Book For

Andhra Pradesh State Cooperative Bank (APCOB)

THE ANDHRA PRADESH STATE CO-OPERATIVE BANK LIMITED
A Government Partnered Scheduled Bank

APCOB Math Aptitude Sample Paper 2016 PDF Download

(1) The banker's discount on a sum of money for $1\frac{1}{2}$ years is Rs. 558 and the true discount on the same sum for 2 years is Rs. 600. The rate percent is:

[A] 10%

[B] 13%

[C] 12%

[D] 15%

Answer : [C]

Explanation:

B.D. for $\frac{3}{2}$ years = Rs. 558.

B.D. for 2 years = Rs. $\left(558 \times \frac{2}{3} \times 2\right)$

= Rs. 744

T.D. for 2 years = Rs. 600.

$\therefore$ Sum = $\frac{\text{B.D. x T.D.}}{\text{B.D. - T.D}}$ = Rs. $\left(\frac{744 \times 600}{144}\right)$ = Rs. 3100.

Thus, Rs. 744 is S.I. on Rs. 3100 for 2 years.

$\therefore$ Rate = $\left(\frac{100 \times 744}{3100 \times 2}\right)_{\%}$ = 12%

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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%.

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

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(3) The banker's discount on a bill due 4 months hence at 15% is Rs. 420. The true discount is:

[A] Rs. 400

[B] Rs. 360

[C] Rs. 480

[D] Rs. 320

Answer : [A]

Explanation:

T.D. = $\frac{\text{B.D. x 100}}{\text{100 + (R x T)}}$

= Rs. $\left[\frac{420 \times 100}{100 + \left(15 \times \frac{1}{3}\right)}\right]$

= Rs. $\left(\frac{420 \times 100}{105}\right)$

= Rs. 400.

(4) 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:

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

∴ B.D. = Rs.(750 + 270) = Rs. 1020.

(5) The certain worth of a certain sum due sometime hence is Rs. 1600 and the true discount is Rs. 160. The banker's gain is:

[A] Rs. 20

[B] Rs. 24

[C] Rs. 16

[D] Rs. 12

Answer : [C]

Explanation:

$$\text{B.G.} = \frac{(\text{T.D.})^2}{\text{P.W.}} = \text{Rs.} \left(\frac{160 \times 160}{1600}\right) = \text{Rs. } 16.$$

(6) The true discount on a bill of Rs. 540 is Rs. 90. The banker's discount is:

[A] Rs. 60

[B] Rs. 108

[C] Rs. 110

[D] Rs. 112

Answer : [B]

Explanation:

P.W. = Rs. (540 - 90) = Rs. 450.

∴ S.I. on Rs. 450 = Rs. 90.

$$\text{S.I. on Rs. } 540 = \text{Rs.} \left(\frac{90}{450} \times 540\right) = \text{Rs. } 108.$$

∴ B.D. = Rs. 108.

(7) In a shower, 5 cm of rain falls. The volume of water that falls on 1.5 hectares of ground is:

[A] 75 cu. m

[B] 750 cu. m

[C] 7500 cu. m

[D] 75000 cu. m

Answer : [B]

Explanation:
1 hectare = 10,000 m^2
So, Area = (1.5 x 10000) m^2 = 15000 m^2.
Depth = $\frac{5}{100}$m = $\frac{1}{20}$m.

$\therefore$ Volume = (Area x Depth) = $\left(15000 \times \frac{1}{20}\right)_{m^3}$ = 750 m^3.

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(8) A hollow iron pipe is 21 cm long and its external diameter is 8 cm. If the thickness of the pipe is 1 cm and iron weighs 8 g/cm^3, then the weight of the pipe is:

[A] 3.6 kg

[B] 3.696 kg

[C] 36 kg

[D] 36.9 kg

Answer : [B]

Explanation:
External radius = 4 cm,
Internal radius = 3 cm.

Volume of iron = $\left(\frac{22}{7} \times [(4)^2 - (3)^2] \times 21\right)_{cm^3}$

= $\left(\frac{22}{7} \times 7 \times 1 \times 21\right)_{cm^3}$

= 462 cm^3.

$\therefore$ Weight of iron = (462 x 8) gm = 3696 gm = 3.696 kg.

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(9) 66 cubic centimetres of silver is drawn into a wire 1 mm in diameter. The length of the wire in metres will be:

[A] 84

[B] 90

[C] 168

[D] 336

Answer : [A]

Explanation:
Let the length of the wire be h.
Radius = $\frac{1}{2}$mm = $\frac{1}{20}$cm. Then,

$\Rightarrow \frac{22}{7} \times \frac{1}{20} \times \frac{1}{20} \times h = 66.$

$\Rightarrow h = \left(\frac{66 \times 20 \times 20 \times 7}{22}\right)$ = 8400 cm = 84 m.

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(10) 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 x 50) m^3 = 200 m^3.
∴ Rise in water level = $\left(\frac{200}{40 \times 20}\right)$ m 0.25 m = 25 cm.

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(11) A cistern 6m long and 4 m wide contains water up to a depth of 1 m 25 cm. The total area of the wet surface is:

[A] 49 m^2

[B] 50 m^2

[C] 53.5 m^2

[D] 55 m^2

Answer : [A]

Explanation:
Area of the wet surface = [2(*lb* + *bh* + *lh*) - *lb*]

= 2(*bh* + *lh*) + *lb*

= [2 (4 x 1.25 + 6 x 1.25) + 6 x 4] m^2

= 49 m^2.

