

Book For  
State Bank Of India



**SBI Sub Staff Aptitude Sample Paper For Pre Exam**



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(1) The difference between simple and compound interests compounded annually on a certain sum of money for 2 years at 4% per annum is Re. 1. The sum (in Rs.) is:

- [A] 625
- [B] 630
- [C] 640
- [D] 650

Answer : [A]

**Explanation:**

Let the sum be Rs.  $x$ . Then,

$$\text{C.I.} = \left[ x \left( 1 + \frac{4}{100} \right)^2 - x \right] = \left( \frac{676}{625}x - x \right) = \frac{51}{625}x.$$

$$\text{S.I.} = \left( \frac{x \times 4 \times 2}{100} \right) = \frac{2x}{25}.$$

$$\therefore \frac{51x}{625} - \frac{2x}{25} = 1$$

$$\Rightarrow x = 625.$$

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(2) There is 60% increase in an amount in 6 years at simple interest. What will be the compound interest of Rs. 12,000 after 3 years at the same rate?

- [A] Rs. 2160
- [B] Rs. 3120
- [C] Rs. 3972
- [D] Rs. 6240
- [E] None of these

Answer : [C]

**Explanation:**

Let P = Rs. 100. Then, S.I. Rs. 60 and T = 6 years.

$$\therefore R = \left( \frac{100 \times 60}{100 \times 6} \right) = 10\% \text{ p.a.}$$

Now, P = Rs. 12000. T = 3 years and R = 10% p.a.

$$\therefore \text{C.I.} = \text{Rs.} \left[ 12000 \times \left\{ \left( 1 + \frac{10}{100} \right)^3 - 1 \right\} \right]$$

$$= \text{Rs.} \left( 12000 \times \frac{331}{1000} \right)$$

$$= 3972.$$

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(3) At what rate of compound interest per annum will a sum of Rs. 1200 become Rs. 1348.32 in 2 years?

- [A] 6%
- [B] 6.5%
- [C] 7%
- [D] 7.5%

Answer : [A]

**Explanation:**

Let the rate be R% p.a.

$$\text{Then, } 1200 \times \left( 1 + \frac{R}{100} \right)^2 = 1348.32$$

$$R \quad 2 \quad 134832 \quad 11236$$

$$\Rightarrow \left(1 + \frac{R}{100}\right) = \frac{120000}{100000} = \frac{120}{100}$$

$$\therefore \left(1 + \frac{R}{100}\right)^2 = \left(\frac{120}{100}\right)^2$$

$$\Rightarrow 1 + \frac{R}{100} = \frac{120}{100}$$

$$\Rightarrow R = 6\%$$

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**(4) If the simple interest on a sum of money for 2 years at 5% per annum is Rs. 50, what is the compound interest on the same at the same rate and for the same time?**

[A] Rs. 51.25

[B] Rs. 52

[C] Rs. 54.25

[D] Rs. 60

**Answer : [A]**

**Explanation:**

$$\text{Sum} = \text{Rs.} \left( \frac{50 \times 100}{2 \times 5} \right) = \text{Rs.} 500.$$

$$\text{Amount} = \text{Rs.} \left[ 500 \times \left( 1 + \frac{5}{100} \right)^2 \right]$$

$$= \text{Rs.} \left( 500 \times \frac{21}{20} \times \frac{21}{20} \right)$$

$$= \text{Rs.} 551.25$$

$$\therefore \text{C.I.} = \text{Rs.} (551.25 - 500) = \text{Rs.} 51.25$$

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**(5) The difference between compound interest and simple interest on an amount of Rs. 15,000 for 2 years is Rs. 96. What is the rate of interest per annum?**

