Book For

State Bank Of India

भारतीय स्टेट बैंक
State Bank of India

SBI PO Exam Math Sample Paper In English 2017

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(1) The banker's gain of a certain sum due 2 years hence at 10% per annum is Rs. 24. The present worth is:

[A] Rs. 480

[B] Rs. 520

[C] Rs. 600

[D] Rs. 960

Answer : [C]

Explanation:

$$\text{T.D.} = \left(\frac{\text{B.G.} \times 100}{\text{Rate} \times \text{Time}}\right) = \text{Rs.} \left(\frac{24 \times 100}{10 \times 2}\right) = \text{Rs. } 120.$$

$$\therefore \text{ P.W.} = \frac{100 \times \text{T.D.}}{\text{Rate} \times \text{Time}} = \text{Rs.} \left(\frac{100 \times 120}{10 \times 2}\right) = \text{Rs. } 600.$$

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(2) 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. The time is:

[A] 3 months

[B] 4 months

[C] 6 months

[D] 8 months

Answer : [B]

Explanation:

S.I. on Rs. 1600 = T.D. on Rs. 1680.

$\therefore$ Rs. 1600 is the P.W. of Rs. 1680, *i.e.,* Rs. 80 is on Rs. 1600 at 15%.

$$\therefore \text{ Time} = \left(\frac{100 \times 80}{1600 \times 15}\right)_{\text{year}} = \frac{1}{3} \text{ year} = 4 \text{ months.}$$

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(3) The banker's gain on a sum due 3 years hence at 12% per annum is Rs. 270. The banker's discount is:

[A] Rs. 960

[B] Rs. 840

[C] Rs. 1020

[D] Rs. 760

Answer : [C]

Explanation:

$$\text{T.D.} = \left(\frac{\text{B.G.} \times 100}{\text{R} \times \text{T}}\right) = \text{Rs.} \left(\frac{270 \times 100}{12 \times 3}\right) = \text{Rs. } 750.$$

$\therefore$ B.D. = Rs.(750 + 270) = Rs. 1020.

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(4)

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

The rate percent is:

[A] 11%

[B] 10%

[C] 5%

[D] 5.5%

Answer : [C]

Explanation:
Let T.D. be Re. 1.
Then, B.D. = Rs. $\frac{11}{10}$ = Rs. 1.10.

$\therefore$ Sum = Rs. $\left(\frac{1.10 \times 1}{1.10 - 1}\right)$ = Rs. $\left(\frac{110}{10}\right)$ = Rs. 11.

$\therefore$ S.I. on Rs. 11 for 2 years is Rs. 1.10
$\therefore$ Rate = $\left(\frac{100 \times 1.10}{11 \times 2}\right)_{\%}$ = 5%.

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(5) A alone can do a piece of work in 6 days and B alone in 8 days. A and B undertook to do it for Rs. 3200. With the help of C, they completed the work in 3 days. How much is to be paid to C?

[A] Rs. 375

[B] Rs. 400

[C] Rs. 600

[D] Rs. 800

Answer : [B]

Explanation:
C's 1 day's work = $\frac{1}{3} - \left(\frac{1}{6} + \frac{1}{8}\right) = \frac{1}{3} - \frac{7}{24} = \frac{1}{24}$.

A's wages : B's wages : C's wages = $\frac{1}{6} : \frac{1}{8} : \frac{1}{24}$ = 4 : 3 : 1.

$\therefore$ C's share (for 3 days) = Rs. $\left(3 \times \frac{1}{24} \times 3200\right)$ = Rs. 400.

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(6) If 6 men and 8 boys can do a piece of work in 10 days while 26 men and 48 boys can do the same in 2 days, the time taken by 15 men and 20 boys in doing the same type of work will be:

[A] 4 days

[B] 5 days

[C] 6 days

[D] 7 days

Answer : [A]

Explanation:
Let 1 man's 1 day's work = x and 1 boy's 1 day's work = y.
Then, $6x + 8y = \frac{1}{10}$ and $26x + 48y = \frac{1}{2}$.

Solving these two equations, we get : $x = \frac{1}{100}$ and $y = \frac{1}{200}$.

(15 men + 20 boy)'s 1 day's work = $\left(\frac{15}{100} + \frac{20}{200}\right) = \frac{1}{4}$.

$\therefore$ 15 men and 20 boys can do the work in 4 days.

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(7) A can finish a work in 18 days and B can do the same work in 15 days. B worked for 10 days and left the job. In how many days, A alone can finish the remaining work?

[A] 5

[B] $5\frac{1}{}$

[C] 6

[D] 8

Answer : [C]

Explanation:

B's 10 day's work = $\left(\frac{1}{15} \times 10\right) = \frac{2}{3}$.

