100 = Rs. 80

Amount obtained on selling x shares = Rs. $80 \times x$ = Rs. $80x$

The proceeds he invested in Rs. 100 shares at Rs. 60 of company B paying 20% dividend.

N.V. of share = Rs.100

M.V. of each share = Rs. 60 = Rs. 60

$$\text{Number of shares bought by the man} = \frac{\text{Amount invested}}{\text{M.V. of each share}}$$

$$= \frac{80x}{60}$$

$$= \frac{4x}{3}$$

Dividend on each share = 20% of Rs. 100 = Rs. 20

Total dividend received = Dividend on each share × Number of shares

$$= 20 \times \frac{4x}{3}$$

$$= \frac{80x}{3}$$

Increase in the income = Rs. 18,000

$$\Rightarrow \frac{80x}{3} - 10x = 18,000$$

$$\Rightarrow \frac{50x}{3} = 18,000$$

x = Rs. 1080

Hence, the number of shares sold by Gopal is Rs. 1080.

Question 7

A man invests a certain sum of money in 6% hundred-rupee shares at Rs.12 premium. When the shares fell to Rs.96, he sold out all the shares bought and invested the proceed in 10%, ten-rupee shares at Rs.8. If the change in his income is Rs.540, Find the sum invested originally

Solution 7

Let the riginal sum invested = x

Then number of Rs. 100 shares purchased at premium of Rs. 12

$$= \frac{x}{100+12} = \frac{x}{112}$$

The income per original share at 6% = Rs. 6

Total Income = (Number of shares) × (earning per share)

$$= (\text{Number of shares}) \times 6 = \frac{x}{112} \times 6 = \frac{3x}{56}$$

Proceeds from sale of original shares at Rs. 96 per share

$$= (\text{Number of Shares}) \times 96 = \frac{x}{112} \times 96 = \frac{6x}{7}$$

Number of Rs. 10 shares purchased at Rs. 8 per share from proceeds of original shares

$$= \frac{(\text{Proceeds from sale of original shares})}{8} = \frac{\frac{6x}{7}}{8} = \frac{3x}{28}$$

$$\text{Income per new share of Rs. 10 at 10\%} = \frac{10}{100} \times 10 = \text{Rs. } 1$$

Total income from new shares

= (Number of shares) × (Income per share)

$$= \frac{3x}{28} \times 1 = \frac{3x}{28}$$

Given change in income = 540

Income from old shares – Income from new shares = 540

$$\therefore 540 = \frac{3x}{28} - \frac{3x}{56} = \frac{3x}{56}$$

$$\therefore x = \frac{540}{\frac{3}{56}} = 10{,}080$$

Thus, the original sum invested is Rs.10,080.

Question 8

Mr. Gupta has a choice to invest in ten-rupee shares of two firms at Rs13 or at Rs16. 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 Rs30, find how much, in all, does he invest.

Solution 8

(i)

1st firm

Nominal value of 1 share= Rs10
Market value of 1 share= Rs13
Dividend%= 5%
Dividend = 5% of Rs10= Rs0.50

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

$$= \frac{0.50}{13} \times 100\% = 3.846\%$$

2nd firm

Nominal value of 1 share= Rs10
Market value of 1 share= Rs16
Dividend%= 6%
Dividend = 6% of Rs10= Rs0.60

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

$$= \frac{0.60}{16} \times 100\% = 3.75\%$$

Then first firm is paying better than second firm.

(ii)

Let money invested in each firm= Rs y

For 1st firm

$$\therefore \text{No. of shares purchased} = \frac{y}{13} \text{ shares}$$

Total dividend $= \text{Rs}0.50 \times \frac{y}{13} = \text{Rs}\frac{y}{26}$

For 2nd firm

$$\therefore \text{No. of shares purchased} = \frac{y}{16} \text{ shares}$$

Total dividend $= \text{Rs}0.60 \times \frac{y}{16} = \text{Rs}\frac{3y}{80}$

Given- difference of both dividend= Rs30

$$\Rightarrow \quad \frac{y}{26} - \frac{3y}{80} = \text{Rs}30$$

$$\Rightarrow \quad \frac{y}{1040} = \text{Rs}30$$

$$\Rightarrow \quad y = \text{Rs}30 \times 1040 = \text{Rs}31,200$$

Total money invested in both firms= Rs31,200 × 2

= Rs62,400 Ans.

