

1. The banker's discount on a bill due 4 months hence at 15% is Rs. 420. What is the true discount?

A. Rs. 410

B. Rs. 400

C. Rs. 390

D. Rs. 380

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Here is the answer and explanation

Answer : Option B

Explanation :

$$\begin{aligned} \text{TD} &= \frac{\text{BD} \times 100}{100 + \text{TR}} = \frac{420 \times 100}{100 + \left(\frac{4}{12} \times 15\right)} = \frac{420 \times 100}{100 + \left(\frac{1}{3} \times 15\right)} \\ &= \frac{420 \times 100}{100 + 5} = \frac{420 \times 100}{105} = \frac{84 \times 100}{21} = 4 \times 100 = 400 \end{aligned}$$

2. The banker's discount on a certain amount due 2 years hence is $\frac{11}{10}$ of the true discount. What is the rate percent?

A. 1%

B. 5%

C. 10%

D. 12%

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Here is the answer and explanation

Answer : Option B

Explanation :

Let TD = Rs. 1

$$\text{Then BD} = \frac{11}{10} \times 1 = \text{Rs. } \frac{11}{10}$$

T = 2

R = ?

$$F = \frac{\text{BD} \times \text{TD}}{(\text{BD} - \text{TD})} = \frac{\left(\frac{11}{10} \times 1\right)}{\left(\frac{11}{10} - 1\right)} = \frac{\frac{11}{10}}{\frac{1}{10}} = \text{Rs. } 11$$

$$\text{BD} = \frac{\text{FTR}}{100}$$

$$\Rightarrow \frac{11}{10} = \frac{11 \times 2 \times R}{100}$$

$$\Rightarrow 110 = 22R$$

$$\Rightarrow R = \frac{110}{22} = 5\%$$

3. The present worth of a sum due sometimes hence is Rs.5760 and the baker's gain is Rs.10. What is the true discount?

A. Rs. 480

B. Rs. 420

C. Rs. 120

D. Rs. 240

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Answer : Option D

Explanation :

$$TD = \sqrt{PW \times BG} = \sqrt{5760 \times 10} = \sqrt{57600} = \text{Rs. } 240$$

4. What is the banker's discount if the true discount on a bill of Rs.540 is Rs.90 ?

A. Rs. 108

B. Rs. 120

C. Rs. 102

D. Rs. 106

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Answer : Option A

Explanation :

$$\text{Present Worth, } PW = F - TD = 540 - 90 = \text{Rs. } 450$$

Simple Interest on the Present Worth = True Discount

Hence Simple Interest on 450 = 90 -----(Equation 1)

Simple Interest on the face value = Bankers Discount

=> Simple Interest on 540 = Bankers Discount

From Equation 1, Simple Interest on 450 = 90

$$\text{Hence, Simple Interest on } 540 = \frac{90}{450} \times 540 = \frac{540}{5} = \text{Rs. } 108$$

=> Bankers Discount = Rs. 108

5. A bill for Rs. 3000 is drawn on 14th July at 5 months. It is discounted on 5th October at 10%. What is the Banker's Discount?

A. Rs. 60

B. Rs. 82

C. Rs. 90

D. Rs. 120

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Answer : Option A

Explanation :

$$F = \text{Rs. } 3000$$

$$R = 10\%$$

Date on which the bill is drawn = 14th July at 5 months

Nominally Due Date = 14th December

Legally Due Date = 14th December + 3 days = 17th December

Date on which the bill is discounted = 5th October

Unexpired Time

$$= [\text{6th to 31st of October}] + [30 \text{ Days in November}] + [1\text{st to 17th of December}]$$

$$= 26 + 30 + 17 = 73 \text{ Days}$$

$$= \frac{73}{365} \text{ year} = \frac{1}{5} \text{ year}$$

$$\text{BD} = \text{Simple Interest on the face value of the bill for unexpired time} = \frac{\text{FTR}}{100}$$

$$= \frac{3000 \times \frac{1}{5} \times 10}{100} = 30 \times \frac{1}{5} \times 10 = \text{Rs. } 60$$

6. The bankers discount and the true discount of a sum at 10% per annum simple interest for the same time are Rs.100 and Rs.80 respectively. What is the sum and the time?

