Banking/Recurring Deposit Account

Q1. Naveen deposits Rs.800 every month in a recurring deposit account for 6 months. If he receives Rs.4884 at the time of maturity, then the interest he earns is:
(a) Rs. 84 (b) Rs.42 (c) Rs.24 (d) Rs.284 [2023]

Answer: (a) Rs.84

Step-by-step Explanation:

Monthly Instalment (P) = Rs.800

Time in months (n) = 6 months

Maturity Amount (A) = Rs.4884

Interest = A – Pn
= 4884 – 800 × 6
= 4884 – 4800
= Rs. 84

Q2. Salman deposits Rs.1000 every month in a recurring deposit account for 2 years. If he receives Rs.26000 on maturity, find:
(i) The total interest Salman earns (ii) The rate of interest [2023]

Answer: (i) Rs. 2000 (ii) 8%

Step-by-step Explanation:

Monthly Instalment (P) = Rs. 1000

Time in months (n) = 2 years = 2*12=24 months

Maturity Amount (A) = Rs. 26000

$$(i)\ Interest\ =\ A\ -\ Pn$$
$$=\ 26000\ -\ 1000\times 24$$
$$=\ 26000-24000$$
$$=\ Rs.\ 2000$$
$$(ii)\ I\ =\ \frac{P\times n(n+1)}{2\times 12}\times\frac{r}{100}$$
$$2000=\frac{1000\times 24\times 25\times r}{2\times 12\times 100}$$
$$2000=250\ r$$
$$\frac{2000}{250}=r$$
$$8\ =\ r$$
$$Rate\ of\ interest\ =\ 8\%$$

Q3. Mohit opened a recurring deposit account in a bank for 2 years. He deposits Rs.1000 every month and receives Rs.25500 on maturity. The interest he earned in 2 years is:
Rs.13500 (b) Rs.3000 (c) Rs.24000 (d) Rs.1500
[2021 Semester- 1]

Answer: (d) Rs. 1500

Step-by-step Explanation:

Monthly Instalment (P) = Rs. 1000

Time in months (n) = 2 years = 2*12=24 months

Maturity Amount (A) = Rs. 25500

Interest = A – Pn

= 25500 – 1000 × 24

$= 25500 - 24000$

$= 1500$

Interest is Rs. 1500

Q4. A man deposited Rs.500 per month for 6 months and received Rs 3,300 as the maturity value. The interest received by him is:- 1950 (b) 300 (c) 2800 (d) None of these [2021 Semester-1]

Answer: (b) 300

Step-by-step explanation:

Monthly Instalment (P) = Rs. 500

Time in months (n) = 6 months

Maturity Amount (A) = Rs. 3300

Interest = A – Pn

$= 3300 - 500 \times 6$

$= 3300 - 3000$

$= 300$

Interest is Rs. 300

Q5. Joseph has a recurring deposit account in a bank for two years at the rate of 8% per annum simple interest.
(i) If at the time of maturity Joseph receives Rs. 2000 as interest then the monthly instalment is:
Rs.1200 (b) Rs.600 (c) Rs.1000 (d) Rs.1600

(ii) The total amount deposited in the bank:
Rs.25000 (b) Rs.24000 (c) Rs.26000 (d) Rs.23000

(iii) The amount Joseph receives on maturity is:
Rs.27000 (b) Rs.25000 (c) Rs.26000 (d) Rs.28000

(iv) If the monthly instalment is Rs.100 and the rate of interest is 8%, in how many months Joseph will receive Rs.52 as interest?
18 (b) 30 (c) 12 (d) 6 [2021 Semester- I]

Answer (i): (c) Rs. 1000

Step-by-step explanation:

Interest (I) = Rs. 2000

Time in months (n) = 2 years= 2*12 = 24 months

Rate of Interest (r) = 8%

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

$$2000 = \frac{P \times 24 \times 25 \times 8}{2 \times 12 \times 100}$$

$$\frac{2000}{2} = P$$

$$P = 1000$$

$$Monthly\ instalment\ is\ Rs.\ 1000$$

Answer (ii): (b) Rs. 24000

Step-by-step Explanation:

Total money deposited in the Bank

= P x n
= 1000 x 24
= Rs. 24000

Answer (iii): (c) Rs. 26000

Step-by-step Explanation:

Maturity Amount = Interest + Pn

= 2000 + 24000

= Rs. 26000

Answer (iv): ()

Step-by-step explanation:

Monthly Instalment (P) = Rs. 100

Rate of interest(r) = 8%

Interest (I) = Rs. 52

$$I = \frac{P \times n(n+1)}{2 \times 12} \times \frac{r}{100}$$
$$52 = \frac{100 \times n(n+1) \times 8}{2 \times 12 \times 100}$$
$$52 = \frac{n(n+1)}{3}$$
$$n^2 + n = 156$$
$$n^2 + n - 156 = 0$$
$$n^2 + 13n - 12n - 156 = 0$$
$$n(n+13) - 12(n+13) = 0$$
$$(n+13)(n-12) = 0$$
$$Either\ (n+13) = 0\ \ OR\ (n-12) = 0$$
$$n = -13\ OR\ 12$$
$$n\ cannot\ be\ begative.$$
$$Therefore,\ n\ =\ 12\ months$$

Q6. A man deposited Rs. 1200 in a recurring deposit account for 1 year at 5% per annum simple interest. The interest earned by him on maturity is
14790 (b) 390 (c) 4680 (d) 780 [2021 Semester-I]

Answer: (b) Rs. 390

Step-by-step explanation:

Monthly Instalment (P) = Rs. 1200

Rate of interest(r) = 5%

Time in months (n) = 1 year = 1*12 = 12 months

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

$$I = \frac{1200 \times 12 \times 13 \times 5}{2 \times 12 \times 100}$$

$$I = 390$$

$$Therefore,\ Interest = \ Rs.\ 390$$

Q7. Mr. Sonu has a recurring deposit account and deposits Rs 750 per month for 2 years. If he gets Rs. 19125 at the time of maturity, find the rate of interest. [2020]

Answer: 6%

Step-by-step explanation:

Monthly Instalment (P) = Rs. 750

Maturity Amount(A) = Rs. 19125

Time in months (n) = 2 years = 2*12 = 24 months

$$\begin{aligned} Interest &= A - Pn \\ &= 19125 - 750 \times 24 \\ &= 19125 - 18000 \\ &= Rs.\ 1125 \end{aligned}$$

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

$$1125 = \frac{750 \times 24 \times 25 \times r}{2 \times 12 \times 100}$$

$$1125 = \frac{375\ r}{2}$$

$$375\ r = 1125 \times 2$$

$$r = \frac{1125 \times 2}{375}$$

$$r = 6\%$$

$$Therefore,\ Rate\ of\ Interest = 6\%$$

Q8. Rekha opened a recurring deposit account for 20 months. The rate of interest is 9% per annum and Rekha receives 441 as interest at the time of maturity. Find the amount Rekha deposited each month. [2019]

Answer: Rs. 280

Step-by-step explanation:

Rate of interest (r) = 9%

Interest(I) = Rs. 441

Time in months (n) = 20 months

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

$$441 = \frac{P \times 20 \times 21 \times 9}{2 \times 12 \times 100}$$

$$441 = \frac{P \times 21 \times 3}{2 \times 4 \times 5}$$

$$P = \frac{441 \times 2 \times 4 \times 5}{3 \times 21}$$

$$P = 280$$

$$Therefore,\ monthly\ deposit\ =\ Rs.\ 280.$$

Q9. Sonia had a recurring deposit account in a bank and deposited Rs.600 per month for 2 1/2 years. If the rate of interest was 10% p.a., find the maturity value of this account. [3] [2018]

Answer: Rs. 20325

Step-by-step explanation:

Rate of interest (r) = 10%

Monthly instalment (P) = Rs. 600

Time in months (n) = 5/2 years

= 5/2*12

= 30 months

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

$$I = \frac{600 \times 30 \times 31 \times 10}{2 \times 12 \times 100}$$

$$I = 2325$$

$$\begin{aligned} Maturity\ Amount &= I + Pn \\ &= 2325 + 600 \times 30 \\ &= 2325 + 18000 \\ &= 20325 \end{aligned}$$

$$Therefore,\ Maturity\ Value\ is\ Rs.\ 20325$$

Q10. Priyanka has a recurring deposit account of ₹ 1000 per month at 10% per annum. If she gets ₹ 5550 as interest at the time of maturity, find the total time for which account has held. [3] [2018]