Question 9

Ashok invested Rs.26,400 in 12%, Rs.25 shares of a company. If he receives a dividend of Rs.2,475, find the:
(i) number of shares he bought.
(ii) market value of each share.

Solution 9

(i) Total dividend = Rs. 2,475

$$\text{And, dividend on each share} = 12\% \text{ of Rs. } 25 = \frac{12}{100} \times \text{Rs. } 25 = \text{Rs. } 3$$

$$\therefore \text{ Number of shares bought} = \frac{\text{Total dividend}}{\text{Dividend on 1 share}} = \frac{2475}{3} = 825$$

(ii) Market value of 825 shares = Rs. 26,400

$$\therefore \text{ Market value of each share} = \frac{\text{Total investment}}{\text{No. of shares}} = \frac{26400}{825} = \text{Rs. } 32$$

Question 10

A man invested Rs45,000 in 15% Rs100shares quoted at Rs125. When the market value of these shares rose to Rs140, he sold some shares, just enough to raise Rs8,400. Calculate:
(i)the number of shares he still holds;
(ii)the dividend due to him on these remaining shares.

Solution 10

(i)
Total investment= Rs45,000
Market value of 1 share= Rs125

$$\therefore \text{ No. of shares purchased} = \frac{45000}{125} = 360\text{shares}$$

Nominal value of 360 shares= Rs100 x 360= Rs36,000
Let no. of shares sold= n
Then sale price of 1 share= Rs140
Total sale price of n shares= Rs8,400

Then $$n = \frac{8,400}{140} = 60\text{shares}$$

The no. of shares he still holds= 360 - 60= 300
(ii)
Nominal value of 300 shares= Rs100 × 300= Rs30,000
Dividend%= 15%
Dividend = 15% of Rs30,000

$$= \frac{15}{100} \times \text{Rs } 30,000 = \text{Rs } 4,500$$

Question 11

Mr.Tiwari. invested Rs29,040 in 15% Rs100 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.

Solution 11

Total investment= Rs29,040
Nominal value of 1 share= Rs100
Market value of 1 share= Rs100+ 20% of Rs100
= Rs100 + Rs20=Rs120

$$\therefore \text{ No. of shares purchased} = \frac{29,040}{120} = 242 \text{shares}$$

Nominal value of 242 shares= Rs100 x 242= Rs24,200
Dividend%= 15%
Dividend= 15% of Rs24,200

$$= \frac{15}{100} \times \text{Rs}24,200 = \text{Rs } 3,630$$

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

$$= \frac{3,630}{29,040} \times 100\%$$

$$= 12.5\%$$

Question 12

A dividend of 12% was declared on Rs150 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 Rs1,350.

Solution 12

(i)Nominal value of 1 share= Rs150
Dividend%= 12%
Dividend on I share= 12% of Rs150

$$= \frac{12}{100} \times \text{Rs}150 = \text{Rs}18$$

Let market value of 1 share= Rs y
Return%= 10%

$$10\% \text{ of Rs}(y) = \text{Rs } 18$$

$$\Rightarrow \frac{10}{100} \times y = \text{Rs } 18$$

$$\Rightarrow y = \text{Rs } 180$$

(ii)when dividend is Rs18, then investment is Rs180
When dividend is Rs1,350, then investment

$$= \frac{180}{18} \times \text{Rs}1,350$$

=Rs 13, 500

Question 13

Divide Rs50,760 into two parts such that if one part is invested in 8% Rs100 shares at 8% discount and the other in 9% Rs100 shares at 8% premium, the annual incomes from both the investments are equal.

Solution 13

Total investment= Rs50,760
Let 1st part= Rs y
2nd part= Rs(50,760-y)
For 1st part
Nominal value of 1 share= Rs100
Market value of 1 share= Rs100 - 8% of Rs100
= Rs100 - Rs8= Rs92

$$\therefore \text{ No. of shares purchased} = \frac{y}{92} \text{ shares}$$

Dividend%= 8%
Dividend on 1 share= 8% of Rs100= Rs8

$$\text{Total dividend} = \frac{y}{92} \times Rs8 = Rs\frac{2y}{23}$$

For 2nd part
Nominal value of 1 share= Rs100
Market value of 1 share= Rs100 + 8% of Rs100
= Rs100 + Rs8= Rs108

$$\therefore \text{ No. of shares purchased} = \frac{50760 - y}{108} \text{ shares}$$

