



MATHS

BOOKS - ARIHANT SSC MATHS (HINGLISH)

FUNDAMENTALS



3. Multiply 238 by 9.

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4. Multiply 238 by 81.

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5. Multiply 287 by 19.

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6. Multiply 734 by 99.

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7. Multiply 23857 by 9999.



12. Mutiply 431 by 439.

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13. Mutiply 1203 by 1207.

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14. Mutiply 38 by 52.

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15. Mutiply 76 by 96.

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16. Mutiply 185 by 215.



21. Solve 3456 × 89

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22. Evaluate 245 × 367.

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23. Evaluate 123456 × 789

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24. Find the value of 4567 × 1289.

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25. Find the value of 325768 × 1234.



30. Find out whether 323 is divisible by 17.



34. Find the square root of 3600.



39. Find the square root of 15876.

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40. Find the square root of 120409. Watch Video Solution
41. Find the square of 5793649.Watch Video Solution
42. Find the cube root of 125.
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43. Find the cube root of 1728.

44. On 14th November, in my school, each child received as many packs of chocolates as there were total number of the students in the school. Further, each pack of chocolates contains as many chocolates as there were the total number of packs which a child had. Total how many chocolates have been distributed among all the children of school .

A. 729

B. 196

C. 961

D. can't be determined

Answer: d

45. The average number of chocolates with six children is six. If another child joined them the average number of chocolates with the seven children will become 7. What is the number of chocolates with the seventh child?

A. a.512

B. b.64

C. c.256

D. d.can't be determined

Answer: a

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46. Check that whether 241 is prime.



48. Arrange the integers in descending order

-17,18, 15, 32, 81, -5 .

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49. Solve the following expressions:

3 + 2 - 1 × 4 ÷ 2

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50. Solve the following expressions:

7 × 3 + 8 - 2



51. Solve the following expressions:

53 × 2 - 1 × 6

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52. Solve the following expressions:

12 + (-3) + 5 - (-2)

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53. Evaluate or simplify the following expression .

9 - $\{7 - 24 \div (8 + 6 \times 2 - 16)\}$

A. 11

B. 10

C. 8

Answer: C



54. Evaluate or simplify the following expression .

 $(-3) \times (-12) \div (-4) + 3 \times 6$

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55. Evaluate or simplify the following expression .

 $17 - \{8 + (2 \times 3 - 4)\}$



56. Evaluate or simplify the following expression .

 $5 \times 2 - [3 - (5 - 7 + 2 \text{ of } 4 - 19)]$

57. Find the value of k.

 $45 - [28 - {37 - (15 - k)}] = 58$

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58. Which one of the following options is correct in the given expression?

 $1 + [1 \div {5 \div 4 - 1 \div (13 \div 3 - 1 \div 3)}]$ equal to :

A. 2/5

B.2

C. 3/2

D. None of these

Answer: B

59. Which one of the following options is correct in the given expression?

 $2 - [3 - \{6 - (5 \div 4 - 3)\}]:$

A. 0

B. 1

C. - 3

D. None of these

Answer: A

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60. A student gets 4 marks for a correct answer and 1 mark is deducted for a wrong answer. If she has done 80 questions at all and she has gotten only 240 marks. The correct answers she has attempted is :

A. 40

B. 60

C. 64

D. can't be determined

Answer: C

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61. Solution set of the equation |x - 2| = 5 is :

A. {3, -7}

B. { - 3, 7}

C. {3, 6}

D. None of these

Answer: B

62. The minimum value of the expression |17x - 8| - 9 is :

A. 27 B. 17 C. 44

D. 26

Answer: A

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63. The maximum value of the expression 27 - |9x - 8| is :

- A. 0
- **B.** 9
- C. $\frac{8}{17}$
- D. None of these

Answer: B



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65. The value of x for which the value of |3x + 15| is minimum :

B.5

C. -5

D. None of these

Answer: C

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66. Find the total number of factors of 24.

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67. Find the total number of factors of 540.

A. 24

B. 20

C. 30

D. None of these

Answer: A Watch Video Solution 68. The total number of divisors of 10500 except 1 and it. A. 48 B. 50 C. 46 D. 56 Answer: C



69. Total number of factors of 36 is :

B. 9

C. 6

D. None of these

Answer: B

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70. Find the sum of factors of 24.

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71. Find the sum of factors of 270.

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72. The sum of factors of 1520 except the unity is :

A. 3720

B. 2730

C. 2370

D. None of these

Answer: D

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73. The sum of factors of 19600 is:

A. 54277

B. 33667

C. 5428

D. None of these

Answer: A

74. Product of divisors of 7056 is :

A. (84)⁴⁸

B. (84)⁴⁴

C. (84)⁴⁵

D. None of these

Answer: C

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75. Product of factors of 360 is :

A. (360)¹²

B. (36)¹²⁰

C. (360)²²



Answer: A



79. Find the number of ways of expressing 180 as a product of two factors.

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80. Find the number of ways expressing 36 as a product of two factors.

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81. In how many ways can 576 be expressed as the product of two distinct

factors?

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82. Find the HCF of 1680 and 3600.

83. Find the HCF of 750, 6300, 18900.

Watch Video Solution 84. Find the HCF of 120 and 180. Watch Video Solution **85.** Find the HCF of 420 and 1782. Watch Video Solution

86. Find the HCF of 210, 495 and 980.

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87. Find the HCF of 63 and 84.



92. Find the LCM of 108, 135 and 162.

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93. Find the LCM of 420, 9009, 6270.
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94. Find the least possible number which can be divided by 32, 36 and 40.
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95. In the above problem what is the least possible number of 5 digits
which divisible by all the number 32, 36 and 40.

96. According to above problem find the largest possible number of 4 digits which is exactly divisible by 32, 36 and 40.

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97. Find the number of numbers lying between 1 and 1000 which are divisible by each of 6,7 and 15.

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98. Find the number of numbers lying between 1 and 1,00,000 which are

divisible by each of 15,35 and 77 and are even also .



99. Find the least possible perfect square number which is exactly divisible by 6, 40, 49 and 75.



100. Three bells in the bhootnath temple toll at the interval of 48, 72 and 108 second individually. If they have tolled all together at 6 : 00 AM then at what time will they toll together after 6 : 00 AM ?

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101. Six bells commerce tolling together and toll at intervals of 2, 4, 6, 8, 10, 12 minutes respectively. In 30 hours, how many times do they toll together?

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102. What is the least possible number which when divided by 24, 32 or 42

in each case it leaves the remainder 5?

103. How many integer numbers are possible between 666 and 8888?



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106. What is the least number which when divided by 8, 12 and 16 leaves 3 as the remainder in each case, but when divided by 7 leaves no any remainder?



107. What is the least possible number which when divided by 18, 35 or 42

it leaves the 2, 19, 26 as the remainders respectively?

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108. What is the least possible number which when divided by 2, 3,4,5,6 it

leaves the remainders 1,2,3,4,5 respectively?

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109. Find which of the following numbers are divisible by 11 :

A. a. 5918

B. b. 68,717

C. c. 3882

D. d. 10857

Answer: 539



110. Find the least possible number which when divisible by 2, 4, 6 and 8, it

leaves the remainder 1, 3, 5 and 7 respectively.

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111. What is the least possible number which when divided by 13 leaves

the remainder 3 and when it is divided by 5 it leaves the remainder 2.



112. In the above problem what is the greatest possible number of 4

digits?

113. How many numbers lie between 11 and 1111 which when divided by 9

leave a remainder of 6 and when divide by 21 leave a remainder of 12?

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114. The HCF and LCM of the two numbers is 12 and 600 respectively . If

one of the number is 24, then the other number will be

A. 300

B. 400

C. 1500

D. None of these

Answer: A
115. The least number of 3 digits when successively divided by 2, 5, 4, 3

gives respective remainders of 1,1,3,1 is :

A. 372

B. 275

C. 273

D. 193

Answer: D

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116. A number when successively divided by 2,3,4 it leaves the respective remainders 1,2 and 3. What will be the remainder if this number will be divided by 7 ?



117. A number when divided successively by 6, 7 and 8 . it leaves the respective remainders of 3,5 and 4 . What will be the last remaindr when such a least possible number is divided successively by 8, 7 and 6 ?



118. How many numbers lie between 100 and 10000 which when successive divided by 7, 11 and 13 leaves the respective remainders of 5,6 and 7 ?

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119. Solve the following expression :

 $\frac{3}{5} + \frac{2}{7}$

120. Solve the following expression :

 $\frac{7}{3} + \frac{9}{2}$



121. Solve the following expression :

$$8\frac{3}{7} + 6\frac{1}{5}$$

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122. Solve the following expression :

 $\frac{8}{3} - \frac{13}{6}$



123. Solve the following expressions:

 $\frac{6}{55} - \frac{7}{88}$



126. Solve the following expression :

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 $\frac{193}{75} + \frac{37}{81} - \frac{81}{65}.$

 $\frac{16}{5} - \frac{3}{8} + \frac{11}{10}$

 $\frac{3}{7} \times \frac{5}{4}$



128. Simplify the following expressions :

 $\frac{3}{8}\times\frac{9}{16}\times\frac{7}{5}$

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129. Simplify the following expressions :

$$\frac{9}{7} \times \frac{21}{6} \times \frac{5}{8} \times 3\frac{5}{6}$$



130. Simplify the following expressions:

 $\frac{4}{9}$ of $\frac{729}{48}$

$$\frac{1}{2}$$
 of $\left(\frac{16}{7} + \frac{5}{3}\right)$

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132. Simplify the following expressions :

$$\frac{2}{3}$$
 of $21\frac{4}{9} - 9\frac{4}{11}$

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133. Simplify the following expressions :

 $\frac{6}{15} + \frac{3}{2}$

 $\frac{14}{9} \div \frac{3}{7}$



135. Simplify the following expressions :

$$\frac{3}{7} \div \frac{2}{7} \times \frac{21}{8}$$



136. Simplify the following expressions :

$$\frac{9}{5}$$
 of $\frac{37}{8} \times \frac{36}{74}$

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137. Simplify the following expressions :

$$5\frac{1}{3} \div \frac{4}{15}$$



$$36 \div 4 \text{ of } \frac{1}{2} + \frac{3}{4} \times \frac{3}{2}$$

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139. Simplify the following expressions:

$$1 + \frac{1}{1 + \frac{1}{1 + \frac{1}{6}}}$$

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140. Simplify the following expressions:

$$1 + \frac{1}{1 + \frac{1}{1 + \frac{1}{1 + \frac{1}{1 + \frac{1}{1 + \frac{1}{1}}}}}}$$

$$2 - \frac{1}{3 + \frac{1}{4 - \frac{1}{5 + \frac{1}{5 - \frac{1}{7}}}}}$$

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142. Find the smallest positive number which is exactly divisible by $\frac{1}{3}, \frac{1}{2}, \frac{3}{7}$ and $\frac{4}{11}$.

