1B

$$T = \frac{100 \times SI}{PR} = \frac{100 \times 81}{900 \times 4.5} = 2$$

2C

SI for 1 year $= 854 - 815 = 39$

SI for 3 years $= 39 \times 3 = 117$

Required sum $= 815 - 117 = 698$

3D

$$P = \frac{100 \times SI}{RT} = \frac{100 \times 929.20}{8 \times 5} = 2323$$

4C

$$SI = \frac{PRT}{100}$$
$$\Rightarrow 686 = \frac{1400 \times R \times R}{100}$$
$$\Rightarrow R^2 = 49$$
$$\Rightarrow R = 7$$

5C

Total simple interest $= 3508$
$\Rightarrow$ simple interest on x for 2 years at 14% per annum + simple interest on $(13900 - x)$ for 2 years at 11% per annum $= 3508$
$$\Rightarrow \frac{x \times 14 \times 2}{100} + \frac{(13900 - x) \times 11 \times 2}{100} = 3508$$
$$\Rightarrow 14x + 11(13900 - x) = 175400$$
$$\Rightarrow (14 - 11)x + 152900 = 175400$$
$$\Rightarrow 3x + 152900 = 175400$$
$$\Rightarrow x = 7500$$

Investment in scheme B
$= 13900 - 7500 = 6400$

6A

Difference in interest rate
$$= 6\frac{1}{4}\% - 4\% = 2\frac{1}{4}\% = \frac{9}{4}\%$$

Gain per year
= simple interest on 5000 at $\frac{9}{4}\%$ for 1 y

$$= \frac{5000 \times \frac{9}{4} \times 1}{100} = 112.5$$

7B

Required ratio
$$= \frac{PR \times 5}{100} : \frac{PR \times 15}{100}$$
$$= 5 : 15 = 1 : 3$$

8C

Simple interest for 3 years
$$= 12005 - 9800 = 2205$$

Simple interest for 5 years
$$= \frac{2205}{3} \times 5 = 3675$$

Sum of money = $9800 - 3675 = 6125$

$$R = \frac{100 \times 2205}{6125 \times 3} = 12$$

9C

Required details cannot be found out with the given information.

10D

$$P = \frac{100 \times SI}{RT} = \frac{100 \times 6200}{8 \times 4} = 19375$$

11C

Simple interest(SI) for 12 years = $22400 - 14000 = 8400$

$$R = \frac{100 \times SI}{PT} = \frac{100 \times 8400}{14000 \times 12} = 5$$

12C

Suppose ₹725 is lent out at rate of R% for 1 year. Then, at the end of 8 months, ₹362.50 more is lent out at rate of 2R% for the remaining 4 months(1/3 year)

Total simple interest = 33.50

$$\Rightarrow \frac{725 \times R \times 1}{100} + \frac{362.50 \times 2R \times \frac{1}{3}}{100} = 33.50$$

$$\Rightarrow \frac{725R}{100} + \frac{725R}{100} \times \frac{1}{3} = 33.50$$

$$\Rightarrow \frac{725R}{100} \times \frac{4}{3} = 33.50$$

$$\Rightarrow \frac{29R}{3} = 33.50$$

$$\Rightarrow R = 3.47$$

13B

$$\text{Amount after 1 year} = 100\left(1 + \frac{10/2}{100}\right)^{2 \times 1} = 100\left(\frac{21}{20}\right)^2 = 110.25$$

Total simple interest for 1 year = 110.25 − 100 = 10.25

Therefore, effective rate of interest = 10.25%

14C

Simple interest on ₹5000 for 2 years + simple interest on ₹3000 for 4 years = ₹2200

$$\Rightarrow \frac{5000 \times R \times 2}{100} + \frac{3000 \times R \times 4}{100} = 2200$$

$$\Rightarrow 100R + 120R = 2200$$

$$\Rightarrow 220R = 2200$$

$$\Rightarrow R = 10$$

15C

Required annual payment
$$= \frac{100 \times 6450}{100 \times 4 + \frac{5 \times 4(4-1)}{2}}$$

$$= \frac{100 \times 6450}{400 + 30} = 1500$$

16C

Total money lent

$$= \frac{100 \times 1400}{8 \times 4} = 4375$$

Thereofre, money lent to C
$$= 4375 - 1500 = 2875$$

17C

Payment after second month = 3

Interest on 3 for remaining four months $= \dfrac{3 \times R \times 4}{12 \times 100}$

. . .

Payment after fifth month = 3

Interest on 3 for the remaining one month $= \dfrac{3 \times R \times 1}{12 \times 100}$

Payment after sixth month = 3 and this will close the loan

Therefore,

$$3 \times 6 + \frac{3 \times R(5 + 4 + 3 + 2 + 1)}{12 \times 100} = 10 + \frac{R}{20}$$

$$\Rightarrow 8 + \frac{3R}{80} = \frac{R}{20}$$

$$\Rightarrow \frac{R}{80} = 8$$

$$\Rightarrow R = 640$$

18D

$$\frac{RT}{100} = \frac{1}{4}$$

$$\Rightarrow R \times \frac{25}{8} \times \frac{1}{100} = \frac{1}{4}$$

$$\Rightarrow R = 8$$

19B

$$1 \times 10 + \frac{R(9 + 8 + \cdots + 1)}{12 \times 100} = 9 + \frac{3R}{40}$$

$$\Rightarrow 1 + \frac{3R}{80} = \frac{3R}{40}$$

$$\Rightarrow \frac{3R}{80} = 1$$

$$\Rightarrow R = 26.67$$

20B

$$x : y : z = 23 \times 12 : 22 \times 12 : 11 \times 23$$

Given, $x + y + z = 2379$

Therefore,

$$x = \frac{2379 \times 23 \times 12}{23 \times 12 + 22 \times 12 + 11 \times 23} = 828$$

21C

$$\frac{150 \times 6 \times n}{100} = \frac{800 \times \frac{9}{2} \times 2}{100}$$

$$\Rightarrow 150 \times 6 \times n = 800 \times \frac{9}{2} \times 2$$

$$\Rightarrow n = 8$$

22A

Simple interest $= 3875 - 2500 = 1375$

$$R = \frac{100 \times 1375}{2500 \times 4} = 13.75$$

23C

Required simple interest

$$= \frac{3200 \times 10 \times \frac{40}{365}}{100} = 35.07$$

24B

Simple interest $= 220 - 150 = 70$

$$R = \frac{100 \times 70}{150 \times 10} = \frac{14}{3}$$

25B

$$\frac{x \times 4 \times 1}{100} = \frac{y \times 6 \times 1}{100} = \frac{z \times 8 \times 1}{100}$$
$$\Rightarrow 2x = 3y = 4z$$

$x : y = 3 : 2 = 6 : 4$
$x : z = 2 : 1 = 6 : 3$

$x : y : z = 6 : 4 : 3$

Since the total amount is 2600,
$$x = 2600 \times \frac{6}{6 + 4 + 3} = 1200$$