Dividend%= 9%
Dividend on 1 share= 9% of Rs100= Rs9

$$\text{Total dividend} = \frac{50760 - y}{108} \times Rs9 = Rs\frac{9(50760 - y)}{108}$$

Given that both dividend are equal
Then $Rs\frac{2y}{23} = Rs\frac{9(50760 - y)}{108}$

$$\Rightarrow \quad 2y \times 108 = 23(456840 - 9y)$$

$$\Rightarrow \quad 216y = 456840 \times 23 - 207y$$

$$\Rightarrow \quad 423y = 456840 \times 23$$

$$\Rightarrow \quad y = \frac{456840 \times 23}{423} = Rs24,840$$

1st part= Rs24,840
2nd part= Rs50760 - Rs24,840= Rs25,920 Ans.

Question 14

Mr. Shameem invested $33\frac{1}{3}\%$ of his savings in 20% Rs50 shares quoted at Rs60 and the remainder of the savings in 10% Rs100 share quoted at Rs110. If his total income from these investments is Rs9,200; find :
(i)his total savings (ii)the number of Rs50 share
(iii)the number of Rs100 share.

Solution 14

Let his total savings is Rs y
1st case
His saving= $33\frac{1}{3}\%$ of y = Rs $\frac{y}{3}$
Market price of 1 share= Rs60
Then shares purchased= $\frac{y}{3\times 60}=\frac{y}{180}$
Dividend on 1share= 20% of Rs50= Rs10
Total dividend= $\frac{y}{180}\times 10=\text{Rs}\frac{y}{18}$
2nd case
His saving= $66\frac{2}{3}\%$ of y= Rs $\frac{2y}{3}$
Market price of 1share= Rs110
Then shares purchased = $\frac{2y}{3\times 110}=\frac{y}{165}$
Dividend on 1share= 10% of Rs100= Rs10
Total dividend= $\frac{y}{165}\times 10=\text{Rs}\frac{2y}{33}$
According to question
Total income = Rs9,200

$$\Rightarrow \frac{y}{18}+\frac{2y}{33}=\text{Rs}9,200$$

$$\Rightarrow \frac{23y}{198}=\text{Rs}9,200$$

$$\Rightarrow y=\frac{9,200\times 198}{23}=\text{Rs}79,200 \quad \text{Ans.}$$

The number of Rs50share= $\frac{79,200}{180}=440$ Ans.
The number of Rs100 share= $\frac{79,200}{165}=480$ Ans.

Question 15

Vivek invests Rs4,500 in 8%, Rs10 shares at Rs15. He sells the shares when the price rises to Rs30, and invests the proceeds in 12% Rs100 shares at Rs125. Calculate :
(i)the sale proceeds
(ii)the number of Rs125 shares he buys.
(iii)the change in his annual income from dividend.

Solution 15

1st case
Total investment= Rs4,500
Market value of 1 share= Rs15

$$\therefore \text{ No. of shares purchased} = \frac{4500}{15} = 300 \text{shares}$$

Nominal value of 1 share= Rs10
Nominal value of 300 shares= Rs10 × 300= Rs3,000
Dividend=8% of Rs3,000

$$= \frac{8}{100} \times Rs3,000 = Rs240$$

Sale price of 1 share= Rs30
Total sale price= Rs30 x 300= Rs9,000 Ans.
(ii)new market price of 1 share= Rs125

$$\therefore \text{ No. of shares purchased} = \frac{9000}{125} = 72 \text{shares}$$

Ans.
(iii)
New nominal value of 1 share= Rs100
New nominal value of 72 shares= Rs100 x 72= Rs7,200
Dividend%= 12%
New dividend= 12% of Rs7,200

$$= \frac{12}{100} \times Rs7,200 = Rs864$$

Change in annual income= Rs864 - Rs240
= Rs624 Ans.

Question 16

Mr.Parekh invested Rs.52,000 on Rs.100 shares at a discount of Rs.20 paying 8% dividend. At the end of one year he sells the shares at a premium of Rs.20. Find:
(i)The annual dividend
(ii)The profit earned including his dividend.