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(12) A large cube is formed from the material obtained by melting three smaller cubes of 3, 4 and 5 cm side. What is the ratio of the total surface areas of the smaller cubes and the large cube?

[A] 2 : 1

[B] 3 : 2

[C] 25 : 18

[D] 27 : 20

Answer : [C]

Explanation:
Volume of the large cube = ($3^3 + 4^3 + 5^3$) = 216 cm^3.
Let the edge of the large cube be *a*.
So, a^3 = 216 ⇒ *a* = 6 cm.
∴ Required ratio = $\left(\frac{6 \times (3^2 + 4^2 + 5^2)}{6 \times 6^2}\right) = \frac{50}{36}$ = 25 : 18.

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(13) The curved surface area of a cylindrical pillar is 264 m^2 and its volume is 924 m^3. Find the ratio of its diameter to its height.

[A] 3 : 7

[B] 7 : 3

[C] 6 : 7

[D] 7 : 6

Answer : [B]

Explanation:
$\pi r^2 h = 924$ ⇒ $r = \frac{924}{\text{x } 2}$ = 7 m.

$2\pi rh$ 264
And, $2\pi rh = 264 \Rightarrow h = \left(26 \times \frac{7}{22} \times \frac{1}{2} \times \frac{1}{7}\right) = 6m.$

$\therefore$ Required ratio $= \frac{2r}{h} = \frac{14}{6} = 7 : 3.$

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(14) From a point P on a level ground, the angle of elevation of the top tower is 30?. If the tower is 100 m high, the distance of point P from the foot of the tower is:

[A] 149 m

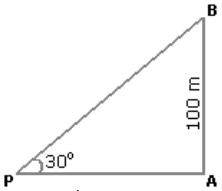
[B] 156 m

[C] 173 m

[D] 200 m

Answer : [C]

Explanation:
Let AB be the tower.



Then, $\angle APB = 30?$ and AB = 100 m.
$\frac{AB}{AP} = \tan 30? = \frac{1}{3}$

$\Rightarrow$ AP = (AB x 3) m

= 100 3 m

= (100 x 1.73) m

= 173 m.

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(15) 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 3 units

[B] 8 units

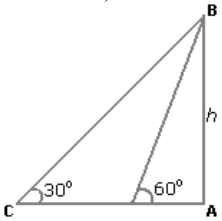
[C] 12 units

[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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(16) An observer 1.6 m tall is 20 3 away from a tower. The angle of elevation from his eye to the top of the tower is 30?. The heights of the tower is:

[A] 21.6 m

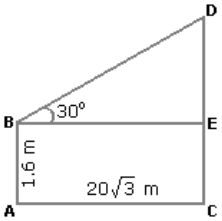
[B] 23.2 m

[C] 24.72 m

[D] None of these

Answer : [A]

Explanation:
Let AB be the observer and CD be the tower.



Draw BE ⊥ CD.
Then, CE = AB = 1.6 m,
BE = AC = 20 3 m.

$\frac{DE}{BE} = \tan 30^\circ = \frac{1}{3}$

$\Rightarrow DE = \frac{20\ 3}{3} m = 20$ m.

$\therefore$ CD = CE + DE = (1.6 + 20) m = 21.6 m.

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(17) The angle of elevation of a ladder leaning against a wall is 60? and the foot of the ladder is 4.6 m away from the wall. The length of the ladder is:

[A] 2.3 m

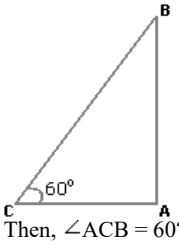
[B] 4.6 m

[C] 7.8 m

[D] 9.2 m

Answer : [D]

Explanation:
Let AB be the wall and BC be the ladder.



Then, ∠ACB = 60? and AC = 4.6 m.

$\frac{AC}{BC} = \cos 60^\circ = \frac{1}{2}$

$\Rightarrow$ BC = 2 x AC

= (2 x 4.6) m

= 9.2 m.

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(18) Find a positive number which when increased by 17 is equal to 60 times the reciprocal of the number.

[A] 3

[B] 10

[C] 17

[D] 20

Answer : [A]

Explanation:
Let the number be x.
Then, $x + 17 = \frac{60}{x}$

$\Rightarrow x^2 + 17x - 60 = 0$
$\Rightarrow (x + 20)(x - 3) = 0$
$\Rightarrow x = 3$.

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(19) The product of two numbers is 9375 and the quotient, when the larger one is divided by the smaller, is 15. The sum of the numbers is:

[A] 380

[B] 395

[C] 400

[D] 425

Answer : [C]

Explanation:
Let the numbers be x and y.
Then, $xy = 9375$ and $\frac{x}{y} = 15$.

$\frac{xy}{(x/y)} = \frac{9375}{15}$

$\Rightarrow y^2 = 625$.
$\Rightarrow y = 25$.
$\Rightarrow x = 15y = (15 \times 25) = 375$.
$\therefore$ Sum of the numbers $= x + y = 375 + 25 = 400$.

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(20) The sum of two number is 25 and their difference is 13. Find their product.

[A] 104

[B] 114

[C] 315

[D] 325

Answer : [B]

Explanation:
Let the numbers be x and y.
Then, $x + y = 25$ and $x - y = 13$.
$4xy = (x + y)^2 - (x- y)^2$
$= (25)^2 - (13)^2$
$= (625 - 169)$
$= 456$
$\therefore xy = 114$.
