Chapter: Simple Interest **Class:** 7
Test Code: 2026/Simple Interest/VII/03
Max Marks: 15

Q.1 Let the principal be P. The amount after 20 years is $3P$.

Simple Interest (SI) = Amount - Principal = $3P - P = 2P$.

The formula for Simple Interest is:

$$SI = \frac{P \times R \times T}{100}$$

Substitute the values:

$$2P = \frac{P \times R \times 20}{100} \implies 2 = \frac{R \times 20}{100} \implies R = 10\%$$

Now, to find the time T for the sum to double itself:

$$P = \frac{P \times 10 \times T}{100} \implies 1 = \frac{T}{10} \implies T = 10 \text{ years}$$

Thus, the sum will double itself in $\boxed{10 \text{ years}}$.

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Q.2 Given:

$$SI = 500, \quad R = 5\%, \quad T = 2 \text{ years}$$

The formula for Simple Interest is:

$$SI = \frac{P \times R \times T}{100}$$

Substitute the values:

$$500 = \frac{P \times 5 \times 2}{100} \implies 500 = \frac{10P}{100} \implies P = 5000$$

Now, calculate the Simple Interest for 5 years at 2

$$SI = \frac{5000 \times 2 \times 5}{100} = 500$$

Thus, the Simple Interest is $\boxed{\text{Rs. } 500}$.

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Q.3 Let the part lent at 10

Total interest:

$$\frac{x \times 10 \times 1}{100} + \frac{(10000 - x) \times 8 \times 1}{100} = \frac{10000 \times 9.2 \times 1}{100}$$

Simplify:

$$\frac{10x}{100} + \frac{8(10000 - x)}{100} = 920 \implies 10x + 80000 - 8x = 92000 \implies 2x = 12000 \implies x = 6000$$

Thus, the part lent at 10

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Q.4 Given:

$$SI = 0.8P, \quad T = 10 \text{ years}$$

The formula for Simple Interest is:

$$SI = \frac{P \times R \times T}{100}$$

Substitute the values:

$$0.8P = \frac{P \times R \times 10}{100} \implies 0.8 = \frac{R}{10} \implies R = 8\%$$

Thus, the rate percent per annum is $\boxed{8\%}$.

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Q.5 Let the total capital be C.

Amount invested at 7

$$\frac{1}{3}C$$

Amount invested at 8

$$\frac{1}{4}C$$

Amount invested at 10

$$C - \left(\frac{1}{3}C + \frac{1}{4}C\right) = \frac{5}{12}C$$

Total annual interest:

$$\frac{\frac{1}{3}C \times 7 \times 1}{100} + \frac{\frac{1}{4}C \times 8 \times 1}{100} + \frac{\frac{5}{12}C \times 10 \times 1}{100} = 561$$

Simplify:

$$\frac{7C}{300} + \frac{8C}{400} + \frac{50C}{1200} = 561 \implies \frac{7C}{300} + \frac{2C}{100} + \frac{25C}{600} = 561$$

$$\frac{14C + 12C + 25C}{600} = 561 \implies \frac{51C}{600} = 561 \implies C = \frac{561 \times 600}{51} = 6600$$

Thus, the total capital is $\boxed{\text{Rs. } 6,600}$.

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Q.6 Time from 10th March to 22nd May = 73 days = $\frac{73}{365}$ years.

The formula for Simple Interest is:

$$SI = \frac{P \times R \times T}{100}$$

Substitute the values:

$$SI = \frac{7300 \times 12 \times \frac{73}{365}}{100} = \frac{7300 \times 12 \times 73}{365 \times 100} = \frac{7300 \times 876}{36500} = \frac{7300 \times 0.24}{10} = 73 \times 2.4 = 175.20$$

Thus, the Simple Interest is $\boxed{\text{Rs. } 175.20}$.

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Q.7 Let the principal be P and the rate be $R\%$.

Amount after 2 years:

$$A_1 = P + \frac{P \times R \times 2}{100} = 2240$$

Amount after 5 years:

$$A_2 = P + \frac{P \times R \times 5}{100} = 2600$$

Subtract the first equation from the second:

$$\frac{3PR}{100} = 360 \implies PR = 12000$$

Substitute $PR = 12000$ in the first equation:

$$P + \frac{2 \times 12000}{100} = 2240 \implies P + 240 = 2240 \implies P = 2000$$

Thus, the principal is $\boxed{\text{Rs. } 2,000}$.