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143. Four runers started running the race in the same direction around a circular path of 7 km. Their speeds are 4,3,9 and 3.5km/hr individually. If they have started their race at 6 o'clock in the morning, then at what time they will be at the starting point?

144. Evaluate the following:















156. Evaluate the following :

$$\sqrt{50} \times \sqrt{18}$$

157. Evaluate the following :

$$\sqrt{39} \times \sqrt{\frac{75}{2197}}$$

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158. The value of
$$\left\{ \frac{1}{(\sqrt{2}-2)} + \frac{1}{(\sqrt{2}+2)} + (\sqrt{2}+2) \right\}$$
 is :

A. 2

B.4

C. $2\sqrt{2}$

D. None of these

Answer: A





Answer: D

160. From a rope of length $38\frac{3}{5}m$, a piece of length $5\frac{3}{38}m$ is cut off. The

length of the remaining rope is :

A.
$$190\frac{99}{33}$$

B. $33\frac{90}{190}$
C. $33\frac{99}{190}$

D. None of these

Answer: C

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161. The cost of 1 metre cloth is Rs. $21\frac{1}{2}$, then the cost of $\frac{42}{43}$ metre:

A. Rs. 21

B. Rs. 42

C. Rs
$$\frac{43}{2}$$

D. None of these

Answer: A

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162. A drum of kerosene oil is 3/4 full. When 15 litres of oil is drwan from it, it is 7/12 full. Find the total capacity of the drum.

A. 45

B. 90

C. 60

D. can't be determined

Answer: B

163. A sum of Rs. 11200 is shared among Mr. khare, Mr. Patel and Mr. Verma, Mr. Khare gets $\frac{1}{4}$ th of it while Mr. Patel gets $\frac{1}{5}$ th of it. The amount of Mr. Verma is :

A. 6006

B. 6160

C. 3080

D. data insufficient

Answer: B

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164. When Sarvesh travelled 33 km, he found that $\frac{2}{3}rd$ of the entire journey was still left. The length of the total journey is :

A. 66

B. 132

C. 99

D. 100

Answer: B

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165. Mrs. Verma earns Rs. 18000 per month. She speds $\frac{7}{12}$ on house hold items and $\frac{1}{8}$ on rest of the things. The amount she saves is :

A. 7120

B. 5250

C. 5520

D. None of these

Answer: B

166. Neha , a working lady, earns $\exists x$ per month. If she spends 2/5 th of her earning for personal uses and 3/4 th of the personal uses, she spends in entertainment while 7/20 th of the expenditure in entertainment she spends in movies only . Her salary would be, if her expenditure in movies is in integers.

A. 4225

B. 2175

C. 200

D. 3465

Answer: C

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167. 5.732 + 8. 613



172. Find the LCM of 4.44, 37 and 55.5 .



176. Solve the following :

 $(4)^3$



177. Solve the following :

 $(-4)^3$

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178. Solve the following expressions .

$$(-2)^3 \times 5^2$$



179. Solve the following expressions .

$$(-4)^3 \times 5^2 \times 7^0$$

180. Solve the following expressions .

(32)^{-1/5}

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181. Solve the following expressions .

 $(243)^{4/5}$

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182. Solve the following expressions .

 $(36)^{1/2}$

183. Solve the following expressions .

$$\left(-\frac{1}{343}\right)^{-2/3}$$

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184. Solve the following expressions .

 $3^{-3} + (-3)^3$

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185. Solve the following expressions .

$$\left(2^2+2^3+2^{-2}+2^{-3}\right)$$

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186. Solve the following expressions .

$$2^{2x-1} = \frac{1}{8^{x-3}}$$
, then x = ?

187. Solve the following expressions .

 $4^{2x+1} = 8^{x+3}$, then x = ?

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188. Solve the following expressions .

 $3^{x-1} + 3^{x+1} = 90$ then x = ?

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189. Solve the followings :

$$\left[\left(x+\frac{1}{y}\right)^a\left(x-\frac{1}{y}\right)^b\right] \div \left[\left(y+\frac{1}{x}\right)^a\left(y-\frac{1}{x}\right)^b\right] \text{ is equal to :}$$

A. $\left(\frac{x}{y}\right)^{a+b}$

B.
$$\left(\frac{y}{x}\right)^{(a+b)}$$

C. $\frac{x^a}{y^b}$
D. $(xy)^{a+b}$

Answer: A

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190. Solve the followings :

$$\left(\frac{x^b}{x^c}\right)^a \times \left(\frac{x^c}{x^a}\right)^b \times \left(\frac{x^a}{x^b}\right)^c$$
 is equal to :

A. 0

B. 1

C. abc

D. None of these

Answer: B



191. If
$$x^{x^{\frac{3}{2}}} = \left(x^{\frac{3}{2}}\right)^{x}$$
, the value of x :
A. $\frac{3}{2}$
B. $\frac{9}{4}$
C. $\frac{16}{25}$

D.
$$\frac{1}{27}$$

Answer: B

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192. Solve the followings :

If
$$x^a = y^b = z^c$$
 and $y^2 = zx$ then the value of $\frac{1}{a} + \frac{1}{c}$ is :

A.
$$\frac{b}{2}$$

B.
$$\frac{c}{2}$$

C. $\frac{2}{b}$

D. 2a

Answer: C

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193. Solve the followings :

$$(a^{m-n})^1 \times (a^{n-1})^m \times (a^{1-m})^n$$

A. 1

B. 0

C. 2

D. *a*^{*mn*}

Answer: A

194. If $a^x = b$, $b^y = c$ and $c^z = a$ then find the value of xyz

A. 0

B. 1

C. x + y + z

D. abc

Answer: B

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195. Solve the followings :

$$\left(\frac{x^a}{x^b}\right)^{a+b} \times \left(\frac{x^b}{x^c}\right)^{b+c} \times \left(\frac{x^c}{x^a}\right)^{c+a}$$
 is equal to :

A. 1

B. 0

C. 2

D. None of these

Answer: A





Answer: C

197.
$$2^{2^x} = 16^{2^{3x}}$$
 then $x =$

A. - 1

B. 0

C. 1

D. None of these

Answer: A

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198. Solve the followings :

The value of the expression

$$\frac{4^n \times 20^{m-1} \times 12^{m-n} \times 15^{m+n-2}}{16^m \times 5^{2m+n} \times 9^{m-1}}$$
 is

A. 500

B. 1

C. 200

D. $\frac{1}{1000}$

Answer: D



199. Solve the followings :

The value of the expression

$$\frac{(0.3)^{1/3} \cdot \left(\frac{1}{27}\right)^{1/4} \cdot (9)^{1/6} \cdot (0.81)^{2/3}}{(0.9)^{2/3} \cdot (3)^{-1/2} \cdot \left(\frac{1}{3}\right)^{-2} \cdot (243)^{-1/4}}$$
 is :

A. 0.3

B. 0.9

C. 1.27

D. 0.09

Answer: A

200. Solve the followings :

The value of expression
$$\frac{(0.6)^{0} - (0.1)^{-1}}{\left(\frac{3}{2^{3}}\right)^{-1} \cdot \left(\frac{3}{2}\right)^{3} + \left(-\frac{1}{3}\right)^{-1}}$$
 is :

A.
$$-\frac{3}{2}$$

B. $\frac{2}{3}$
C. $\frac{3}{2}$
D. $\frac{9}{4}$

Answer: A



201. Find the value of m - n, if

$$\frac{9^n \times 3^2 \times \left(3^{\frac{-n}{2}}\right)^{-2} - (27)^n}{3^{3m} \times 2^3} = \frac{1}{27}$$

A. - 1

B. 1

C. 2

D. - 2

Answer: B

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202. Find the HCF of
$$(2^{315} - 1)$$
 and $(2^{25} - 1)$ is

A. 5

B. 2

C. 31

D. None of these

Answer: C





204. Which one is greatest out of $\sqrt[3]{5}$, $\sqrt[4]{3}$, $\sqrt[5]{4}$?



205. Which one is greatest out of $\sqrt[3]{5}$, $\sqrt[4]{3}$, $\sqrt[5]{4}$?

A. a.p > q > r

B. b.*q* < *r* < *p*

C. c.*r* > *q* > *r*

D. d.can't be determined

Answer: B


206. If $5\sqrt{5} \times 5^{3} \div 5^{-\frac{3}{2}} = 5^{a+2}$, then the value of *a* is 4 b. 5 c. 6 d. 8 A. 4 B. 5 C. 9 D. 16

Answer: A



207. Find the value of
$$\frac{2+\sqrt{3}}{2-\sqrt{3}}$$
.



208. The value of
$$\frac{\sqrt{5} - 2}{\sqrt{5} + 2}$$
 is
A. 4 - 9 $\sqrt{5}$
B. 9 + 4 $\sqrt{5}$
C. 9 - 4 $\sqrt{5}$
D. 7 + 4 $\sqrt{5}$

:

Answer: C

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209. Find the value of
$$\frac{5}{6\sqrt{6}} \times \frac{12\sqrt{30}}{25\sqrt{5}}$$
.

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210. Arrange the following in decending order

$$\sqrt{3} - \sqrt{2}, \sqrt{4} - \sqrt{3}, \sqrt{5} - \sqrt{4}, \sqrt{2} - 1.$$



211.
$$\sqrt{\frac{9\left(r+\frac{1}{4}\right)\sqrt{3.3^{-r}}}{3.\sqrt{3^{-r}}}} = k$$
, then the value of k is

A. 3

B. 3^{*r*}

C. 3³

D. $\sqrt[r]{3}$

Answer: B

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212. If m and n (n > 1) are whole numbers such that $m^n = 121$, the value of

 $(m - 1)^{n+1}$ is

A. 12321

B. 1

C. 1000

D. 11

Answer: C

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213. Simplify :
$$\sqrt{192} - \frac{1}{2}\sqrt{48} - \sqrt{75}$$
.

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214. Find the square root of 7 - $2\sqrt{10}$.

215. Find the value of
$$\left(\frac{1}{\sqrt{5}-2} + \frac{1}{\sqrt{5}+2}\right)^2$$
.

216. If $m^n - m = (m - n)!$ where m > n > 1 and $m = n^2$ then the value of $m^2 + n^2$ is :

A. 272

B. 90

C. 20

D. none of (a), (b), (c)

Answer: B

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217. If $P + P! = P^3$, then the value of P is :

A. 4

B. 6

C. 0

D. 5

Answer: D

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218. If $P + P! = P^2$ then the value of P is:

A. 5

B. 7

C. 3

D. 0

Answer: C

219. If n! - n = n, then the value of n is :

A. 4 B. 5 C. 6

D. 3

Answer: D

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220. The appropriate value of P for the relation $(P! + 1) = (P + 1)^2$ is :

A. 3

B.4

C. 5

D. none of these

Answer: B



Answer: D

222. If
$$n! = \frac{(n+4)!}{(n+1)!}$$
, then the value of n is :

В	•	1	8

C. 6

D. 9

Answer: C

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223. The value of

(1.2.3.....9). (11.12.13...19). (21.22.23....29). (31.32.33......39). (41.42.43....49).