A. Sum = Rs.400 and Time = 5 years

B. Sum = Rs.200 and Time = 2.5 years

C. Sum = Rs.400 and Time = 2.5 years

D. Sum = Rs.200 and Time = 5 years

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Answer : Option C

Explanation :

$$\text{BD} = \text{Rs.}100$$

$$\text{TD} = \text{Rs.}80$$

$$R = 10\%$$

$$F = \frac{\text{BD} \times \text{TD}}{(\text{BD} - \text{TD})} = \frac{100 \times 80}{(100 - 80)} = \frac{100 \times 80}{20} = \text{Rs. } 400$$

$$BD = \text{Simple Interest on the face value of the bill for unexpired time} = \frac{FTR}{100}$$

$$\Rightarrow 100 = \frac{400 \times T \times 10}{100}$$

$$\Rightarrow 100 = 4 \times T \times 10$$

$$\Rightarrow 10 = 4 \times T$$

$$\Rightarrow T = \frac{10}{4} = 2.5 \text{ years}$$

7. The banker's gain on a sum due 6 years hence at 12% per annum is Rs. 540. What is the banker's discount?

A. 1240

B. 1120

C. 1190

D. 1290

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Here is the answer and explanation

Answer : Option D

Explanation :

$$TD = \frac{BG \times 100}{TR} = \frac{540 \times 100}{6 \times 12} = \frac{90 \times 100}{12} = \frac{15 \times 100}{2} = \text{Rs. } 750$$

$$BG = BD - TD$$

$$\Rightarrow 540 = BD - 750$$

$$\Rightarrow BD = 540 + 750 = 1290$$

8. The present worth of a certain bill due sometime hence is Rs. 1296 and the true discount is Rs. 72. What is the banker's discount?

A. Rs. 76

B. Rs. 72

C. Rs. 74

D. Rs. 4

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Here is the answer and explanation

Answer : Option A

Explanation :

$$BG = \frac{(TD)^2}{PW} = \frac{72^2}{1296} = \frac{72 \times 72}{1296} = \frac{12 \times 12}{36} = \frac{12}{3} = \text{Rs. } 4$$

$$BG = BD - TD$$

$$\Rightarrow 4 = BD - 72$$

$$\Rightarrow BD = 72 + 4 = \text{Rs. } 76$$

9. The banker's discount of a certain sum of money is Rs. 36 and the true discount on the same sum for the same time is Rs. 30. What is the sum due?

- A. Rs. 180
C. Rs. 220

- B. Rs. 120
D. Rs. 200

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Here is the answer and explanation

Answer : Option A

Explanation :

$$F = \frac{BD \times TD}{(BD - TD)} = \frac{36 \times 30}{(36 - 30)} = \frac{36 \times 30}{6} = 36 \times 5 = \text{Rs. } 180$$

10. The banker's gain on a bill due 1 year hence at 10% per annum is Rs. 20. What is the true discount?

- A. Rs. 200
C. Rs. 150

- B. Rs. 100
D. Rs. 250

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Here is the answer and explanation

Answer : Option A

Explanation :

$$TD = \frac{BG \times 100}{TR} = \frac{20 \times 100}{1 \times 10} = \text{Rs. } 200$$

11. The banker's gain of a certain sum due 3 years hence at 10% per annum is Rs. 36. What is the present worth ?

- A. Rs. 400
C. Rs. 500

- B. Rs. 300
D. Rs. 350

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Here is the answer and explanation

Answer : Option A

Explanation :

$$T = 3 \text{ years}$$

$$R = 10\%$$

$$TD = \frac{BG \times 100}{TR} = \frac{36 \times 100}{3 \times 10} = 12 \times 10 = \text{Rs. } 120$$

$$TD = \frac{PW \times TR}{100}$$

$$\Rightarrow 120 = \frac{PW \times 3 \times 10}{100}$$

$$\Rightarrow 1200 = PW \times 3$$

$$PW = \frac{1200}{3} = \text{Rs. } 400$$

12. The present worth of a certain sum due sometime hence is Rs. 3400 and the true discount is Rs. 340. The banker's gain is:

A. Rs. 21

B. Rs. 17

C. Rs. 18

D. Rs. 34

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Answer : Option D

Explanation :

$$BG = \frac{(TD)^2}{PW} = \frac{(340)^2}{3400} = \frac{340 \times 340}{3400} = \frac{340}{10} = \text{Rs. } 34$$

13. The banker's discount on Rs. 1600 at 15% per annum is the same as true discount on Rs. 1680 for the same time and at the same rate. What is the time?

A. 3 months

B. 4 months

C. 5 months

D. 6 months

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Answer : Option B

Explanation :

Bankers Discount, BD = Simple Interest on the face value of the bill for unexpired time.

True Discount, TD = Simple Interest on the present value for unexpired time.

