Book For

Bharatiya Reserve Bank Note Mudran Private Limited

BRBNMPL Assistant Manager Numerical Ability Sample Paper

(1) 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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(2) A metallic sheet is of rectangular shape with dimensions 48 m x 36 m. From each of its corners, a square is cut off so as to make an open box. If the length of the square is 8 m, the volume of the box (in m^3) is:

[A] 4830

[B] 5120

[C] 6420

[D] 8960

Answer : [B]

Explanation:
Clearly, l = (48 - 16)m = 32 m,
b = (36 -16)m = 20 m,
h = 8 m.
$\therefore$ Volume of the box = (32 x 20 x 8) m^3 = 5120 m^3.

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(3) A cistern of capacity 8000 litres measures externally 3.3 m by 2.6 m by 1.1 m and its walls are 5 cm thick. The thickness of the bottom is:

[A] 90 cm

[B] 1 dm

[C] 1 m

[D] 1.1 cm

Answer : [B]

Explanation:
Let the thickness of the bottom be x cm.
Then, [(330 - 10) x (260 - 10) x (110 - x)] = 8000 x 1000
$\Rightarrow$ 320 x 250 x (110 - x) = 8000 x 1000
$\Rightarrow$ (110 - x) = $\frac{8000 \times 1000}{320 \times 250}$ = 100

$\Rightarrow x = 10$ cm = 1 dm.

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(4) Which of the following is a prime number ?

[A] 33

[B] 81

[C] 93

[D] 97

Answer : [D]

Explanation: Clearly, 97 is a prime number.

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(5) It is being given that $(2^{32} + 1)$ is completely divisible by a whole number. Which of the following numbers is completely divisible by this number?

[A] $(2^{16} + 1)$

[B] $(2^{16} - 1)$

[C] (7×2^{23})

[D] $(2^{96} + 1)$

Answer : [D]

Explanation:
Let $2^{32} = x$. Then, $(2^{32} + 1) = (x + 1)$.
Let $(x + 1)$ be completely divisible by the natural number N. Then,
$(2^{96} + 1) = [(2^{32})^3 + 1] = (x^3 + 1) = (x + 1)(x^2 - x + 1)$, which is completely divisible by N, since $(x + 1)$ is divisible by N.

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(6) What is the unit digit in $\{(6374)^{1793} \times (625)^{317} \times (341^{491})\}$?

[A] 0

[B] 2

[C] 3

[D] 5

Answer : [A]

Explanation:
Unit digit in $(6374)^{1793}$ = Unit digit in $(4)^{1793}$
= Unit digit in $[(4^2)^{896} \times 4]$
= Unit digit in $(6 \times 4) = 4$
Unit digit in $(625)^{317}$ = Unit digit in $(5)^{317} = 5$
Unit digit in $(341)^{491}$ = Unit digit in $(1)^{491} = 1$
Required digit = Unit digit in $(4 \times 5 \times 1) = 0$.

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(7) A 3-digit number $4a3$ is added to another 3-digit number 984 to give a 4-digit number $13b7$, which is divisible by 11. Then, $(a + b) = ?$

[A] 10

[B] 11

[C] 12

[D] 15

Answer : [A]

Explanation:

4 *a* 3 | 9 8 4 } ==> *a* + 8 = *b* ==> *b* - *a* = 8 13 *b* 7 |

Also, 13 *b*7 is divisible by 11 $\Rightarrow$ (7 + 3) - (*b* + 1) = (9 - *b*)
$\Rightarrow$ (9 - *b*) = 0
$\Rightarrow$ *b* = 9
$\therefore$ (*b* = 9 and *a* = 1) $\Rightarrow$ (*a* + *b*) = 10.

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(8) In dividing a number by 585, a student employed the method of short division. He divided the number successively by 5, 9 and 13 (factors 585) and got the remainders 4, 8, 12 respectively. If he had divided the number by 585, the remainder would have been

[A] 24

[B] 144

[C] 292

[D] 584

Answer : [D]

Explanation:

5 | *x* *z* = 13 x 1 + 12 = 25 ---------- 9 | *y* - 4 *y* = 9 x *z* + 8 = 9 x 25 + 8 = 233 ---------- 13|

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(9) On dividing 2272 as well as 875 by 3-digit number N, we get the same remainder. The sum of the digits of N is:

[A] 10

[B] 11

[C] 12

[D] 13

Answer : [A]

Explanation:
Clearly, (2272 - 875) = 1397, is exactly divisible by N.
Now, 1397 = 11 x 127
$\therefore$ The required 3-digit number is 127, the sum of whose digits is 10.

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(10) The sum of the two numbers is 12 and their product is 35. What is the sum of the reciprocals of these numbers ?

[A] $\frac{12}{35}$

[B] $\frac{1}{35}$

[C] $\frac{35}{}$

8

[D] $\frac{7}{32}$

Answer : [A]

Explanation:
Let the numbers be a and b. Then, $a + b = 12$ and $ab = 35$.
$\therefore \frac{a+b}{ab} = \frac{12}{35} \Rightarrow \left(\frac{1}{b} + \frac{1}{a}\right) = \frac{12}{35}$

$\therefore$ Sum of reciprocals of given numbers $= \frac{12}{35}$

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(11) In a division sum, the remainder is 0. As student mistook the divisor by 12 instead of 21 and obtained 35 as quotient. What is the correct quotient ?