A.
$$\frac{100!}{36288 \times 10^{12}}$$

B.
$$\frac{99!}{388 \times 10^{11}}$$

C.
$$\frac{99!}{36288 \times 10^{10}}$$

D. can't be determined

Answer: C

224. The expression $1! + 2! + 3! + 4! + \dots + n!$ (where $n \ge 5$) is not a/an :

A. composite number

B. odd number

C. perfect number

D. multiple of 3

Answer: C

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225. The HCF and LCM of 13! and 31! are respectively :

A. 12! And 32!

B. 13! and 31!

C. 26 and 403

D. can't be determined

Answer: B



229. Find the number of Zeros at the end of the expression -

10 + 100 + 1000 + + 100000000

A. 1

B. 10

C. 55

D. None of these

Answer: A

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230. Find the no. of zeros in expression $10 \times 100 \times 1000 \times ...10000000000$ is :

A. 10

B. 100

C. 50

Answer: D



231. Number of zeros at the end of the following expression $(5!)^{5!} + (10!)^{10!} + (50!)^{50!} + (100!)^{100!}$ is :

A. 165

B. 120

C. 125

D. None of these

Answer: B

232.	Find	the	largest	power	of 5	contained	in	124!.
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233. Find the largest power of 2 that can divide 268!.
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234. Find the largest power of 7 that can exactly divide 777!.
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235. Find the largest value of n in the 10^n which can exactly divide 1000!.
 235. Find the largest value of n in the 10ⁿ which can exactly divide 1000!. Watch Video Solution
 235. Find the largest value of n in the 10ⁿ which can exactly divide 1000!. Watch Video Solution

236. Find the number of zeros at the end of 1000!.

237. The number of zeros at the end of 100! Is :

A. 25

B. 50

C. 24

D. 100

Answer: C

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238. Find the highest power of 63 which can exactly divide 6336!.



243. Find the unit digit of $135 \times 361 \times 970$.





251. Find the unit digit of the product of all the prime number between

1 and $(11)^{11}$.

252. Find the unit digit of the product of all the elements of the set which

consists all the prime numbers greater than 2 but less than 222.





D. none of these

Answer: C



259. Find the unit digit of the expression.

 $888^{9235!} + 222^{9235!} + 666^{2359!} + 999^{9999!}$.



260. The last digit of the following expreesion is :

$$(1!)^{1} + (2!)^{2} + (3!)^{3} + (4!)^{4} + \dots (10!)^{10}$$

A. 4

- B. 5
- C. 6

D. 7

Answer: D

261. The last 5 digit of the following expression will be

 $(1!)^{5} + (2!)^{4} + (3!)^{3} + (4!)^{2} + (5!)^{1} + (10!)^{5} + (100!)^{4} + (1000!)^{3} + (10000!)^{2} + (1000!)^{3}$

A. 45939

B. 00929

C. 20929

D. can't be determined

Answer: B

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262. Find the value of $107 \times 107 - 93 \times 93$.

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263. Find the value of 734856×9999 .

264. $6798 \times 223 + 6798 \times 77 = k$ then the value of k will be :

A. 2034900

B. 3029400

C. 2039400

D. none of these

Answer: c

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265. 123 × 123 + 77 × 77 + 2 × 123 × 77 = ?

266.
$$\frac{(941 + 149)^2 + (941 - 149)^2}{(941 \times 941 + 149 \times 149)} = ?$$

267. $\frac{888 \times 888 \times 888 - 222 \times 222 \times 222}{888 \times 888 + 888 \times 222 + 222 \times 222} = ?$



268. If $(64)^2 - (36)^2 = 20k$ then the value of k is :

A. 140

B. 120

C. 80

D. none of these

Answer: A

269. If $a + \frac{1}{a} = 3$, then the value of $a^2 + \frac{1}{a^2}$ is : A. 6

B. 7

C. 9

D. can't be determined

Answer: B

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270. If
$$a + \frac{1}{a} = 3$$
, then the value of $a^3 + \frac{1}{a^3}$ is :

A. 15

B. 18

C. 27

D. none of these

Answer: B



271. What is the value of

 $\frac{2.75 \times 2.75 \times 2.75 - 2.25 \times 2.25 \times 2.25}{2.75 \times 2.75 + 2.75 \times 2.25 + 2.25 \times 2.25} = ?$

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272. If
$$\left(\sqrt{a} + \sqrt{b}\right) = 17$$
 and $\left(\sqrt{a} - \sqrt{b}\right) = 1$, then the value of \sqrt{ab} is :

A. 72

B. 27

C. 35

D. none of these

Answer: A

273. Find the value of $a^3 + b^3 + c^3 - 3abc$ if a + b + c = 12 and ab + bc + ca = 47.



274. If a + b + c = 0, then the value of $a^3 + b^3 + c^3$ is :

A. 0

B. abc

C. 3abc

D. none of these

Answer: C

275. If
$$x + y + z = 0$$
 then the value of $\frac{x^2y^2 + y^2z^2 + z^2x^2}{x^4 + y^4 + z^4}$ is :

- B. $\frac{1}{2}$
- **C**. 1
- **D**. 2

Answer: B

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276. The value of $a^3 + b^3 + c^3$ - 3*abc*, when a = 87, b = -126 and c = 39 is

A. 0

:

B. 1259

C. - 48

D. None of these

Answer: A



277. simplify $(a - b)(a + b)(a^{2} + b^{2})(a^{4} + b^{4})(a^{8} + b^{8})(a^{16} + b^{16})$ is: A. $a^{16} - b^{16}$ B. $a^{16} + b^{16}$ C. $a^{31} - b^{31}$ D. $a^{32} - b^{32}$

Answer: D

278. simplify

$$(a - b)(a + b)(a^{2} + b^{2})(a^{4} + b^{4})(a^{8} + b^{8})(a^{16} + b^{16})$$
 is:

In the above question which of the following can not divide the given expression:

A. $a^4 - b^4$ B. $a^{12} - b^{12}$ C. $a^{16} - b^{16}$

D. can't be determined

Answer: B

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279. The expression $31^n + 17^n$ is divisible by, for every odd positive integer

n :

B. 14

C. 16

D. both (1) and (3)

Answer: D

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280. Which is not the factor of $4^{6n} - 6^{4n}$ for any postive interger n?

A. 5

B. 25

C. 7

D. None of these

Answer: D

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281. 19ⁿ - 1 is

A. always divisible by 9

B. always divisible by 20

C. is never divisible by 19

D. only (a) and (c) are true

Answer: D

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282. Find the remainder when 38 + 71 + 85 is divided by 16.



283. Find the remainder when

1661 + 1551 + 1441 + 1331 + 1221 is divided by 20.



284. What is the remainder when

678 + 687 + 6879 + 6890 is divided by 17 ?

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285. What is the remainder when
$$(10 + 10^2 + 10^3 + 10^4 + 10^5)$$
 is divided

by 6 ?

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286. Find the remainder when 123×1234 is divided by 15.



287. Find the remainder when $1719 \times 1721 \times 1723 \times 1725 \times 1727$ is divided

by 18.



292. Find the remainder when $923^{888} + 235^{222}$ is divided by 4.



C. 2

D. 3

Answer: D


297. Find the remainder when $32^{32^{32}}$ is divided by 7

A. 2

B. 1

C. 4

D. none of these

Answer: C

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298. The remainder when 8^{1785} is divided by 7 is :

A. 5

B. 1

C. 6

D. can't be determined

Answer: B

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299. The remainder when $(16)^{3500}$ is divided by 17 is
A. 1
В. О
C. 16
D. none of these
Answer: A
Watch Video Solution

300. The remainder when $(3)^{81}$ is divided by 28 is :

B. 8

C. 18

D. 26

Answer: A

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301. The remainder of
$$\frac{2^{243}}{3^2}$$
 is :

A. 8

B. 10

C. 4

D. none of these

Answer: A

302. The remainder when $(3)^{671}$ is divided by 80 :

A. 0

B. 1

C. 2

D. can't be determined

Answer: B

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303. The remainder of
$$\frac{39^{93!}}{40}$$
 is :

A. 0

B. 1

C. 39

D. 13

Answer: B



304. The remaider of
$$\frac{2^{59!}}{255}$$
 is :

A. 0

B. 1

C. 55

D. 5

Answer: B



305. Find the value of i^{63} .



306. Find the value of i^{170} .



307. Find the value of
$$\frac{1}{1^{123}}$$
.

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308. Find the value of
$$\sqrt{-16} \times \sqrt{-25}$$
.

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309. Find the value of
$$\left(\sqrt{-1}\right)^{4n+1}$$
.

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310. Find the value of i^{-343} .

311. Find the value of $i^{248} + i^{341} + i^{442} + i^{543}$.



312. The value of
$$\frac{1}{i^n} + \frac{1}{i^{n+3}} + \frac{1}{i^{n+2}} + \frac{1}{i^{n+1}}$$
 is :

A. - 1

B. 1

C. 0

D. can't be determined

Answer: C

313. Find the modulus of $5 + \sqrt{-11}$.



314. If the multiplicative inverse of a complex number is $\frac{\sqrt{5} + 6i}{41}$ then the complex number itself is :

A. $\sqrt{5}$ - 6i

 $\mathsf{B.}\sqrt{5}+6i$

C. 6 + $\sqrt{7}i$

D. none of these

Answer: A

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315. Which of the following is correct ?

A. 7 + *i* > 5 - *i*

B. 8 + *i* > 9 - *i*

C. 13 + *i* < 25 - 3*i*

D. none of these

Answer: D

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316. The smallest positive integer n for which $\left(\frac{1+i}{1-i}\right)^n = -1$ is :

A. 5

B. 1

C. 2

D. none of these

Answer: C

317. The smallest positive integer n forwhich
$$\left(\frac{1+i}{1-i}\right)^n = 1$$
 is:

Answer: B



318.
$$(3 + 2i)^3 = ?$$

A. 9 + 46*i*
B. 9 + 46*i*
C. -9 + 46*i*

D. none of these

Answer: C



319. The multiplicative inverse of $(3 + 2i)^2$ is :

A.
$$\frac{12}{169} - \frac{5i}{169}$$

B. $\frac{5}{169} - \frac{12i}{169}$
C. $\frac{5}{13} - \frac{12i}{13}$

D. none of these

Answer: B



320. If
$$|z| = 1$$
, then $\left(\frac{1+z}{1+z}\right)$ equals :

A. *ī*

B.z

C. *z*⁻¹

D. none of these

Answer: B

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321. Find the value of
$$\sqrt{i} + \sqrt{-i}$$
.