Answer: 3 years

Step-by-step explanation:

Monthly instalment (P) = Rs. 1000

Rate of interest (r) = 10%

Interest (I) = Rs. 5550

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

$$5550 = \frac{1000 \times n(n+1) \times 10}{2 \times 12 \times 100}$$

$$5550 = \frac{25 \times n(n+1)}{6}$$

$$n(n+1) = \frac{5550 \times 6}{25}$$

$$n^2 + n = 1332$$

$$n^2 + n - 1332 = 0$$

$$n^2 + 37n - 36n - 1332 = 0$$

$$n(n+37) - 36(n+37) = 0$$

$$(n+37)(n-36) = 0$$

$$Euther\ n + 37 = 0\ OR\ n - 36 = 0$$

$$Either\ n = -37\ or\ 36$$

$$months\ cannot\ be\ negative.$$

$$Therefore,\ n = 36\ months = 3\ years$$

Q11. Mr. Richard has a recurring deposit account in a bank for 3 years at 7.5% p.a. simple interest. If he gets ₹ 8325 as interest at the time of maturity, find:

(i) the monthly deposit. (ii) the amount of maturity.[3] [2017]

Answer: (i) Rs. 2000 (ii) Rs. 80325

Step-by-step explanation:

Rate of interest (r) = 7.5%

Interest(I) = Rs. 8325

Time in months (n) = 3 years

= 3*12

= 36 months

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

$$8325 = \frac{P \times 36 \times 37 \times 7.5}{2 \times 12 \times 100}$$

$$8325 = \frac{P \times 9 \times 37}{2 \times 40}$$

$$P = \frac{8325 \times 2 \times 40}{9 \times 37}$$

$$P = 1332$$

$$P = 2000$$

$$Therefore,\ monthly\ deposit\ =\ Rs.\ 2000$$

$$(ii)\ A = I + Pn$$

$$= 8325 + 2000 \times 36$$

$$= 8325 + 72000$$

$$= 80325$$

$$Maturity\ Value\ is\ Rs.\ 80325$$

Q12. Mohan has a recurring deposit account in a bank for 2 years at 6% p.a. simple interest. If he gets Rs.1200 as interest at the time of maturity, find :

(i) the monthly installment. (ii) the amount of maturity.[3] [2016]

Answer: (i) Rs. 800 (ii) Rs. 20400

Step-by-step expanation:

Rate of interest (r) = 6%

Interest(I) = Rs. 1200

Time in months (n) = 2 years

= 2*12

= 24 months

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

$$1200 = \frac{P \times 24 \times 25 \times 6}{2 \times 12 \times 100}$$

$$1200 = \frac{P \times 3}{2}$$

$$P = \frac{1200 \times 2}{3}$$

$$P = 800$$

$$Therefore,\ monthly\ deposit\ =\ Rs.\ 800$$

$$(ii)\ A = \ I + Pn$$

$$= \ 1200 + 800 \times 24$$

$$= \ 1200 + 19200$$

$$= 20400$$

$$Maturity\ Value\ is\ Rs.\ 20400.$$

Q13. 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 instalment is 1,000, find the:

(i) interest earned in 2 years. (ii) matured value. [3] [2015]

Answer: (i) Rs. 1500 (ii) Rs. 25500

Step-by-step Explanation:

Rate of interest (r) = 6% p.a.

Monthly Instalment (P) = Rs. 1000

Time in months (n) = 2 years

= 2*12

= 24 months

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

$$I = \frac{1000 \times 24 \times 25 \times 6}{2 \times 12 \times 100}$$

$$I = 250 \times 6$$

$$I = 1500$$

$$Interest\ is\ Rs.\ 1500$$

$$(ii)\ A = I + Pn$$

$$= 1500 + 1000 \times 24$$

$$= 1500 + 24000$$

$$= 25500$$

$$Maturity\ Amount\ is\ Rs.\ 25500.$$

Q14. Shahrukh opened a Recurring Deposit Account in a bank and deposited Rs.800 per month for 1 1/2 years. If he received Rs.15,084 at the time of maturity, find the rate of interest per annum.[2014]

Answer: 6% p.a.