Simple Interest on Rs. 1600 = True Discount on Rs.1680

=> Rs. 1600 is the Present Worth (PW) of Rs. 1680

=> Rs. 80 is the Simple Interest of Rs.1600 at 15%

$$\Rightarrow 80 = \frac{1600 \times T \times 15}{100}$$

$$\Rightarrow 80 = 16 \times T \times 15$$

$$\Rightarrow 5 = T \times 15$$

$$\Rightarrow 1 = T \times 3$$

$$\Rightarrow T = \frac{1}{3} \text{ year} = \frac{12}{3} \text{ months} = 4 \text{ months}$$

14. The banker's gain on a certain sum due $2\frac{1}{2}$ years hence is $\frac{9}{25}$ of the banker's discount. What is the rate percent?

A. $18\frac{1}{3}\%$

B. $18\frac{1}{2}\%$

C. $24\frac{1}{3}\%$

D. $22\frac{1}{2}\%$

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Answer : Option D

Explanation :

$$T = 2\frac{1}{2} \text{ years} = \frac{5}{2} \text{ years}$$

Let the banker's discount, $BD = \text{Rs. } 1$

$$\text{Then, banker's gain, } BG = \frac{9}{25} \times 1 = \text{Rs. } \frac{9}{25}$$

$$BG = BD - TD$$

$$\Rightarrow \frac{9}{25} = 1 - TD$$

$$\Rightarrow TD = 1 - \frac{9}{25} = \frac{16}{25}$$

$$F = \frac{BD \times TD}{(BD - TD)} = \frac{1 \times \frac{16}{25}}{(1 - \frac{16}{25})} = \frac{\frac{16}{25}}{\frac{9}{25}} = \text{Rs. } \frac{16}{9}$$

BD = Simple Interest on the face value of the bill for unexpired time = $\frac{FTR}{100}$

$$\Rightarrow 1 = \frac{\frac{16}{9} \times \frac{5}{2} \times R}{100}$$

$$\Rightarrow 100 = \frac{16}{9} \times \frac{5}{2} \times R$$

$$\Rightarrow 100 = \frac{16 \times 5 \times R}{9 \times 2}$$

$$\Rightarrow 100 = \frac{8 \times 5 \times R}{9}$$

$$\Rightarrow R = \frac{100 \times 9}{8 \times 5} = \frac{100 \times 9}{40} = \frac{5 \times 9}{2}$$

$$= \frac{45}{2} = 22 \frac{1}{2} \%$$

15. The banker's gain on a sum due 3 years hence at 12% per annum is Rs. 360. The banker's discount is:

A. Rs. 1360

B. Rs. 1000

C. Rs. 360

D. Rs. 640

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Answer : Option A

Explanation :

BG = Rs. 360

T = 3 years

R = 12%

$$TD = \frac{BG \times 100}{TR} = \frac{360 \times 100}{3 \times 12} = \text{Rs. } 1000$$

BG = BD - TD

$$\Rightarrow BD = BG + TD = 360 + 1000 = \text{Rs. } 1360$$

16. The true discount on a certain sum due 6 months hence at 15% is Rs. 240. What is the banker's discount on the same sum for the same time at the same rate?

A. None of these

B. Rs. 278

C. Rs. 228

D. Rs. 258

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Answer : Option D

Explanation :

$$TD = \text{Rs. } 240$$

$$T = 6 \text{ months} = \frac{1}{2} \text{ year}$$

$$R = 15\%$$

$$TD = \frac{BG \times 100}{TR}$$

$$\Rightarrow 240 = \frac{BG \times 100}{\left(\frac{1}{2} \times 15\right)}$$

$$BG = \frac{240 \times 15}{100 \times 2} = \frac{120 \times 15}{100} = \text{Rs. } 18$$

$$BG = BD - TD$$

$$\Rightarrow 18 = BD - 240$$

$$\Rightarrow BD = 18 + 240 = \text{Rs. } 258$$

17. A bill is discounted at 10% per annum. If banker's discount is allowed, at what rate percent should the proceeds be invested so that nothing will be lost?

A. $10 \frac{1}{9} \%$

B. $11 \frac{1}{9} \%$

C. 11

D. $10 \frac{2}{9} \%$

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Here is the answer and explanation

Answer : Option B

Explanation :

Let the amount = Rs.100

Then $BD = \text{Rs. } 10$ (\because banker's discount, BD is the simple Interest on the face value of the bill for unexpired time and bill is discounted at 10% per annum)

$$\text{Proceeds} = \text{Rs. } 100 - \text{Rs. } 10 = \text{Rs. } 90$$

Hence we should get Rs.10 as the interest of Rs.90 for 1 year so that nothing will be lost

$$\Rightarrow 10 = \frac{90 \times 1 \times R}{100}$$

$$\Rightarrow R = \frac{10 \times 100}{90} = \frac{100}{9} = 11 \frac{1}{9} \%$$

18. A banker paid Rs.5767.20 for a bill of Rs.5840, drawn of Apr 4 at 6 months. If the rate of interest was 7%, what was the day on which the bill was discounted?