A. 1

 $B.\sqrt{2}$

C. - i

D. none of these

Answer: B

322. The value of $\log_e(-1)$ is:

Α. іπ

B. 0

C. *i*⁻¹

D. does not exist

Answer: A

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323. Number of solutions of the equation $z^2 + |z|^2 = 0$, where $z \in C$, is

A. 1

B. 2

C. 4

D. infinitely many

Answer: D

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324.
$$\left(\frac{-1+\sqrt{3}i}{2}\right)^{100} + \left(\frac{-1-\sqrt{3}i}{2}\right)^{100} =$$

B. 1

C. 0

D. i

Answer: A

325. If
$$1, \omega, \omega^2$$
 be the cube roots of unity, then the value of $(1 - \omega + \omega^2)^5 + (1 + \omega - \omega^2)^5$ is :
A. a) 0
B. b.)16
C. c.) 32
D. d) 64

Answer: C

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326. If 1,
$$\omega$$
, ω^2 , ... ω^{n-1} are n, nth roots of

unity, find the value of
$$(9 - \omega) \left(9 - \omega^2\right) \dots \left(9 - \omega^{n-1}\right)$$
.

A. 0

B.
$$\frac{9^n - 1}{8}$$

C.
$$\frac{8^n - 1}{3}$$

D. none of these

Answer: B

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327. If
$$\left(\frac{1-i}{1+i}\right)^{100} = x + iy$$
 then the value of (x, y) is:
A. $(0, 1)$
B. $(0, 0)$
C. $(1, 0)$
D. $(-1, 0)$

Answer: C

328. The inequality a + ib < c + id holds if

A. *a* < *c*, *b* < *d*

B. a < c, b > d

C. *a* > *c*, *b* < *d*

D. None of these

Answer: D

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329. The points z_1, z_2, z_3, z_4 in the complex plane form the vertices of a parallelogram iff :

A.
$$z_1 + z_2 = z_3 + z_4$$

B. $z_1 + z_3 = z_2 + z_4$

$$C. z_1 + z_3 > z_2 + z_4$$

D. None of these

Answer: B



330. If
$$a + ib = \sqrt{\frac{u + iv}{x + iy}}$$
 then the value of $a^2 + b^2$ is:

A.
$$\sqrt{\frac{u^2 + v^2}{x^2 + y^2}}$$

B. $\frac{u^2 - v^2}{x^2 - y^2}$

- C. can't be determined
- D. None of these

Answer: A



331. The maximum value of |z| where z satisfies the condition

$$\left|z + \left(\frac{2}{z}\right)\right| = 2$$
 is

A. $\sqrt{3} - 1$ B. $\sqrt{3}$

 $C.\sqrt{3} + 1$

D. 1

Answer: A::C





A. - 1

B.1

C. $\sqrt{3}$ D. $-\sqrt{3}$

Answer: B



333. The difference between the highest and lowest two digit numbers is :

A. 88

B. 89

C. 22

D. 99

Answer: B

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334. When a two digit number is reversed, then the new number becomes

 $\frac{5}{6}$ th of the original number. The two digits differs by one. The original

number is :

B.45

C. 48

D. 54

Answer: D

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335. The number of two digit numbers which on being reversed (i.e., their digits exchanged the position) gives out perfect square two digit numbers:

A. 1

B. 4

C. 6

D. 10

Answer: C



336. The number of two digit numbers which are prime :

A. 25

B. 23

C. 21

D. can't be determined

Answer: C

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337. The number of two digit prime numbers, with distinct digits, on being reversed they give again the prime number is :

A. 3

B. 5

C. 8

D. 11

Answer: C

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338. The total number of two digit numbers whose unit digit is either, same, double, triple or quadruple of the tens digit :

A. 13

B. 9

C. 18

D. 90

Answer: C

339. The number of two digit numbers which are perfect square and perfect cube both is :

A. 0

B. 2

C. can't be determined

D. None of these

Answer: D

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340. Aprajita multiplies a number by 72 instead of 27, and got the answer

by 23175 more than the actual number. The actual number was :

A. 515

B. 4615

C. 550

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341. If the numerator and denominator of a fraction are exchanged then the product of these two fractions becomes equal to 1. The total number of such fractions is :

A. 1

B. 31

C. 13

D. infinitely many

Answer: D

342. $\frac{3}{4}th$ of a number is 20 more than half of the same number. The required number is :

A. 50

B. 180

C. 90

D. 80

Answer: D

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343. When 50 is added to the 50% of a number, then the number becomes itself. The required number is :

A. 375

B. 100

C. 150

D. 500

Answer: B



344. If we reverse the digits of a two digit number then the difference between the original number and new number is 27 the defference between the digits is :

A. 9

B. 3

C. can't be determined

D. None of these

Answer: B

345. A two digit number is 4 times the sum of its digits and the unit digit is 3 more than the tens digit. The number is :

B. 61 C. 63

A. 52

D. 36

Answer: D

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346. When a two digit number is subtracted from the other two digit number which consists of the same digits but in reverse order, then the difference comes out to be a two digit perfect square. The number is :

A. 59

B. 73

C. 36

D. not unique

Answer: D

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347. There is a three digit number such that the sum of its end digits (unit digit and hundredth place digit) is always a single digit number. Another three digit number is obtained by reversing the position of end digits of the original number. Then what can be the possible sum of the tens digits of both these numbers ?

A. 5

B. 12

C. 15

D. 26

Answer: B

348. A three digit number which on being subtracted from another three digit number consisting of the same digits in reverse order gives 594. The minimum possible sum of all the three digits of this number is :

A. 808

B. 102

C. 6

D. can't be determined

Answer: A

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349. Convert $(17)_{10}$ to binary system (or in base 2).

350. Convert (35)₁₀ into base 3.

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351. Convert (169)₁₀ in base 7.

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352. Convert (8976)₁₀ in base 9.

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353. Convert $(128)_{10}$ into binary system.

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354. Convert $(127)_{10}$ into binary system.

355. Convert $(100101)_2$ into decimal representation.

A. 36

B.35

C. 37

D. 38

Answer: C

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356. Convert $(1101.0101)_2$ in base 10 (i.e., decimal system)

357. The decimal number corresponding to the binary number $(111000.0101)_2$ is :

A. (5.6312)₁₀

B. (56.3125)₁₀

C. (563.125)₁₀

D. (5631.2)₁₀

Answer: B

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358. Convert $(0.875)_{10}$ to binary.

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359. Convert $(0.3125)_{10}$ to binary equivalent.







368. Convert $(101100101)_2$ to octal.





369. Convert $(725)_{10}$ to hexadecimal.



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371. Convert (756)₁₆ to decimal.

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372. Convert (3*C*8.08)₁₆ to decimal.




377. Find the sum of 7 terms of following series 1,3,9,27,81......



378. Find the Geometric mean of 3, 9, 27.



379. If
$$a \oplus b = a^3 + b^2 + 1$$

 $a \odot b = (a - b)^2 + 1$
 $a * b = a^3 - b^2 + 1$
If $P = (2 \oplus 3) \odot (3 * 5)$, then the value of P is :
A. 225
B. 226

C. 256

D. None of these

Answer: B



380. If
$$a \oplus b = a^3 + b^2 + 1$$

 $a @b = (a - b)^2 + 1$

 $a * b = a^3 - b^2 + 1$

The value of $P = (((1 \oplus 2) * 2))$ is :

A. 40001

B. 10804

C. 40401

D. None of these

Answer: D

381. If $a \oplus b = a^3 + b^2 + 1$ $a \odot b = (a - b)^2 + 1$ $a * b = a^3 - b^2 + 1$ The value of $P = (((2 \oplus 2) \odot 2) \text{ is }:$ A. 14441 B. 14401

C. 144001

D. None of these

Answer: B

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382. In the following division problem some digits are replaced by letters

a,b,c.....etc.

ab3) c61de1 (4cfd eg2 6gd fa5 8be d3j 8f18f1×

The value of J is :

A. 1

B. 6

C. 8

D. None of these

Answer: C

383. In the following division problem some digits are replaced by letters

a,b,c.....etc.

ab3) c61de1 (4cfd eg2 6gd ſa5 8be d3j 8fl8f 1 x

A. 4

B. 6

C. 0

D. can't be determined

Answer: B

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384. In the following division problem some digits are replaced by letters a,b,c......etc.

ab3)c61de1 (4cfd eg2 6gd fa5 8be d3j 8fl8 f ×

The value of a + g is :

A. 7

B. 8

C. 10

D. None of these

Answer: C



385. If F = a. (|b|). c. (|d|). e. (|f|). g(|h|). i. (|j|) and G = a. b. c. d. e. f. g. h. i. jAgain, $a = (-1)^1$, $b = (2)^{-2}$, $c = (-3)^3$, $d = (4)^{-4}$, $j = (10)^{-10}$ then the correct relation is :

 $\mathsf{A.}\,F = -G$

 $\mathsf{B}.\,F=G$

C.*F*.*G* = 1

D. None of these

Answer: B

386. If 2f(x) = f(2x), 3f(x) = f(3x), 4f(x) = f(4x)..... etc. then

 $f(1) + f(2) + f(3) + \dots + f(n)$ equals to where f(1) = 1:

A. a.n(n + 1)

B.b.0

C. c. $\frac{n(n+1)}{2}$

D. d. n!

Answer: C

387. If
$$f\left(x + \frac{1}{x}\right) = x^2 + \frac{1}{x^2}$$
, then f(t) equals to :
A. $t^2 - \frac{1}{t^2}$
B. $t^2 + \frac{1}{t^2}$
C. $t^2 + 2$

D. $(t - 1)^2$

Answer: C

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388. $P * q = p^2 - q^2$ $p \% q = p^2 - q^2$ $p \$ q = p^2 + q^2$ $p \circ q = pq + p + q$ $p \triangle q$ = Remainder of $\frac{p}{q}$ p @ q = greatest integer less than or equal to $\frac{p}{q}$. If p = 11 and q = 7, then the value of $(p * q) \circ (p \$ q)$ is:

A. 14641

B. 12482

C. 12243

D. None of these

Answer: B



389.
$$P * q = p^2 - q^2$$

 $p \$ q = p^2 - q^2$
 $p \$ q = p^2 + q^2$
 $p \circ q = pq + p + q$
 $p \Delta q$ = Remainder of $\frac{p}{q}$
 $p @ q$ = greatest integer less than or equal to $\frac{p}{q}$.
If $p = 8$ and $q = 10$, then the value of $[(p \$ q) \Delta (p \circ q)] * [(q * p) \circ (q @ p)]$
is :

A. a. 5329

B. b. 5239

C. c. 12100

D. d. - 973

Answer: D



390.
$$P * q = p^2 - q^2$$

 $p \$ q = p^2 + q^2$
 $p \circ q = pq + p + q$
 $p \Delta q$ = Remainder of $\frac{p}{q}$
 $p @ q$ = greatest integer less than or equal to $\frac{p}{q}$.
If $p = 15$ and $q = 25$, then the value of the expression $[(q * p) \circ (p \$ q)]$ is:
A. a.341200
B. b.341500

C. c.341250

D. d. none

Answer: A

391. Follow the steps to solve the given problem :

Step 1. Put x = 2 and y = 3

Step 2. Multiply x by 2

Step 3. Multiply y by 3

Step 4. If y = greatest possible 3 digit perfect square, then stop, else

follow step 5.