Remaining work = $\left(1 - \frac{2}{3}\right) = \frac{1}{3}$.

Now, $\frac{1}{18}$ work is done by A in 1 day.

$\therefore$ $\frac{1}{3}$ work is done by A in $\left(18 \times \frac{1}{3}\right)$ = 6 days.

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(8) Sakshi can do a piece of work in 20 days. Tanya is 25% more efficient than Sakshi. The number of days taken by Tanya to do the same piece of work is:

[A] 15

[B] 16

[C] 18

[D] 25

Answer : [B]

Explanation:

Ratio of times taken by Sakshi and Tanya = 125 : 100 = 5 : 4.
Suppose Tanya takes x days to do the work.

5 : 4 :: 20 : x $\Rightarrow x = \left(\frac{4 \times 20}{5}\right)$

$\Rightarrow x$ = 16 days.
Hence, Tanya takes 16 days to complete the work.

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(9) A and B can do a piece of work in 30 days, while B and C can do the same work in 24 days and C and A in 20 days. They all work together for 10 days when B and C leave. How many days more will A take to finish the work?

[A] 18 days

[B] 24 days

[C] 30 days

[D] 36 days

Answer : [A]

Explanation:

2(A + B + C)'s 1 day's work = $\left(\frac{1}{30} + \frac{1}{24} + \frac{1}{20}\right) = \frac{15}{120} = \frac{1}{8}$.

Therefore, (A + B + C)'s 1 day's work = $\frac{1}{2 \times 8} = \frac{1}{16}$.

Work done by A, B, C in 10 days = $\frac{10}{16} = \frac{5}{8}$.

Remaining work = $\left(1 - \frac{5}{8}\right) = \frac{3}{8}$.

A's 1 day's work = $\left(\frac{1}{16} - \frac{1}{24}\right) = \frac{1}{48}$.

Now, $\frac{1}{48}$ work is done by A in 1 day.

So, $\frac{3}{8}$ work will be done by A in $\left(48 \times \frac{3}{8}\right)$ = 18 days.

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(10) A and B can do a work in 8 days, B and C can do the same work in 12 days. A, B and C together can finish it in 6 days. A and C together will do it in :

[A] 4 days

[B] 6 days

[C] 8 days

[D] 12 days

Answer : [C]

Explanation:

(A + B + C)'s 1 day's work = $\frac{1}{6}$;

(A + B)'s 1 day's work = $\frac{1}{8}$;

(B + C)'s 1 day's work = $\frac{1}{12}$.

$\therefore$ (A + C)'s 1 day's work = $\left(2 \times \frac{1}{6}\right) - \left(\frac{1}{8} + \frac{1}{12}\right)$

$= \left(\frac{1}{3} - \frac{5}{24}\right)$

$= \frac{3}{24}$

$= \frac{1}{8}$.

So, A and C together will do the work in 8 days.

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(11) A vendor bought toffees at 6 for a rupee. How many for a rupee must he sell to gain 20%?

[A] 3

[B] 4

[C] 5

[D] 6

Answer : [C]

Explanation:

C.P. of 6 toffees = Re. 1

S.P. of 6 toffees = 120% of Re. 1 = Rs. $\frac{6}{5}$

For Rs. $\frac{6}{5}$, toffees sold = 6.

For Re. 1, toffees sold = $\left(6 \times \frac{5}{6}\right)$ = 5.

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(12) The cost price of 20 articles is the same as the selling price of *x* articles. If the profit is 25%, then the value of *x* is:

[A] 15

[B] 16

[C] 18

[D] 25

Answer : [B]

Explanation:
Let C.P. of each article be Re. 1 C.P. of x articles = Rs. x.
S.P. of x articles = Rs. 20.
Profit = Rs. (20 - x).
$\therefore \left(\frac{20 - x}{x} \times 100 = 25\right)$

$\Rightarrow 2000 - 100x = 25x$
$125x = 2000$
$\Rightarrow x = 16$.

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(13) The percentage profit earned by selling an article for Rs. 1920 is equal to the percentage loss incurred by selling the same article for Rs. 1280. At what price should the article be sold to make 25% profit?

[A] Rs. 2000

[B] Rs. 2200

[C] Rs. 2400

[D] Data inadequate

Answer : [A]

Explanation:
Let C.P. be Rs. x.
Then, $\frac{1920 - x}{x} \times 100 = \frac{x - 1280}{x} \times 100$

$\Rightarrow 1920 - x = x - 1280$
$\Rightarrow 2x = 3200$
$\Rightarrow x = 1600$
$\therefore$ Required S.P. = 125% of Rs. 1600 = Rs. $\left(\frac{125}{100} \times 1600\right)$ = Rs 2000.

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(14) When a plot is sold for Rs. 18,700, the owner loses 15%. At what price must that plot be sold in order to gain 15%?