A. 3rd March

B. 3rd September

C. 3rd October

D. 3rd August

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Here is the answer and explanation

Answer : Option D

Explanation :

$$F = \text{Rs.}5840$$

$$R = 7\%$$

$$BD = 5840 - 5767.20 = \text{Rs.}72.8$$

$$BD = \frac{FTR}{100}$$

$$\Rightarrow 72.8 = \frac{5840 \times T \times 7}{100}$$

$$\Rightarrow T = \frac{72.8 \times 100}{7 \times 5840} = \frac{10.4 \times 100}{5840} = \frac{1040}{5840} = \frac{104}{584} = \frac{13}{73} \text{ years}$$

$$= \frac{13 \times 365}{73} \text{ Days} = 65 \text{ Days}$$

$$\Rightarrow \text{Unexpired Time} = 65 \text{ Days}$$

Given that Date of Draw of the bill = 4th April at 6 months

=> Nominally Due Date = 4th October

=> Legally Due Date = (4th October + 3 days) = 7th October

Hence, The date on which the bill was discounted

= (7th October - 65 days)

= (7th October - 7 days in October - 30 days in September - 28 days in August)

= 3rd August

19. The banker's discount on a sum of money for 3 years is Rs. 1116. The true discount on the same sum for 4 years is Rs. 1200. What is the rate per cent?

A. 8%

B. 12%

C. 10%

D. 6%

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Here is the answer and explanation

Answer : Option D

Explanation :

BD for 3 years = Rs. 1116

BD for 4 years = $\frac{1116}{3} \times 4 = \text{Rs. } 1488$

TD for 4 years = Rs. 1200

$$F = \frac{BD \times TD}{(BD - TD)} = \frac{1488 \times 1200}{(1488 - 1200)} = \frac{1488 \times 1200}{288} = \frac{124 \times 1200}{24} = \frac{124 \times 100}{2} = 62 \times 100 = \text{Rs. } 6200$$

=> Rs.1488 is the simple interest on Rs. 6200 for 4 years

$$\Rightarrow 1488 = \frac{6200 \times 4 \times R}{100}$$

$$\Rightarrow R = \frac{1488 \times 100}{6200 \times 4} = \frac{372 \times 100}{6200}$$

$$= \frac{372}{62} = 6\%$$

20. The true discount on a bill of Rs. 2160 is Rs. 360. What is the banker's discount?

A. Rs. 432

B. Rs. 422

C. Rs. 412

D. Rs. 442

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Here is the answer and explanation

Answer : Option A

Explanation :

F = Rs. 2160

TD = Rs. 360

PW = F - TD = 2160 - 360 = Rs. 1800

True Discount is the Simple Interest on the present value for unexpired time

=> Simple Interest on Rs. 1800 for unexpired time = Rs. 360

Banker's Discount is the Simple Interest on the face value of the bill for unexpired time

= Simple Interest on Rs. 2160 for unexpired time

$$= \frac{360}{1800} \times 2160 = \frac{1}{5} \times 2160 = \text{Rs. } 432$$

21. The banker's gain of a certain sum due 2 years hence at 10% per annum is Rs. 24. What is the present worth?

A. Rs. 600

B. Rs. 500

C. Rs. 400

D. Rs. 300

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Answer : Option A

Explanation :

T = 2 years

R = 10%

$$\text{TD} = \frac{\text{BG} \times 100}{\text{TR}} = \frac{24 \times 100}{2 \times 10} = 12 \times 10 = \text{Rs. } 120$$

$$\text{TD} = \frac{\text{PW} \times \text{TR}}{100}$$

$$\Rightarrow 120 = \frac{\text{PW} \times 2 \times 10}{100}$$

$$\Rightarrow 1200 = \text{PW} \times 2$$

$$\text{PW} = \frac{1200}{2} = \text{Rs. } 600$$

22. The true discount on a bill for Rs. 2520 due 6 months hence at 10% per annum is

A. Rs. 180

B. Rs. 140

C. Rs. 80

D. Rs. 120

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Answer : Option D

Explanation :

F = Rs. 2520

$$\text{T} = 6 \text{ months} = \frac{1}{2} \text{ year}$$

R = 10%

$$R = 5\%$$

$$TD = \frac{PW \times TR}{100}$$

$$\Rightarrow 18 = \frac{480 \times T \times 5}{100}$$

$$\Rightarrow 18 = 24 \times T$$

$$\Rightarrow T = \frac{18}{24} = \frac{3}{4} \text{ years} = \frac{12 \times 3}{4} \text{ months} = 9 \text{ months}$$