Step 5. Go to step 2.

What is the maximum possible value of x?

A. 32

B. 64

C. less than 50

D. None of these

Answer: B

392. $p \circ q = p^2 - 20$ if p > q, $p < q = p^2 + 20$ if $p \le q$, then for a = 5 and b = 4 the value of

 $[(a \circ b) \circ (a \circ b)] - [(b \circ a) \circ (b \circ a)]$ is :

A. a. 416

B. b. -461

C. c. - 1271

D. d. None of these

Answer: C

393. If
$$x # y = \frac{x + y}{xy}$$
, then the value of $P#(q#r)$ for every p, q, in N :
A. a. $\frac{pq + qr + r^2}{p(q + q + r)}$
B. b. $\frac{pqr + q + r}{p(q + r)}$
C. c. $\frac{p(qr + q + r)}{pqr}$

D. d. None of these

Answer: B

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394. If
$$f(x, y) = \frac{(x + y)^2}{xy}$$
 for every $x, y > 0$ then $f(x, y)$ must be :

- **A.** ≥ 2
- **B.** < 5
- $\mathsf{C.} \geq 4$

D. None of these

Answer: C

395. The function f_1 and f_2 are defined as follows : $f_1 = a! + b!$ and $f_2 = a^a + b^b$ for a, b > 1 and a, b in N` then the correct relation is :

A. $f_1 < f_2$ B. $f_1 = f_2$ C. $f_1 > f_2$

D. can't say

Answer: A

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396. For any natural number p and q

(i)
$$p#q = p^3 + q^3 + 3$$
 and $p * q = p^2 + q^2 + 2$ and pq = |p - q|$

(ii) Max (p,q) = Maximum of (p,q) and Min (p and q) = Minimum of (p,q)

The value of [(4#5)\$(14 * 15)] is :

A.a.-196

B. b. 231

C. c. - 225

D. d. 229

Answer: B

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397. For any natural number p and q (i) p # q = p 3 + q 3 + 3 and p * q = p 2 + q 2 + 2 and p \$ q = | p - q | (ii) Max (p,q) = Maximum of (p,q) and Min (p and q) = Minimum of (p,q)The value of $[(1$2)#(3$4)] \cdot [(5$6)#(7$8)]$ is :

A. a. 25

B. b. 52

C. c. 36

D. d. None of these

Answer: B



398. For any natural number p and q (i) p # q = p 3 + q 3 + 3 and p * q = p 2 + q 2 + 2 and p \$ q = | p - q | (ii) Max (p,q) = Maximum of (p,q) and Min (p and q) = Minimum of (p,q) .The value of [*Max*(2, 4)\$Min(6, 8)]#[Min(10, 12)\$*Max*(14, 16)] A. a.227

B. b. 225

C. c. 224

D. d. None of these

Answer: A

399. The value of the numeral MCDLXIV is :

A. 1666

B. 664

C. 1464

D. 656

Answer: C

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400. Which of the following can represent the numeral for 2005?

A. DDDDV

B. MMV

C. MDDXV

D. MDVX

Answer: B Watch Video Solution **401.** The value of the numeral MDCCLXXXIX is : A. 1789 B. 1987 C. 2989 D. 2311

402. Which of the following represents the numeral for 2949?

A. MMMIXL

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B. MMXMIX

C. MMCMIL

D. MMCMXLIX

Answer: D

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INTRODUCTORY EXERCISE - 1.1

1. What is the largest possible two digit number by which 2179782 can be divided?

A. 88

B. 50

C. 66

D. 99

Answer: D



2. At least which number must be substracted from 9999999 so that it will become the multiple of 125 ?

A. 124

B.4

C. 24

D. None of these

Answer: A

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3. A number of the form 10^n - 1` is always divisible by 11 for every n is a natural number, when :

A. n is odd

B. n is prime

C. n is even

D. can't say

Answer: C

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4. Out of the following numbers which is divisible by 132?

A. 31218

B. 78520

C. 38148

D. 52020

Answer: A

5. If 653xy is divisible by 80 then the value of x + y is :

A. 2 B. 3 C. 4 D. 6

Answer: D

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6. The value of k if k35624 is divisible by 11 :

A. 2

B. 5

C. 7

D. 6

Answer: D



Answer: C



8. How many numbers between 1 and 1000 are divisible by 7?

B. 142

C. 143

D. None of these

Answer: B

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9. How many numbers between -55 and 55 including both the extreme

values are divisible by 5?

A. 100

B. 111

C. 101

D. None of these

Answer: C

10. How many numbers are there from 100 to 200?

A. 100

B. 101

C. 99

D. None of these

Answer: B

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11. How many numbers are divisible by 3 in the set of numbers 300, 301,

302,, 499, 500 ?

A. 200

B. 66

C. 67

D. None of these

Answer: C



12. How many numbers are there between 200 and 800 which are divisible by both 5 and 7?

A. 35

B. 16

C. 17

D. can't be determined

Answer: C

13. In the above question total numbers in the set of numbers $S = \{200, 201, 800\}$ which are either divisible by 5 or by 7 is :

A. 210

B. 190

C. 199

D. can't be determined

Answer: B

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14. How many numbers are there from 200 to 800 which are neither

divisible by 5 nor by 7?

200 से 800 तक ऐसी कितनी संख्याएँ है जो ना तो 5 से ना ही 7 से विभाज्य है?

A. 411

B. 412

C. 410

D. None of these

Answer: A

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15. Total number of numbers lying in the range of 1331 and 3113 which are

neither divisible by 2,3 or 5 is :

A. a. 477

B. b. 594

C. c. 653

D. d. None of these

Answer: A

16. Atleast what number must be subtracted from 434079 so that is becomes divisible by (or multiple of 137) ?

A. 173

B. 63

C. 97

D. can't be determined

Answer: B

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17. Atleast what number must be subtracted from 434079 so that is becomes divisible by (or multiple of 137) ?

A. 97

B.74

C. 74

D. None of these

Answer: B



18. Which one number is closest to 193 which is divisible by 18 is :

A. 180

B. 195

C. 198

D. 108

Answer: C



19. The product o two numbers ab7 and cd5 could be where ab7 and cd5 are individually three digit numbers:

A. a. 8135

B. b. 79236

C. c. 8735255

D. d. None of these

Answer: D

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20. When a 3 digit number 984 is added to another 3 digit number 4 p3, we get a four digit number 13q7, which is divisible by 11. The value of p + q is :

A. 10

B. 11

C. 12

D. 13

Answer: A

Watch Video Solution

21. When a number divided by 9235, we get the quotient 888 and the remainder 222, such a least possible number is :

A. 820090

B. 8200920

C. 8200680

D. None of these

Answer: D

22. The number which when divided by 33 is perfectly divisible and closer to 1000 is :

A. 990

B. 999

C. 1023

D. can't be determined

Answer: A

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23. A number which when 'divided by 32 leaves a remainder of 29. If this number is divided by 8 the remainder will be

A. 0

B. 1

C. 5
Answer: C



24. A number when divided by 5 leaves a remainder of 4, when the double (i.e., twice) of that number is divided by 5 the remainder will be :

A. 0

B. 1

C. 3

D. can't be determined

Answer: C

25. When a number 'N' is divided by a proper divisor 'D' then it leaves a remainder of 14 and if the thrice of that number i.e. 3N is divided by the same divisor D, the remainder comes out to be 8. Again if the 4 times of the same number i.e., '4N' is divided by D the remainder will be :

A. 35

B. 22

C. 5

D. Both 1 and 2

Answer: D

Watch Video Solution

26. A number when divided by 5 gives a number which is 8 more than the remainder obtained on dividing the same number by 34. Such a least possible number is :

A. 175

B.75

C. 680

D. does not exist

Answer: B

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27. When a natural number divided by a certain divisor, we get 15 as a remainder. But when the 10 times of the same number is divided by the same divisor we get 6 as a remainder. The maximum possible number of such divisors is:

A. 6

B. 7

C. 15

D. can't be determined

Answer: B



28. A certain number 'C' when divided by N_1 it leaves a remainder of 13 and when it is divided by N_2 it leaves a remainder of 1, where N_1 and N_2 are the positive integers. Then the value of $N_1 + N_2$ is if $\frac{N_1}{N_2} = \frac{5}{4}$.

A. 36

B. 27

C. 54

D. can't be determined uniquely

Answer: D

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29. In the above problem the value of c is :

A. 50 lt c lt 100

B. any multiplied 11

C. 20 lt c lt 50

D. can't be determined

Answer: D

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30. In how many parts a rod of length 19.5 m can be broken of equal length of 65 cm?

A. 20

B. 30

C. 3

D. 130

Answer: B

31. six digit number which is consisting of only one digits either 1, 2, 3, 4, 5, 6, 7, 8 or 9, e.g. 111111, 222222. etc. This number is always divisible by:

A. 7

B. 11

C. 13

D. all of these

Answer: D



32. The maximum possible difference between the 4 digit numbers formed by using the 4 different digit 1,2,3,5 is :

A. 4086

B. 5076

C. 4386

D. 3242

Answer: A

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33. The sum of all digits except the unity that can be substituted at the place of k inorder to be divisible by 8 in the number 23487k 2 :

A. 5

B. 14

C. 9

D. None of these

Answer: B

34. A certain number N when multiplied by 13, the resultant values consists entirely of sevens. The value of N is :

A. 123459

B. 58829

C. 59829

D. None of these

Answer: C

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INTRODUCTORY EXERCISE - 1.2

1. The square root of 6280036 is :

A. 1308

B. 2903

C. 2506

D. 2609

Answer: C

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2. The square root of 1296 is :

A. 33

B.44

C. 34

D. 36

Answer: D

3. The square root of 7744 is :

A. 94

B. 88

C. 77

D. None of these

Answer: B

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4. The square root of 56169 is :

A. 359

B. 323

C. 227

D. None of these

Answer: D



5. The square root of 1238578 is :

A. 3254

B. 3724

C. 3258

D. None of these

Answer: D



6. The least number by which we multiply to the 11760, so that can get a perfect square number:

A. 2

B. 3

C. 5

D. None of these

Answer: D

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7. By which least possible number we divide to the 11760 so the resultant number becomes a perfect square :

A. 3

B. 15

C. 7

D. Can't be determined

Answer: B



8. The least possible positive number which should be added to 576 to make a perfect square number is:

A. 0

B. 1

C. 4

D. None of these

Answer: A

9. The least possible number which must be subtracted from 575 to make

a perfect square number is :

A. 5 B. 50 C. 46

D. 37

Answer: C

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10. The square of a number 'A' is the sum of the square of other two numbers 'B' and 'C'. Where 5B = 12C and B,C are positive numbers. The least possible positive value of A is :