[A] 8

[B] 10

[C] 12

[D] Cannot be determined

[E] None of these

**Answer : [A]**

**Explanation:**

$$\left[ 15000 \times \left( 1 + \frac{R}{100} \right)^2 - 15000 \right] - \left( \frac{15000 \times R \times 2}{100} \right) = 96$$

$$\Rightarrow 15000 \left[ \left( 1 + \frac{R}{100} \right)^2 - 1 - \frac{2R}{100} \right] = 96$$

$$\Rightarrow 15000 \left[ \frac{(100 + R)^2 - 10000 - (200 \times R)}{10000} \right] = 96$$

$$\Rightarrow R^2 = \left( \frac{96 \times 2}{3} \right) = 64$$

$$\Rightarrow R = 8.$$

$$\therefore \text{Rate} = 8\%.$$

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(6) The percentage increase in the area of a rectangle, if each of its sides is increased by 20% is:

- [A] 40%
- [B] 42%
- [C] 44%
- [D] 46%

Answer : [C]

**Explanation:**

Let original length =  $x$  metres and original breadth =  $y$  metres.

Original area =  $(xy)$  m<sup>2</sup>.

$$\text{New length} = \left(\frac{120}{100}x\right)_m = \left(\frac{6}{5}x\right)_m.$$

$$\text{New breadth} = \left(\frac{120}{100}y\right)_m = \left(\frac{6}{5}y\right)_m.$$

$$\text{New Area} = \left(\frac{6}{5}x \times \frac{6}{5}y\right)_{m^2} = \left(\frac{36}{25}xy\right)_{m^2}.$$

The difference between the original area =  $xy$  and new-area  $36/25 xy$  is

$$= (36/25)xy - xy$$

$$= xy(36/25 - 1)$$

$$= xy(11/25) \text{ or } (11/25)xy$$

$$\therefore \text{Increase \%} = \left(\frac{11}{25}xy \times \frac{1}{xy} \times 100\right)\% = 44\%.$$

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(7) The ratio between the length and the breadth of a rectangular park is 3 : 2. If a man cycling along the boundary of the park at the speed of 12 km/hr completes one round in 8 minutes, then the area of the park (in sq. m) is:

- [A] 15360
- [B] 153600
- [C] 30720
- [D] 307200

Answer : [B]

**Explanation:**

$$\text{Perimeter} = \text{Distance covered in 8 min.} = \left(\frac{12000}{60} \times 8\right)_m = 1600 \text{ m.}$$

Let length =  $3x$  metres and breadth =  $2x$  metres.

$$\text{Then, } 2(3x + 2x) = 1600 \text{ or } x = 160.$$

$$\therefore \text{Length} = 480 \text{ m and Breadth} = 320 \text{ m.}$$

$$\therefore \text{Area} = (480 \times 320) \text{ m}^2 = 153600 \text{ m}^2.$$

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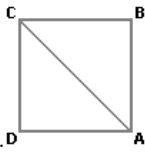
(8) A man walked diagonally across a square lot. Approximately, what was the percent saved by not walking along the edges?

- [A] 20
- [B] 24
- [C] 30
- [D] 33

Answer : [C]

**Explanation:**

Let the side of the square(ABCD) be  $x$  metres.



Then,  $AB + BC = 2x$  metres.

$AC = 2x = (1.41x)$  m.

Saving on  $2x$  metres  $= (0.59x)$  m.

Saving %  $= \left( \frac{0.59x}{2x} \times 100 \right) \% = 30\%$  (approx.)

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**(9) What is the least number of squares tiles required to pave the floor of a room 15 m 17 cm long and 9 m 2 cm broad?**

[A] 814

[B] 820

[C] 840

[D] 844

**Answer : [A]**

**Explanation:**

Length of largest tile = H.C.F. of 1517 cm and 902 cm = 41 cm.

Area of each tile =  $(41 \times 41)$  cm<sup>2</sup>.

$\therefore$  Required number of tiles =  $\left( \frac{1517 \times 902}{41 \times 41} \right) = 814$ .

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**(10) The diagonal of a rectangle is 41 cm and its area is 20 sq. cm. The perimeter of the rectangle must be:**

[A] 9 cm

[B] 18 cm

[C] 20 cm

[D] 41 cm

**Answer : [B]**

**Explanation:**

$$l^2 + b^2 = 41.$$

Also,  $lb = 20$ .

$$(l + b)^2 = (l^2 + b^2) + 2lb = 41 + 40 = 81$$

$$\Rightarrow (l + b) = 9.$$

$\therefore$  Perimeter =  $2(l + b) = 18$  cm.