[A] Rs. 21,000

[B] Rs. 22,500

[C] Rs. 25,300

[D] Rs. 25,800

Answer : [C]

Explanation:
85 : 18700 = 115 : x
$\Rightarrow x = \left(\frac{18700 \times 115}{85}\right)$ = 25300.

Hence, S.P. = Rs. 25,300.

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(15) A hall is 15 m long and 12 m broad. If the sum of the areas of the floor and the ceiling is equal to the sum of the areas of four walls, the volume of the hall is:

[A] 720

[B] 900

[C] 1200

[D] 1800

Answer : [C]

Explanation:
$2(15 + 12) \times h = 2(15 \times 12)$
$\Rightarrow h = \frac{180}{27}m = \frac{20}{3}m.$

$\therefore$ Volume $= \left(15 \times 12 \times \frac{20}{3}\right)_{m^3} = 1200\ m^3.$

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(16) A right triangle with sides 3 cm, 4 cm and 5 cm is rotated the side of 3 cm to form a cone. The volume of the cone so formed is:

[A] $12\pi\ cm^3$

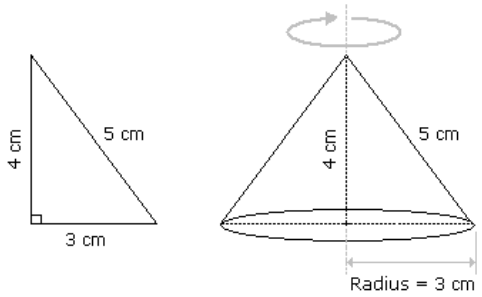
[B] $15\pi\ cm^3$

[C] $16\pi\ cm^3$

[D] $20\pi\ cm^3$

Answer : [A]

Explanation:



Clearly, we have $r = 3$ cm and $h = 4$ cm.
$\therefore$ Volume $= \frac{1}{3}\pi r^2 h = \left(\frac{1}{3} \times \pi \times 3^2 \times 4\right)_{cm^3} = 12\pi\ cm^3.$

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(17) 50 men took a dip in a water tank 40 m long and 20 m broad on a religious day. If the average displacement of water by a man is 4 m^3, then the rise in the water level in the tank will be:

[A] 20 cm

[B] 25 cm

[C] 35 cm

[D] 50 cm

Answer : [B]

Explanation:
Total volume of water displaced = $(4 \times 50)\ m^3 = 200\ m^3$.
$\therefore$ Rise in water level $= \left(\frac{200}{40 \times 20}\right)_m\ 0.25\ m = 25\ cm.$

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(18) What is the total surface area of a right circular cone of height 14 cm and base radius 7 cm?

[A] $344.35\ cm^2$

[B] $462\ cm^2$

[C] $498.35\ cm^2$

[D] None of these

Answer : [C]

Explanation:
$h = 14$ cm, $r = 7$ cm.
So, $l = \sqrt{(7)^2 + (14)^2} = \sqrt{245} = 7\sqrt{5}$ cm.
$\therefore$ Total surface area $= \pi rl + \pi r^2$

$$= \left(\frac{22}{7} \times 7 \times 7\sqrt{5} + \frac{22}{7} \times 7 \times 7\right) cm^2$$

$$= [154(\sqrt{5} + 1)]\ cm^2$$

$$= (154 \times 3.236)\ cm^2$$

$$= 498.35\ cm^2.$$

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(19) A man standing at a point P is watching the top of a tower, which makes an angle of elevation of 30? with the man's eye. The man walks some distance towards the tower to watch its top and the angle of the elevation becomes 60?. What is the distance between the base of the tower and the point P?

[A] $4\sqrt{3}$ units

[B] 8 units

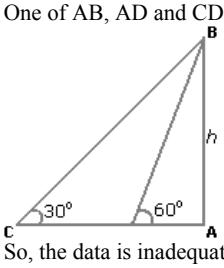
[C] 12 units

[D] Data inadequate

[E] None of these

Answer : [D]

Explanation:
One of AB, AD and CD must have given.



So, the data is inadequate.

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(20) The angle of elevation of the sun, when the length of the shadow of a tree $\sqrt{3}$ times the height of the tree, is:

[A] 30?

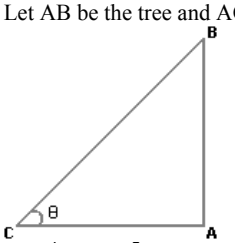
[B] 45?

[C] 60?

[D] 90?

Answer : [A]

Explanation:
Let AB be the tree and AC be its shadow.



Let $\angle ACB = \theta$.
Then, $\frac{AC}{AB} = \sqrt{3} \Rightarrow \cot\theta = \sqrt{3}$

$\therefore \theta = 30?$.