A. 10

B. 12

C. 13

D. 16

Answer: C

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11. Lieutenant Kalia when arranged all his 1500 solidiers in such a way that the number of soldiers in a line were the same as there were the number of lines. So he was left with 56 soldiers , who were not a part of this arrangment. The number of lines in this arrangement is :

A. 44

B. 36

C. 38

D. None of these

Answer: C





12.
$$\sqrt{289} \div \sqrt{x} = \frac{1}{5}$$
, then the value of x is :



D. 7225

Answer: D

Watch Video Solution

13. Out of the following statements which one is incorrect ?

A.
$$\sqrt{5184} = 72$$

B.
$$\sqrt{15625} = 125$$

 $C.\sqrt{1444} = 38$

D. $\sqrt{1296} = 34$

Answer: D



14. If 2 * 3 = $\sqrt{13}$ and 3 * 4 = 5, then the value of 5 * 12 is $\sqrt{17}$ (b) $\sqrt{29}$ (c) 12 (d) 13 A. 17 B. $\sqrt{29}$ C. 21 D. 13

Answer: D

15. If $a * b * c = \sqrt{\frac{(a+2)(b+3)}{(c+1)}}$, then the value of (6 * 15 * 3) is : A. 6 B. 3 C. 4

D. can't be determined

Answer: A

16. The value of
$$\frac{1}{p+q^{-1}+1} + \frac{1}{q+r^{-1}+1} + \frac{1}{1+r+p^{-1}}$$
 given that pqr = 1
is :
A. 1
B. 0
C. pqr

D. p+q+r

Answer: A

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INTRODUCTORY EXERCISE - 1.3

1. The product of two numbers is 84 and their HCF is 2. Find the numbers

of such pairs.

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2. The product of two natural numbers is 15120 and their HCF is 6. Find

how many such pairs exist.

3. The number of pairs of two numbers whose product is 300 and their HCF is 5 :

A. 2

B. 3

C. 4

D. can't be determined

Answer: A

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INTRODUCTORY EXERCISE - 1.4

1. The largest possible number with which when 76,132 and 160 are divided

the remainders obtained are the same is

B. 14

C. 18

D. None of these

Answer: D

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2. Find the number of pairs of two numbers whose HCF is 5 and their sum is 50.

D Watch Video Solution

3. The largest possible length of a tape which can measure 525 cm, 1050 cm and 1155 cm length of cloths in a minium number of attempts without measuring the length of a cloth in a fraction of the tape's length

B. 105

C. 75

D. None of these

Answer: B

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4. In the above question minimum how many attempts are required to

measure whole length of cloths?

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5. Minimum how many similar tiles of square shape are required to furnish the floor of a room with the length of 462 cm and breadth of 360 cm?

6. The ratio of two numbers is 15:11 . If their HCF be 13 then these numbers will be:

A. 15:11

B. 75: 55

C. 105:77

D. 195:143

Answer: D

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7. The three numbers are in the ratio 1:2:3 and their HCF is 12. These numbers are :

A. 4,8,12

B. 5,10,15

C. 25,48,72

D. 12,24,36

Answer: D



8. There are three drums with 1653 litre 2261 litre and 2527 litre of petrol. The greatest possible size of the measuring vessel with which we can measure up the petrol of any drum while every time the vessel must be completely filled:

A. 31

B. 27

C. 19

D. 41

Answer: C

9. Two pencils are the 24 cm and 42 cm . If we want to make them of equal size then minimum no. of similar pencils is :

A. 6

B. 11

C. 12

D. None of these

Answer: B

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10. The sum of two numbers is 216 and their H.C.F. is 27. The numbers are

(a) 27, 189 (b) 81, 189 (c) 108, 108 (d) 154, 162

A. 27, 189

B. 81189

C. 108108

D. 154162

Answer: A



11. Mr. Baghwan wants to plant 36 mango trees, 144 orange trees and 234 apple trees in his garden. If he wants to plant the equal no. of trees in every row, but the rows of mango , oranges and apple tress will be separate, then the minimum number of rows in his garden is:

A. 18

B. 23

C. 36

D. can't be determined

Answer: B

1. Simplify: $\left(x^{2^{n-1}} + y^{2^{n-1}}\right)\left(x^{2^{n-1}} - y^{2^{n-1}}\right)$ A. $x^{2^n} - y^{2^n}$ **B.** $x^{2^n} + y^{2^n}$ $C.(x^n - y^n)^2$ D. $(x^2 - y^2)^{n-1}$

Answer: A

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2. If $x = 2^{1/3} + 2^{-1/3}$, then the value of $2x^3$ is:

A. 6*x* + 5

B. 5x + 6

C. 6*x* - 5

D. 5*x* - 6

Answer: A



3.
$$x = 3 + 3^{\frac{2}{3}} + 3^{\frac{1}{3}}$$
 then the value of $x^3 - 9x^2 + 18x - 12$ is
A. 1
B. 0
C. -1
D. $\sqrt{2}$

Answer: B



4. If $x^{1/3} + y^{1/3} + z^{1/3} = 0$, then the value of $(x + y + z)^3$ is :

A. 27

B. 27 xyz

C. 81

 $D.(xyz)^3$

Answer: B

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5. If
$$x^{x}(\sqrt{x}) = (x\sqrt{x})^{x}$$
, then the value of x is:



D. 4

Answer: A

6. The value of (x, y) if $5^x + 3^y = 8$, $5^{x-1} + 3^{y-1} = 2$ is :

A. 2,3

B. 3,2

C. 1,1

D. 0,1

Answer: C

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7. The value of (x,y) if $5^x + 3^y = 8$, $5^{x-1} + 3^{y-1} = 2$ is :

A.
$$\frac{27}{8}, \frac{9}{4}$$

B. $\frac{9}{8}, \frac{27}{4}$
C. $\frac{8}{27}, \frac{4}{9}$

D.
$$\frac{8}{9}, \frac{4}{27}$$

Answer: A

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8. The value of
$$\left(a^{\frac{2}{3}}+2a^{\frac{1}{2}}+3a^{\frac{1}{3}}+2a^{\frac{1}{6}}+1\right)\left(a^{\frac{1}{3}}-2a^{\frac{1}{6}}+1\right)-a^{\frac{1}{2}}\left(a^{\frac{1}{2}}-2\right)$$
,

$$\left(a^{\frac{2}{3}} + 2a^{\frac{1}{2}} + 3a^{\frac{1}{3}} + 2a^{\frac{1}{6}} + 1\right)\left(a^{\frac{1}{3}} - 2a^{\frac{1}{6}} + 1\right) - a^{\frac{1}{2}}\left(a^{\frac{1}{2}} - 2\right), \text{ or } HIR \text{ find } DIR \text{ for } HIR \text{ find } DIR \text{ for } HIR \text{ for } HIR$$

जब a= 7 है:

A. $a^2 x^{1/4} - a x^{3/4} + 16 x^{5/4}$ B. $a x^2 + x^{3/4} + 9 x^{1/4}$ C. 0

D. 1

Answer: A



9.
$$\frac{1}{x^{b} + x^{-c} + 1} + \frac{1}{x^{c} + x^{-a} + 1} + \frac{1}{x^{a} + x^{-b} + 1}$$
 gven a+b+c=0
A. 1
B. 0
C. abc
D. x

Answer: A

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INTRODUCTORY EXERCISE - 1.6

1. If
$$x = \frac{1}{\sqrt{2} - 1}$$
, then the value of $x^2 - 6 + \frac{1}{x^2}$ is :

A. 0

B. 1

 $C.\sqrt{2}$

D. can't be determined

Answer: A

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2. The value of $\frac{3}{5\sqrt[4]{27}}$, when its denominator is a rational number:



D. None of these

Answer: B

3. Simplify by raationalising the denominator.

(i)
$$\frac{7\sqrt{7} - 5\sqrt{2}}{\sqrt{48} + \sqrt{18}}$$
 (ii) $\frac{2\sqrt{6} - \sqrt{5}}{3\sqrt{5} - 2\sqrt{6}}$

B. 25

C. 30

D. 50

Answer: C

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4. If
$$\sqrt{5 + \sqrt[3]{x}} = 3$$
, then the value of x is :

A. 9

B. 27

C. 64

D. 343

Answer: C

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5. If
$$A = \sqrt{2}$$
, $B = \sqrt[3]{3}$ and $C = \sqrt[4]{4}$ then which of the relation is correct ?

A. A > C

B.A > B = C

C. A = C >B

D. None of these

Answer: C

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INTRODUCTORY EXERCISE - 1.7

1. The value of x when $(25)_x = (85)_{10}$ is:

A. 2

B. 8

C. 40

D. can't be determined

Answer: C

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2. Which name is invalid :-

A. (325)₇

B. (345)₅

C. (543)₆

D. None of these
Answer: B



3. $(35)_n$, $(37)_n$, $(45)_n$ and $(51)_n$ all are written in base n then the value of n, such that all these four numbers when written in decimal system, then must be the cnsecutive prime numbers:

A. *n* = 8 B. *n* = 2 C. *n* = 12

D. *n* = 6

Answer: A

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4. The last three digits in the binary representation of $(365247728)_{10}$ is :

A. 000

B. 100

C. 110

D. 010

Answer: A

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5. Convert $(128)_{10}$ into binary system.

A. 210

B. 100

C. 110

D. 10

Answer: B

6. The last four digits in the binary representation of $(8009)_{10}$ is :

A. 1001

B.0001

C. 0101

D. None of these

Answer: A



7. A number of decimal system when represented in binary system then its first and last digits are same and the rest digits are also of another kind. Further this number appears to be palindrome of numerals. The numbers is : B. 19

C. 8

D. 9

Answer: D

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8. When a two digit number is reversed, the new number is reduced by 63 and the sum of digits of these inidividual numbers is 9. Now, if these same numbers are converted into base 'x' the larger number becomes 5 times that of smaller one the value of x is:

A. 36

B. 13

C. 15

D. 18

Answer: B



9. If $(25)_n \times (31)_n = (1015)_n$ then the value of $(13)_n \times (52)_n$ is when n > 0:

A. a. (626)₄

B. b.(462)_n

C. c. (716)_n

D. d. (676)_n

Answer: C

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10. The decimal equivalent of the binary number $(11010.101)_2$ is

A. 2²³ + 1

B. $2^{24} + 1$

 $C. 2^{92} + 1$

D. 2⁹⁶ + 1

Answer: D

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11. If the decimal number 2^{111} is written in the octal system, then what is

its unit place digit ?