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**(11) Pipes A and B can fill a tank in 5 and 6 hours respectively. Pipe C can empty it in 12 hours. If all the three pipes are opened together, then the tank will be filled in:**

[A]  
 $1\frac{13}{17}$  hours

[B]  
 $2\frac{8}{11}$  hours

[C]  
 $3\frac{9}{17}$  hours

[D]  
 $4\frac{1}{2}$  hours

**Answer : [C]**

**Explanation:**

$$\text{Net part filled in 1 hour} \left( \frac{1}{5} + \frac{1}{6} - \frac{1}{12} \right) = \frac{17}{60}$$

∴ The tank will be full in  $\frac{60}{17}$  hours i.e.,  $3\frac{9}{17}$  hours.

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(12) Two pipes A and B can fill a cistern in  $37\frac{1}{2}$  minutes and 45 minutes respectively. Both pipes are opened. The cistern will be filled in just half an hour, if the B is turned off after:

[A] 5 min.

[B] 9 min.

[C] 10 min.

[D] 15 min.

**Answer : [B]**

**Explanation:**

Let B be turned off after  $x$  minutes. Then,

Part filled by (A + B) in  $x$  min. + Part filled by A in  $(30 - x)$  min. = 1.

$$\therefore x \left( \frac{2}{75} + \frac{1}{45} \right) + (30 - x) \cdot \frac{2}{75} = 1$$

$$\Rightarrow \frac{11x}{225} + \frac{(60 - 2x)}{75} = 1$$

$$\Rightarrow 11x + 180 - 6x = 225.$$

$$\Rightarrow x = 9.$$

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(13) Two pipes A and B together can fill a cistern in 4 hours. Had they been opened separately, then B would have taken 6 hours more than A to fill the cistern. How much time will be taken by A to fill the cistern separately?

[A] 1 hour

[B] 2 hours

[C] 6 hours

[D] 8 hours

**Answer : [C]**

**Explanation:**

Let the cistern be filled by pipe A alone in  $x$  hours.

Then, pipe B will fill it in  $(x + 6)$  hours.

$$\therefore \frac{1}{x} + \frac{1}{(x + 6)} = \frac{1}{4}$$

$$\Rightarrow \frac{x + 6 + x}{x(x + 6)} = \frac{1}{4}$$

$$\Rightarrow x^2 - 2x - 24 = 0$$

$$\Rightarrow (x - 6)(x + 4) = 0$$

$$\Rightarrow x = 6. \quad [\text{neglecting the negative value of } x]$$

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(14) A tank is filled in 5 hours by three pipes A, B and C. The pipe C is twice as fast as B and B is twice as fast as A. How much time will pipe A alone take to fill the tank?

[A] 20 hours

[B] 25 hours

[C] 35 hours

[D] Cannot be determined

[E] None of these

**Answer : [C]**

**Explanation:**

Suppose pipe A alone takes  $x$  hours to fill the tank.

Then, pipes B and C will take  $\frac{x}{2}$  and  $\frac{x}{4}$  hours respectively to fill the tank.

$$\therefore \frac{1}{x} + \frac{2}{x} + \frac{4}{x} = \frac{1}{5}$$

$$\Rightarrow \frac{7}{x} = \frac{1}{5}$$

$$\Rightarrow x = 35 \text{ hrs.}$$

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**(15) Two pipes A and B can fill a tank in 15 minutes and 20 minutes respectively. Both the pipes are opened together but after 4 minutes, pipe A is turned off. What is the total time required to fill the tank?**

[A] 10 min. 20 sec.

[B] 11 min. 45 sec.

[C] 12 min. 30 sec.

[D] 14 min. 40 sec.