[A] 0

[B] 12

[C] 13

[D] 20

Answer : [D]

Explanation:
Number = (12 x 35)
Correct Quotient = 420 ? 21 = 20

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(12) If x and y are the two digits of the number $653xy$ such that this number is divisible by 80, then $x + y$ = ?

[A] 2 or 6

[B] 4

[C] 4 or 8

[D] 8

[E] None of these

Answer : [A]

Explanation:
80 = 2 x 5 x 8
Since $653xy$ is divisible by 2 and 5 both, so $y = 0$.
Now, $653x$ is divisible by 8, so $13x$ should be divisible by 8.
This happens when $x = 6$.
$\therefore x + y = (6 + 0) = 6$.

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(13) 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,

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

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

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

$\Rightarrow x = 625.$

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(14) A bank offers 5% compound interest calculated on half-yearly basis. A customer deposits Rs. 1600 each on 1st January and 1st July of a year. At the end of the year, the amount he would have gained by way of interest is:

[A] Rs. 120

[B] Rs. 121

[C] Rs. 122

[D] Rs. 123

Answer : [B]

Explanation:

Amount = Rs. $\left[1600 \times \left(1 + \frac{5}{2 \times 100} \right)^2 + 1600 \times \left(1 + \frac{5}{2 \times 100} \right) \right]$

= Rs. $\left[1600 \times \frac{41}{40} \times \frac{41}{40} + 1600 \times \frac{41}{40} \right]$

= Rs. $\left[1600 \times \frac{41}{40} \left(\frac{41}{40} + 1 \right) \right]$

= Rs. $\left[\frac{1600 \times 41 \times 81}{40 \times 40} \right]$

= Rs. 3321.

$\therefore$ C.I. = Rs. (3321 - 3200) = Rs. 121

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(15) Albert invested an amount of Rs. 8000 in a fixed deposit scheme for 2 years at compound interest rate 5 p.c.p.a. How much amount will Albert get on maturity of the fixed deposit?

[A] Rs. 8600

[B] Rs. 8620

[C] Rs. 8820

[D] None of these

Answer : [C]

Explanation:

Amount = Rs. $\left[8000 \times \left(1 + \frac{5}{100} \right)^2 \right]$

= Rs. $\left(8000 \times \frac{21}{20} \times \frac{21}{20} \right)$

= Rs. 8820.

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(16) The least number of complete years in which a sum of money put out at 20% compound interest will be more than doubled is:

[A] 3

[B] 4

[C] 5

[D] 6

Answer : [B]

Explanation:

$P\left(1+\frac{20}{100}\right)^n > 2P \quad \Rightarrow \quad \left(\frac{6}{5}\right)^n > 2.$

Now, $\left(\frac{6}{5} \times \frac{6}{5} \times \frac{6}{5} \times \frac{6}{5}\right) > 2.$

So, n = 4 years.

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(17) The compound interest on a certain sum for 2 years at 10% per annum is Rs. 525. The simple interest on the same sum for double the time at half the rate percent per annum is:

[A] Rs. 400

[B] Rs. 500

[C] Rs. 600

[D] Rs. 800

Answer : [B]

Explanation:

Let the sum be Rs. P.

Then, $\left[P\left(1+\frac{10}{100}\right)^2 - P\right] = 525$

$\Rightarrow \quad P\left[\left(\frac{11}{10}\right)^2 - 1\right] = 525$

$\Rightarrow P = \left(\frac{525 \times 100}{21}\right) = 2500.$

$\therefore$ Sum = Rs . 2500.

So, S.I. = Rs. $\left(\frac{2500 \times 5 \times 4}{100}\right)$ = Rs. 500

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(18) A two-digit number is such that the product of the digits is 8. When 18 is added to the number, then the digits are reversed. The number is:

[A] 18

[B] 24

[C] 42

[D] 81

Answer : [B]

Explanation:

Let the ten's and unit digit be x and $\frac{8}{x}$ respectively.

Then, $\left(10x + \frac{8}{x}\right) + 18 = 10 \times \frac{8}{x} + x$

$\Rightarrow 10x^2 + 8 + 18x = 80 + x^2$
$\Rightarrow 9x^2 + 18x - 72 = 0$
$\Rightarrow x^2 + 2x - 8 = 0$
$\Rightarrow (x + 4)(x - 2) = 0$
$\Rightarrow x = 2.$

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(19) In a two-digit, if it is known that its unit's digit exceeds its ten's digit by 2 and that the product of the given number and the sum of its digits is equal to 144, then the number is:

[A] 24

[B] 26

[C] 42

[D] 46

Answer : [A]

Explanation:
Let the ten's digit be x.
Then, unit's digit = $x + 2$.
Number = $10x + (x + 2) = 11x + 2$.
Sum of digits = $x + (x + 2) = 2x + 2$.
$\therefore (11x + 2)(2x + 2) = 144$
$\Rightarrow 22x^2 + 26x - 140 = 0$
$\Rightarrow 11x^2 + 13x - 70 = 0$
$\Rightarrow (x - 2)(11x + 35) = 0$
$\Rightarrow x = 2.$
Hence, required number = $11x + 2 = 24$.

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(20) A number consists of 3 digits whose sum is 10. The middle digit is equal to the sum of the other two and the number will be increased by 99 if its digits are reversed. The number is:

[A] 145

[B] 253

[C] 370

[D] 352

Answer : [B]

Explanation:
Let the middle digit be x.
Then, $2x = 10$ or $x = 5$. So, the number is either 253 or 352.
Since the number increases on reversing the digits, so the hundred's digits is smaller than the unit's digit.
Hence, required number = 253.