A. a. 0

B. b. 1

C. c. 2

D. d. 3

Answer: A

12. Match list I(Binary) with list II (Octal) and select the correct answer

using the codes given below the lists:

List I (Binary)	List II (Octal)
I - 101110	(A) 135
II - 1101110	(B) 56
- 1011101	(C) 176
IV - 1111110	(D) 156

A. I - A, II - C, III - B, IV - D

B. I - B, II - D, III - A, IV - C

C. I - A, II - D, III - B, IV - C

D. I - B, II - C, III - A, IV - D

Answer: B

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PRACTICE EXERCISE

1. The least possible number which we should add to 1720 to make a perfect cube number is :

A. O B. 1 C. 8

D. 7

Answer: C

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2. The least positive number which is subtracted from 1369 to make it a perfect cube is:

A. 17

B. 38

C. 34

D. None of these

Answer: B



3. The least possible natural number by which if we multiply to the 1372, we get perfect cube number is :

A. 2

B. 3

C. 5

D. can't be determined

Answer: A

4. The least possible number by which if we divide 1372, it will become a perfect cube number is:

A. 2 B. 7 C. 3 D. 4

Answer: D



5. Evaluate the following

4 + (-5)

-4 - (- 2)



7. Evaluate the following

8 - (- 5)

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8. Evaluate the following

-13 + (56)



9. Evaluate the following

(-94)+(-239)

(-526)-(-217)

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11. Evaluate the following

7 + (-5) + (-2)

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12. Evaluate the following

-6+(-2)-(-3)+1

6 × 9



14. Evaluate the following

(-9)×(-13)

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15. Evaluate the following

-7 × 8



16. Evaluate the following

13 × (- 15)



 $(-3) \times (8) \times (-5)$

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18. Evaluate the following

(-8) × (-19) × (-15)

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19. Evaluate the following

 $[(-6) \times (-8)] \times 5$

(-18)÷6

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21. Evaluate the following

126 ÷ (-4)

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22. Evaluate the following

-13 × (7 - 8)

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23. Evaluate the following

(-32)÷(-4)



(-31)÷(31)

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25. Find the prime factors of the following:

210

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26. Find the prime factors of the following:

120

27. Find the prime factors of the following:

3315



28. Find the prime factors of the following:

3465

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29. Find the prime factors of the following:

1197

Watch Video Solution

30. Find the prime factors of the following:

157573



31. Find the least number by which 22932 must be multiplied or divided so

as to make it a perfect square :

A. a)10

B.b)4

C. c)11

D. d)13

Answer: D

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32. How many natural numbers upto 150 are divisible by 7?

A. 21

B. 14

C. 22

D. 17

Answer: A

33. How many numbers between 333 and 666 are divisible by 5?

A. 67

B.70

C. 75

D. 55

Answer: A

34. How many numbers between 11 and 111 are the multiples of both 2 and 5 ?

A. 10

B. 12

C. 11

D. 70

Answer: A

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35. Find the total number of prime factors in

 $2^{17} \times 6^{31} \times 7^5 \times 10^{11} \times 11^{10} \times (323)^{23}$.

A. 162

B. 161

C. 346

D. 97

Answer: A



37. Find the number of factors of factors of the following :

101



38. Find the number of factors of factors of the following :

111



39. Find the number of factors of factors of the following :

7056

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40. Find the number of factors of factors of the following :

18522

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41. Find the number of factors of factors of the following :

7744

42. Find the number of factors of factors of the following :





46. State (a) if the fraction is proper (b) if the fraction is improper (c) if

the fraction is mixed (d) none of these

 $(i)\frac{3}{7} \quad (ii)\frac{7}{3} \\ (iii)\frac{35}{12} \quad (iv)4\frac{3}{11}$

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47. State (a) if the fractions are in ascending order state (b) if the fractions are in descending order

3/5,7/9,13/8



48. State (a) if the fractions are in ascending order state (b) if the fractions are in descending order

3/5,7/9,13/8

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49. Find the value of
$$\frac{1}{\sqrt{9} - \sqrt{4}}$$
.
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50. Find the value of x if $\sqrt{1 + \frac{x}{169}} = \frac{14}{13}$
Watch Video Solution

51. Find the value of x if $140\sqrt{x} + 315 = 1015$.

52. If
$$\sqrt{\left(1 + \frac{27}{169}\right)} = \left(1 + \frac{x}{13}\right)$$
 then find the value of x.

53. Find the value of
$$\left[6\frac{1}{4} \div \left\{ 2\frac{1}{4} - \frac{1}{2} \left(2\frac{1}{2} - \frac{1}{4} - \frac{1}{6} \right) \right\} \right]$$
.

D Watch Video Solution

54. Find the value

$$\frac{3}{2} \text{ of } \left(\frac{4}{3} \div \frac{5}{7}\right) + \frac{1}{2} \div \left[3\frac{4}{5} - \left\{\frac{2}{5} - \left(\frac{1}{3} + \frac{1}{2} + \frac{1}{5} - \frac{1}{6}\right)\right\}\right]$$

D Watch Video Solution

55. Find the value of
$$1 + \frac{1}{2 + \frac{1}{4 + \frac{1}{8 + \frac{1}{16}}}}$$

56. Find the value of 1 - —

$$+\frac{1}{2-\frac{1}{2+\frac{1}{2}}}$$

1

2

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57. Calculate the value of
$$\frac{2}{5} + 2\frac{4}{9} \div \left[\left(7\frac{5}{12} - 5\frac{3}{4} \right) \div 22\frac{1}{2} + 10 \times \frac{5}{18} \right] - \frac{4}{5}$$

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58. Calculate the value of
$$\frac{1}{2 + \frac{1}{2 + \frac{1}{2 - \frac{1}{2}}}}$$

Watch Video Solution

59. Calculate the value of
$$\left(1\frac{29}{36} + 1\frac{7}{11} \times 4\frac{1}{8}\right) \div \left(5\frac{1}{9} - \frac{63}{8} \div 9\frac{9}{20}\right)$$
.

60. Calculate the value of
$$\frac{4}{2\frac{1}{3}} + \frac{3}{1\frac{3}{4}} - \frac{5}{3\frac{1}{2}}$$

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EXERCISE - MISCELLANEOUS

1. $\frac{-2}{3}$, $\frac{5}{2}$, $\frac{-1}{6}$ in descending order can be arranged as :

A.
$$\frac{5}{2}$$
, $\frac{-1}{6}$, $\frac{-2}{3}$
B. $\frac{-2}{3}$, $\frac{5}{2}$, $\frac{-1}{6}$
C. $\frac{-1}{6}$, $\frac{5}{2}$, $\frac{-2}{3}$
D. $\frac{5}{2}$, $\frac{-2}{3}$, $\frac{-1}{6}$

Answer: A

2. The sum of a number and its reciprocal is thrice the difference of the number and its reciprocal. The number is :

A.
$$\pm \sqrt{2}$$

B. $\pm \frac{1}{\sqrt{2}}$
C. $\pm \sqrt{3}$
D. $\pm \frac{1}{\sqrt{3}}$

Answer: A



3. If x and y are positive real number, then :

A.
$$x > y \Rightarrow -x > -y$$

B. $x > y \Rightarrow -x < -y$

$$\mathsf{C}.\, x > y \Rightarrow \frac{1}{x} > \frac{1}{y}$$

$$\mathsf{D}.\, x > y \Rightarrow \frac{-1}{x} < \frac{-1}{y}$$

Answer: B



4. If x be a rational number and y be an irrational number, then :

A. both x + y and xy are necessarily irrational

B. both x + y and xy are necessarily rational

C. xy is necessarily irrational, but x + y can be either rational or

irrational

D. x + y necessarity irrational , but xy can be either rational or

irrational

Answer: A

5. The smallest number must be added to 1780 to make it a perfect square

is :

A. 69 B. 156 C. 49 D. 59

Answer: A



6. If p be a prime, p > 3 and let x be the product of positive integers

1, 2, 3...., (p - 1), then consider the following statements:

1. x is a composite number divisible by p.

2. x is a composite number not divisible by p, but some prime numbers greater than p may divide x.

3. x is not divisible by any prime (p - 2).

4. All primes less than (p - 1) divide x.

Of these statements :

A. 1 and 2 are correct

B. 2 and 3 are correct

C. 3 and 4 are correct

D. 4 alone is correct

Answer: D

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7. Consider the following statements:

1. If p > 2 is a prime, then it can be written as 4n + 1 of 4n + 3 for suitable

natural number n.

2. If p > 2 is a prime, then (p - 1)(p + 1) is always divisible by 4.

Of these statements:

A. 1 and 2 are false

B. 1 and 2 are true

C. 1 is true but 2 is false

D. 1 is false but 2 is true

Answer: B

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8. 11111111111 is divisible by :

A. a)3 and 37 only

B. b)3,37 and 11 only

C. c)3,11, 37 and 111 only

D. d)3,11,37,111 and 1001

Answer: D

9. An integer is divisible by 16 if and only if its last X digits are divisible by

16. The value of X would be:

A. three

B. four

C. five

D. six

Answer: B

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10. The number of pairs lying between 40 and 100 such that HCF is 15, is L

A. 3

B.4

C. 5

D. 6

Answer: B



11. If the product of the HCF and the LCM of 3 natural numbers p,q,r equals pqr, then p,q,r must be :

A. such that (p, q, r) = 1

B. prime number

C. odd number

D. such that (p, q) = (p, r) = (q, r) = 1

Answer: B



12. Let x and y be positive integers such that x is prime and y is composite.

Which of the following statements are correct ?

1 (y-x) can be an even integer

2 xy can be an even integer

3 0.5 (x+y) can be an even integer

Select the correct answer using the code given below:

A. 1 and 2 are correct

B.1 alone is correct

C.1 and 3 are correct

D. 1,2 and 3 are correct

Answer: C

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13. In the equation $4^{x+2} = 2^{x+3} + 48$, the value of x will be

A. a)1

B.b)-2

C. *c*) - 3
D. d)-5

Answer: D



14. A lad was asked his age by his friend. The lad said , "The number you get when you subtract 25 times my age from twice the square of my age will be thrice your age". If the friend's age is 14, then the age of the lad is:

A. 21

B. 28

C. 14

D. 25

Answer: C

15. Solve the followings :

$$(a^{m-n})^1 \times (a^{n-1})^m \times (a^{1-m})^n$$

A. both A and R are true and R is the correct explanation of A

B. both A and R are true and R is not the correct explanation of A

C. A is true , but R is false

D. A is false, but R is true

Answer: A

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16. If the sum of two numbers added to the sum of their squares is 42 and the product of these numbers is 15, then the numbers are :

A. 15,1

B.
$$\frac{15}{6}$$
, 6
C. $2\frac{1}{2}$, 6

D. 5, 3

Answer: D

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17. If the equality
$$\frac{1}{x-1} = \frac{2}{x-2}$$
 is satisfied by x then the value of x will be :
A. 2
B. 1
C. 1/2
D. 0

Answer: D

18. If
$$x + \frac{1}{x} = 2$$
, then the value of $x^2 + \frac{1}{x^2}$ is :

A. 6		
B.4		
C. 2		
D. 0		

Answer: C

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19. If a = 24, b = 26, c = 28, then the value of $a^2 + b^2 + c^2 - ab - bc - ac$ will

be

A. 0

B. 1

C. 8

D. 12

Answer: D

20. A number n is said to be 'perfect' if the sum of all its divisors excluding n 'itself' is equal to n. An example of perfect number is :