Step-by-step Explanation:

Monthly Instalment (P) = Rs. 800

Time in months (n) = 1 1/2 years

= 3/2*12

= 18 months

Maturity Amount (A) = Rs. 15084

$$I = A - Pn$$
$$I = 15084 - 800 \times 18$$
$$= 15084 - 14400$$
$$= 684$$
$$I = \frac{P \times n(n+1)}{2 \times 12} \times \frac{r}{100}$$
$$684 = \frac{800 \times 18 \times 19 \times r}{2 \times 12 \times 100}$$
$$684 = 114 \times r$$
$$\frac{684}{114} = r$$
$$r = 6\%\ p.a.$$

Rate of Interest is 6% p. a.

Q15. 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. 8088 from the bank after 3 years, find the value of his monthly installment. [3] [2013]

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

Time in months (n) = 3 years

= 3*12

= 36 months

Maturity Amount (A) = Rs. 8088

$$I = A - Pn$$
$$I = 8088 - P \times 36$$
$$I = 8088 - 36P$$
$$I = \frac{P \times n(n+1)}{2 \times 12} \times \frac{r}{100}$$
$$8088 - 36P = \frac{P \times 36 \times 37 \times 8}{2 \times 12 \times 100}$$
$$8088 - 36P = \frac{P \times 3 \times 37}{25}$$
$$111P = 202200 - 900P$$
$$111P + 900P = 202200$$
$$1011P = 202200$$
$$P = \frac{202200}{1011}$$
$$P = 200$$
$$Monthly\ instalment\ is\ Rs.\ 200$$

Q16. Kiran deposited Rs. 200 per month for 36 months in a bank's recurring deposit account. If the bank pays interest at the rate of 11% per annum, find the amount she gets on maturity.[3] [2012]

Answer: Rs. 8421

Step-by-step Explanation:

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

Monthly Instalment (P) = Rs. 200

Time in months (n) = 36 months

$$I = \frac{P \times n(n+1)}{2 \times 12} \times \frac{r}{100}$$
$$= \frac{200 \times 36 \times 37 \times 11}{2 \times 12 \times 100}$$
$$= 33 \times 37$$
$$= 1221$$
$$A = I + Pn$$
$$= 1221 + 200 \times 36$$
$$= 1221 + 7200$$
$$= 8421$$

$Monthly\ instalment\ is\ Rs.\ 8421.$

Q17. Ahmed has a recurring deposit account in a bank. He deposits Rs. 2,500 per month for 2 years. If he gets Rs. 66,250 at the time of maturity, find

(i) The interest paid by the bank. (ii) The rate of interest. [3] [2011]

Answer: (i) Rs. 6250 (ii) 10%

Step-by-step Explanation:

Monthly Instalment (P) = Rs. 2500

Time in months (n) = 2 years

= 2*12

= 24 months

Maturity Amount (A) = Rs. 66250

$$(i)\ I = A - Pn$$

$$I = 66250 - 2500 \times 24$$

$$I = 66250 - 60000$$

$$I = 6250$$

$$Interest\ is\ Rs.\ 6250$$

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

$$6250 = \frac{2500 \times 24 \times 25 \times r}{2 \times 12 \times 100}$$

$$6250 = 625 \times r$$

$$r = 10\%$$

$$Rate\ of\ interest\ is\ 10\%\ p.a.$$

Q18. 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. [4] [2010]

Answer: (i) Rs. 7500 (ii) 12% p.a.

Step-by-step explanation:

Monthly Instalment (P) = Rs. 2500

Time in months (n) = 2 years

= 2*12

= 24 months

Maturity Amount (A) = Rs. 67500

$$(i)\ I = A - Pn$$
$$I = 67500 - 2500 \times 24$$
$$I = 67500 - 60000$$
$$I = 7500$$
$$Interest\ is\ Rs.\ 7500$$
$$(ii)\ I = \frac{P \times n(n+1)}{2 \times 12} \times \frac{r}{100}$$
$$75000 = \frac{2500 \times 24 \times 25 \times r}{2 \times 12 \times 100}$$
$$7500 = 625 \times r$$
$$r = 12\%$$
$$Rate\ of\ interest\ is\ 12\%\ p.a.$$