25. What is the difference between the banker's discount and the true discount on Rs.8100 for 3 months at 5%

A. Rs. 2

B. Rs. 1.25

C. Rs. 2.25

D. Rs. 0.5

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Here is the answer and explanation

Answer : Option B

Explanation :

$$F = \text{Rs. } 8100$$

$$R = 5\%$$

$$T = 3 \text{ months} = \frac{1}{4} \text{ years}$$

$$BD = \frac{FTR}{100} = \frac{8100 \times \frac{1}{4} \times 5}{100} = \frac{2025}{20} = \frac{405}{4} = \text{Rs. } 101.25$$

$$TD = \frac{FTR}{100 + (TR)} = \frac{8100 \times \frac{1}{4} \times 5}{100 + \left(\frac{1}{4} \times 5\right)} = \frac{2025 \times 5}{100 + \left(\frac{5}{4}\right)}$$

$$= \frac{2025 \times 5 \times 4}{400 + 5} = \frac{2025 \times 5 \times 4}{405} = \frac{405 \times 5 \times 4}{81} = \frac{45 \times 5 \times 4}{9}$$

$$= 5 \times 5 \times 4 = \text{Rs. } 100$$

$$BD - TD = \text{Rs. } 101.25 - \text{Rs. } 100 = \text{Rs. } 1.25$$

26. The B.G. on a certain sum 4 years hence at 5% is Rs. 200. What is the present worth?

A. Rs. 4500

B. Rs. 6000

C. Rs. 5000

D. Rs. 4000

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Here is the answer and explanation

Answer : Option C

Explanation :

$$T = 4 \text{ years}$$

$$R = 5\%$$

$$\text{Banker's Gain, BG} = \text{Rs.}200$$

$$TD = \frac{BG \times 100}{TR} = \frac{200 \times 100}{4 \times 5} = \text{Rs. } 1000$$

$$TD = \sqrt{PW \times BG}$$

$$1000 = \sqrt{PW \times 200}$$

$$1000000 = PW \times 200$$

$$PW = \frac{1000000}{200} = \text{Rs. } 5000$$

27. The B.D. and T.D. on a certain sum is Rs.200 and Rs.100 respectively. Find out the sum.

A. Rs. 400

B. Rs. 300

C. Rs. 100

D. Rs. 200

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Answer : Option D

Explanation :

$$F = \frac{BD \times TD}{(BD - TD)} = \frac{200 \times 100}{200 - 100} = \frac{200 \times 100}{100} = \text{Rs. } 200$$

28. The banker's discount on a bill due 6 months hence at 6% is Rs. 18.54. What is the true discount?

A. Rs. 24

B. Rs. 12

C. Rs. 36

D. Rs. 18

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Answer : Option D

Explanation :

$$T = 6 \text{ months} = \frac{1}{2} \text{ year}$$

$$R = 6\%$$

$$\text{TD} = \frac{\text{BD} \times 100}{100 + \text{TR}} = \frac{18.54 \times 100}{100 + \left(\frac{1}{2} \times 6\right)} = \frac{18.54 \times 100}{103}$$

$$= \frac{1854}{103} = \text{Rs. } 18$$

29. The banker's discount on a sum of money for $1 \frac{1}{2}$ years is Rs. 120. The true discount on the same sum for 2 years is Rs.150. What is the rate per cent?

A. $3 \frac{1}{3} \%$

B. $4 \frac{1}{3} \%$

C. $3 \frac{2}{3} \%$

D. $4 \frac{2}{3} \%$

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Answer : Option A

Explanation :

$$\text{BD for } 1 \frac{1}{2} \text{ years} = \text{Rs. } 120$$

$$\text{BD for 2 years} = 120 \times \frac{2}{3} \times 2 = \text{Rs. } 160$$

$$\text{TD for 2 years} = \text{Rs. } 150$$

$$F = \frac{\text{BD} \times \text{TD}}{(\text{BD} - \text{TD})} = \frac{160 \times 150}{160 - 150} = \frac{160 \times 150}{10} = \text{Rs. } 2400$$

=> Rs.160 is the simple interest on Rs. 2400 for 2 years

$$\Rightarrow 160 = \frac{2400 \times 2 \times R}{100}$$

$$\Rightarrow R = \frac{160 \times 100}{2400 \times 2} = \frac{160}{48}$$

$$= \frac{20}{6} = \frac{10}{3} = 3 \frac{1}{3} \%$$