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Q.8 Given:

$$I = \frac{P \times R \times T}{100}$$

New interest:

$$I_{\text{new}} = \frac{2P \times \frac{R}{2} \times 2T}{100} = \frac{2P \times R \times T}{100} = 2I$$

Thus, the new interest is $\boxed{2I}$.

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Q.9 Let the rates be $R_1\%$ and $R_2\%$.

Difference in interest:

$$\frac{1000 \times R_1 \times 2}{100} - \frac{1000 \times R_2 \times 2}{100} = 20 \implies 20(R_1 - R_2) = 20 \implies R_1 - R_2 = 1\%$$

Thus, the difference between their rates of interest is $\boxed{1\%}$.

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Q.10 Let the principal be P. The amount after 10 years is $\frac{9}{4}P$.

Simple Interest (SI) = Amount - Principal = $\frac{9}{4}P - P = \frac{5}{4}P$.

The formula for Simple Interest is:

$$SI = \frac{P \times R \times T}{100}$$

Substitute the values:

$$\frac{5}{4}P = \frac{P \times R \times 10}{100} \implies \frac{5}{4} = \frac{R}{10} \implies R = 12.5\%$$

Thus, the rate of interest per annum is $\boxed{12.5\%}$.

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Q.11 Given:

$$SI = \frac{3}{8}P, \quad R = 6\frac{1}{4}\% = \frac{25}{4}\%$$

The formula for Simple Interest is:

$$SI = \frac{P \times R \times T}{100}$$

Substitute the values:

$$\frac{3}{8}P = \frac{P \times \frac{25}{4} \times T}{100} \implies \frac{3}{8} = \frac{25T}{400} \implies \frac{3}{8} = \frac{T}{16} \implies T = 6 \text{ years}$$

Thus, the time required is $\boxed{6 \text{ years}}$.

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Q.12 Let the rate of interest be $R\%$.

Total interest:

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

Simplify:

$$100R + 120R = 2200 \implies 220R = 2200 \implies R = 10\%$$

Thus, the rate of interest is $\boxed{10\%}$.

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Q.13 Let the principal be P and the rate be $R\%$.

Amount after 4 years:

$$A_1 = P + \frac{P \times R \times 4}{100} = 3825$$

Amount after 6 years:

$$A_2 = P + \frac{P \times R \times 6}{100} = 4050$$

Subtract the first equation from the second:

$$\frac{2PR}{100} = 225 \implies PR = 11250$$

Substitute $PR = 11250$ in the first equation:

$$P + \frac{4 \times 11250}{100} = 3825 \implies P + 450 = 3825 \implies P = 3375$$

Now, solve for R:

$$3375 \times R = 11250 \implies R = \frac{11250}{3375} = 3.33\%$$

The closest option is $\boxed{3.5\%}$.

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Q.14 Given:

$$y = \frac{x \times R \times T}{100}, \quad z = \frac{y \times R \times T}{100}$$

Substitute y in the second equation:

$$z = \frac{\left(\frac{xRT}{100}\right) \times R \times T}{100} = \frac{xR^2T^2}{10000}$$

But $y^2 = \left(\frac{xRT}{100}\right)^2 = \frac{x^2R^2T^2}{10000}$.

Thus, $z = \frac{y^2}{x} \implies y^2 = xz$.

The relation is $\boxed{y^2 = xz}$.

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Q.15 Total interest for 2 years on Rs.20,000:

$$I = \frac{20000 \times 10 \times 2}{100} = 4000$$

Amount paid after 1 year: Rs.10,000.

Remaining principal after 1 year:

$$20000 - 10000 = 10000$$

Interest for the second year on Rs.10,000:

$$I_2 = \frac{10000 \times 10 \times 1}{100} = 1000$$

Total amount to be paid at the end of 2 years:

$$10000 + 1000 + 4000 = 15000$$

But the correct calculation is:

$$\text{Total amount after 2 years} = 20000 + 4000 = 24000$$

$$\text{Amount paid after 1 year} = 10000$$

$$\text{Remaining amount} = 24000 - 10000 = 14000$$

Thus, the amount to be paid at the end of 2 years is $\boxed{\text{Rs. } 14,000}$.

Correction: The correct final amount to be paid at the end of 2 years is **Rs. 14,000**.