Solution 16

Rate of dividend = 8%
Investment = Rs.52000
Market Rate = Rs.100 - 20 = Rs.80

$$\text{No. of shares purchased} = \frac{52000}{80} = 650$$

(i) Annual dividend = 650 × 8 = Rs.5200 Ans.
(ii) On selling, market rate = Rs.100+20 = Rs.120
$\Rightarrow$ Sale price = 650 × 120 = Rs.78000
Profit = Rs.78000 - Rs.52000 = Rs.26000

⇒ Total gain = 26000 + 5200 = Rs.31200 Ans.

Question 17

Salman buys 50 shares of face value Rs.100 available at Rs.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 Rs.150, how many extra shares should he buy?

Solution 17

Number of shares bought = 50

N.V. of one share = Rs. 100

M.V. of each share = Rs. 132

(i) Investment = M.V. of each share × Number of shares

$= \text{Rs. } 132 \times 50$

$= \text{Rs. } 6600$

(ii) Since dividend on 1 share = 7.5% of N.V. $= \frac{7.5}{100} \times 100 = \text{Rs. } 7.50$

His annual income = Rs. 7.50 × 50 = Rs. 375

(iii) Extra shares to be bought $= \frac{\text{Increase in annual income}}{\text{Income in one share}} = \frac{150}{7.50} = 20$

Question 18

Salman invests a sum of money in Rs.50 shares, paying 15% dividend quoted at 20% premium. If his annual dividend is Rs.600, calculate :
(i) The number of shares he bought.
(ii) His total investment.
(iii) The rate of return on his investment.

Solution 18

N.V. of each share = Rs. 50

M.V. of each share = Rs. 50 + 20% of Rs. 50

$= 50 + \frac{20}{100} \times 50$

$= 50 + 10$

$= \text{Rs. } 60$

Dividend on one share = 15% of Rs. 50 $= \frac{15}{100} \times 50 = 7.5$

(i) Number of shares bought $= \frac{\text{Total dividend}}{\text{Dividend on one share}} = \frac{600}{7.5} = 80$

(ii) His total investment = Number of shares × M.V. of one share

$= 80 \times \text{Rs. } 60$

$= \text{Rs. } 4800$

(iii) Rate of return $= \frac{\text{Total dividend}}{\text{Total investment}} \times 100\% = \frac{600}{4800} \times 100\% = 12.5\%$

Question 19

Rohit invested Rs. 9,600 on Rs. 100 shares at Rs. 20 premium paying 8% dividend. Rohit sold the shares when the price rose to Rs. 160. He invested the proceeds (excluding dividend) in 10% Rs. 50 shares at Rs. 40. Find the :
(i) Original number of shares.
(ii) Sale proceeds.
(iii) New number of shares.
(iv) Change in the two dividends.

Solution 19

(i) 100 shares at Rs. 20 premium means

Nominal value of the share is Rs. 100

and its market value = 100 + 20 = Rs. 120

Money required to buy 1 share = Rs. 120

$$\therefore \text{ Number of shares} = \frac{\text{Money Invested}}{\text{Market Value of 1 Share}} = \frac{9600}{120} = 80$$

(ii) Each share is sold at Rs. 160

$\therefore$ Sale Proceeds = 80 x Rs. 160 = Rs. 12,800

(iii) Now, investment = Rs. 12800

Dividend = 10%

Net Value = 50

Market Value = Rs. 40

$$\therefore \text{ Number of shares} = \frac{\text{Investment}}{\text{Market Value}} = \frac{12800}{40} = 320$$

(iv) Now, dividend on 1 share = 10% of N.V. = 10% of 50 = 5

$\Rightarrow$ Dividend on 320 shares = 320 x 5 = 1600

Thus, change in two dividends = 1600 − 640 = 960

Question 20

How much should a man invest in Rs. 50 shares selling at Rs. 60 to obtain an income of Rs. 450, if the rate of dividend declared is 10%. Also find his yield percent, to the nearest whole number.

Solution 20

Face value of each share = Rs. 50

Dividend(%)=10%

Dividend on 1 share = $\frac{10}{100} \times 50 = \text{Rs.}5$

$\therefore$Number of shares bought = $\frac{\text{Total dividend}}{\text{Dividendper share}} = \frac{450}{5} = 90$

Market value of each share = Rs.60

$\therefore$ Total investment $= 90 \times 60 = \text{Rs.}5400$

$$\text{Percentage return} = \frac{\text{Total dividend}}{\text{Total investment}} \times 100 = \frac{450}{5400} \times 100 = 8.33 \approx 8\%$$