**Answer : [D]**

**Explanation:**

$$\text{Part filled in 4 minutes} = 4 \left( \frac{1}{15} + \frac{1}{20} \right) = \frac{7}{15}$$

$$\text{Remaining part} = \left( 1 - \frac{7}{15} \right) = \frac{8}{15}$$

$$\text{Part filled by B in 1 minute} = \frac{1}{20}$$

$$\therefore \frac{1}{20} : \frac{8}{15} :: 1 : x$$

$$x = \left( \frac{8}{15} \times 1 \times 20 \right) = 10\frac{2}{3} \text{ min} = 10 \text{ min. } 40 \text{ sec.}$$

$\therefore$  The tank will be full in (4 min. + 10 min. + 40 sec.) = 14 min. 40 sec.

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**(16) A train 125 m long passes a man, running at 5 km/hr in the same direction in which the train is going, in 10 seconds. The speed of the train is:**

[A] 45 km/hr

[B] 50 km/hr

[C] 54 km/hr

[D] 55 km/hr

**Answer : [B]**

**Explanation:**

$$\text{Speed of the train relative to man} = \left( \frac{125}{10} \right) \text{ m/sec}$$

$$= \left( \frac{25}{2} \right) \text{ m/sec.}$$

$$= \left( \frac{25}{2} \times \frac{18}{5} \right) \text{ km/hr}$$

$$= 45 \text{ km/hr.}$$

Let the speed of the train be  $x$  km/hr. Then, relative speed =  $(x - 5)$  km/hr.

$$\therefore x - 5 = 45 \Rightarrow x = 50 \text{ km/hr.}$$

(17) A train running at the speed of 60 km/hr crosses a pole in 9 seconds. What is the length of the train?

- [A] 120 metres
- [B] 180 metres
- [C] 324 metres
- [D] 150 metres

**Answer : [D]**

**Explanation:**

$$\text{Speed} = \left(60 \times \frac{5}{18}\right) \text{m/sec} = \left(\frac{50}{3}\right) \text{m/sec.}$$

$$\text{Length of the train} = (\text{Speed} \times \text{Time}) = \left(\frac{50}{3} \times 9\right) \text{m} = 150 \text{ m.}$$

(18) A train speeds past a pole in 15 seconds and a platform 100 m long in 25 seconds. Its length is:

- [A] 50 m
- [B] 150 m
- [C] 200 m
- [D] Data inadequate

**Answer : [B]**

**Explanation:**

Let the length of the train be  $x$  metres and its speed by  $y$  m/sec.

$$\text{Then, } \frac{x}{y} = 15 \Rightarrow y = \frac{x}{15}.$$

$$\therefore \frac{x + 100}{25} = \frac{x}{15}$$

$$\Rightarrow 15(x + 100) = 25x$$

$$\Rightarrow 15x + 1500 = 25x$$

$$\Rightarrow 1500 = 10x$$

$$\Rightarrow x = 150 \text{ m.}$$

(19) A 300 metre long train crosses a platform in 39 seconds while it crosses a signal pole in 18 seconds. What is the length of the platform?

- [A] 320 m
- [B] 350 m
- [C] 650 m
- [D] Data inadequate

**Answer : [B]**

**Explanation:**

$$\text{Speed} = \left(\frac{300}{18}\right) \text{m/sec} = \frac{50}{3} \text{ m/sec.}$$

Let the length of the platform be  $x$  metres.

$$\text{Then, } \left(\frac{x + 300}{39}\right) = \frac{50}{3}$$

$$\Rightarrow 3(x + 300) = 1950$$

$$\Rightarrow x = 350 \text{ m.}$$



(20) Two trains are running at 40 km/hr and 20 km/hr respectively in the same direction. Fast train completely passes a man sitting in the slower train in 5 seconds. What is the length of the fast train?

[A] 23 m

[B]  
 $23\frac{2}{9}$  m

[C]  
 $27\frac{7}{9}$  m

[D] 29 m

**Answer : [C]**

**Explanation:**

$$\text{Relative speed} = (40 - 20) \text{ km/hr} = \left(20 \times \frac{5}{18}\right) \text{ m/sec} = \left(\frac{50}{9}\right) \text{ m/sec.}$$

$$\therefore \text{Length of faster train} = \left(\frac{50}{9} \times 5\right) \text{ m} = \frac{250}{9} \text{ m} = 27\frac{7}{9} \text{ m.}$$