A. 9

B. 15

C. 21

D. 6

Answer: D

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21. The product $\frac{a}{b^2} \times \frac{b}{a^2}$ expressed as the sum of two identical terms is :

A.
$$\frac{1}{a+b} + \frac{1}{a+b}$$

B. $\frac{a}{b} + \frac{a}{b}$

C.
$$\frac{b}{a} + \frac{b}{a}$$

D. $\frac{1}{2ab} + \frac{1}{2ab}$

Answer: D



23. If the arithmetic mean of the numbers $x_1, x_2, x_3, \dots, x_n$ is \bar{x} , then the arithmetic mean of the numbers $ax_1 + b$, $ax_2 + b$, $ax_3 + b$, $\dots, ax_n + b$, where a and b are two constants, would be:

A. x̄ B. nax̄ + nb C. ax̄

D. $a\bar{x} + b$

Answer: D

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24. The arithmetic mean of first 50 odd natural numbers is :

A. 50

B. 625

C. 175

D. None of these

Answer: A



25. A boy draws n squares with sides 1,2,3,4,5,.... In inches. The average area covered by these n square will be :

A. a.
$$\left(\frac{n+1}{2}\right)$$

B. b. $\left(\frac{n+1}{2}\right)\left(\frac{2n+1}{3}\right)$
C. c. $\left(\frac{n+1}{2}\right)\left(\frac{2n+1}{3}\right)^{-1}$
D. d. $\left(\frac{n+1}{2}\right) - 1\left(\frac{2n+1}{3}\right)$

Answer: B

26. Which one of the following sets of surds is in correct sequence of ascending order of their values?

A. $\sqrt[4]{10}$, $\sqrt[3]{6}$, $\sqrt{3}$ B. $\sqrt{3}$, $\sqrt[4]{10}$, $\sqrt[3]{6}$ C. $\sqrt{3}$, $\sqrt[3]{6}$, $\sqrt[4]{10}$ D. $\sqrt[4]{10}$, $\sqrt{3}$, $\sqrt[3]{6}$

Answer: B

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27. Which one of the following statements is not correct :

A. every integer is a rational number

B. every natural number is an integer

C. every natural number is a real number

D. every real number is a rational number

Answer: D



28. If
$$(a^2 + b^2)^3 = (a^3 + b^3)^2$$
 and $ab \neq 0$ then $(\frac{a}{b} + \frac{b}{a})^6$ is equal to :
A. $\frac{a^6 + b^6}{a^3b^3}$
B. $\frac{64}{729}$
C. 1
D. $\frac{a^6 + a^3b^3 + b^6}{a^2b^4 + a^4b^2}$

Answer: B



29. A page contains 60 lines. A chapter contains 125 pages. A book contains 5 chapters. 20 such books form a bound. If there are 30 lakhs

lines in an x number of bounds then the value of x is :

A. 4 B. 2 C. 5 D. 6

Answer: A

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30. If x is a natural number which is a perfect square , then the number $x + \sqrt{x}$ must end in :

A. 0 or 5

B. 0 or 1 or 9

C. 0 or 2 or 6

D. 0 or 4 or 8

Answer: C



D. 6

Answer: A



32. The number of composite numbers between 101 and 120 is :

B. 12

C. 13

D. 14

Answer: D

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33. The number 10^N - 1 is divisible by 11 for :

A. even values of N

B. all values of N

C. odd value of N

D. N must be a multiple of 11

Answer: A

34. A merchant has 140 litres, 260 litres, 320 litres of three kinds of oil. He wants to sell the oil by filling the three kinds separately in tins of equal volume . The volume of such a tin is:

A. 20 litres

B. 13 litres

C. 16 litres

D. 70 litres

Answer: A

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35. If d is the HCF of a and b, then $d = \lambda a + \mu b$ where :

A. λ and μ are uniquely determined

B. λ and μ are both positive

C. λ and μ are both negative

D. one of the λ and μ is negative and the other is positive

Answer: A

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36. The expression
$$\left(1+\frac{1}{3}\right)\left(1+\frac{1}{4}\right)\left(1+\frac{1}{5}\right)1+\frac{1}{n}$$
 simplifies to $\frac{n+1}{3}$ (b)
 $\frac{n}{n+1}$ (c) $\frac{3}{n}$ (d) $1+\frac{1}{31}/\frac{41}{5}\frac{1}{n}$
A. $\frac{n+1}{3}$
B. $\frac{n}{n+1}$
C. $\frac{3}{n}$
D. $1+\frac{1}{3},\frac{1}{4},\frac{1}{5},...,\frac{1}{n}$

Answer: A

37. If $x = 2^{1/3} + 2^{-1/3}$ then the value of $2x^3 - 6x$ will be :

A. 5

B. - 5

C. 1

D. 0

Answer: A

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38. On the set of integers I, if a binary operation 'o' be defined as

aob = a - b for every $a, b \in I$, then :

A. association law holds

B. commutative law holds

C. I is not closed under this operation

D. I is closed under this operation

Answer: D



D. - 3

Answer: A



40. Among the expression (1 - 3p), $[1 - (3P)^2]$, $[1 - (3P)^3]$ and $[1 - (3P)^4]$ the number of factors of $(1 - 81P^4)$ is :

A. one

B. two

C. four

D. three

Answer: D

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41. If the sum of three consecutive integers is 21, then the sum of the two smaller integers is :

A. 11

B. 5

C. 12

D. 13

Answer: D

42. If
$$2s = a + b + c$$
, then the value of
 $(s - a)^2 + (s - b)^2 + (s - c)^2 + s^2 - a^2 - b^2 - c^2$ will be:
A. -1
B. 1
C. 2
D. 0

Answer: D

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43. If ab + bc + ca = 0, then the value of $\frac{1}{a^2 - bc} + \frac{1}{b^2 - ca} + \frac{1}{c^2 - ab}$ will be

A. - 1

:

B. *a* + *b* + *c*

C. abc

D. 0

Answer: D

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44. If $4^{x+3} \times 2^{x-3} - 128 = 0$ then the value of x is :



Answer: D

45. If a^m . $a^n = a^{mn}$, then m(n - 2) + n(m - 2) is :

B. 1

A. 0

C. -1

D. $\frac{1}{2}$

Answer: A

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46.
$$\frac{6^6 + 6^6 + 6^6 + 6^6 + 6^6 + 6^6}{3^6 + 3^6 + 3^6} \div \frac{4^6 + 4^6 + 4^6 + 4^6}{2^6 + 2^6} = 2^n$$
, then the value of

n is :

A. -1

B. 0

C.
$$\frac{1}{2}$$

D. 1

Answer: B



Answer: A



48. Which one of the following among the numbers $-\frac{3}{7}$, $\frac{2}{3}$ and $\frac{-1}{3}$ is in descending order?

A.
$$\frac{-1}{3}$$
, $\frac{-3}{7}$, $\frac{2}{3}$
B. $\frac{2}{3}$, $\frac{-1}{3}$, $\frac{-3}{7}$
C. $\frac{-3}{7}$, $\frac{2}{3}$, $\frac{-1}{3}$
D. $\frac{2}{3}$, $\frac{-3}{7}$, $\frac{-1}{3}$

Answer: B





A.
$$\frac{-30}{25}$$

B. $\frac{30}{25}$
C. $\frac{-29}{25}$
D. $\frac{-19}{25}$

Answer: A

50.
$$\frac{3}{4} \times \left(\frac{-2}{3} + \frac{3}{5}\right)$$
 is equal to :
A. $\frac{-3}{20}$
B. $\frac{-19}{20}$
C. $\frac{-1}{20}$
D. $\frac{1}{20}$

Answer: C

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51. In a problem involving division, the divisor is eight times the quotient and four times the remainder. If the remainder is 12, then the dividend is :

A. 300

B. 288

C. 512

D. 524

Answer: A

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52. Which one of the following is not correct ?

A. $\sqrt{0.4096} = 0.64$

B. $\sqrt{40.96} = 6.4$

 $C.\sqrt{0.04096} = 0.064$

D. $\sqrt{4096} = 64$

Answer: C

53. Let $\frac{a}{b} = \frac{c}{d}$, (where a and b are odd prime numbers). If c > a and d > b,

then

A. c is not a multiple of a

B. d is not a multiple of b

C. c = ka, d = kb with k gt 1

D. c = k a, b = lb with $k \neq l$

Answer: C

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54. Which one of the following numbers belong to the given series 18, 26, 34, 42, 50?

A. 68

B. 58

C. 74

D. 132

Answer: B



55. The number of prime factors in the expression $6^4 \times 8^6 \times 10^8 \times 12^{10}$ is:			
A. 48			
D. 64			
В. 04			
C. 72			
D. 80			

Answer: C



56. x is a five digit number. The digit in ten thousands place is 1. The number formed by its digits in units and tens places is divisible by 4. The sum of all the digits is divisible by 3. If 5 and 7 also divide x, then x will be :

A. 14020

B. 12060

C. 10020

D. 10080

Answer: D

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57. The sum of all possible factors of 500 (including 1 and 500 themselves)

equals: c

A. 784

B. 980

C. 1092

D. 1350

Answer: C

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58. HCF of 1007 and 1273 is :

A. 1

B. 17

C. 23

D. 19

Answer: D

59. If $2s = 9$ then the value of
$s^{2} + (s - 1)^{2} + (s - 3)^{2} + (s - 5)^{2}$ is:
A. 9
B. 25
C. 45
D 35
5.55

Answer: D



60. The sum of the digits of a two digit number is 8. The number obtained by reversing the digits is 18 less than the original number. The original number is :

A. 62

B. 17

C. 53

D. 35

Answer: C

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61. If $x^y = y^x$ and y = 2x then x is equal to :

A. 2

B. - 2

C. 1

D. - 1

Answer: A

62. Value of
$$\left[\left(x^l \right)^{1 - \frac{1}{l}} \right]^{\frac{1}{l-1}}$$
 is:

A. a. *x*

B.b.1

C. c. *x*⁻¹

D. d. *x*⁻¹

Answer: A

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63. If
$$x^a \times x^b \times x^c = 1$$
, then $a^3 + b^3 + c^3$ is equal to :

A. 9

B. abc

C. *a* + *b* + *c*

D. 3*abc*

Answer: D



64. Which one of the following is a rational number?

A. $\left(\sqrt{2}\right)^2$ B. $2\sqrt{2}$ C. $2 + \sqrt{2}$ D. $\frac{\sqrt{2}}{2}$

Answer: A



65. Rational number $\frac{-18}{5}$ lies between consecutive integers :

A. - 2 and - 3

B. - 3 and - 4

C.-4 and -5

D.-5 and -6

Answer: B



66.
$$1 \div \frac{1}{1 \div \frac{1}{1 \div \frac{1}{3}}}$$
 is equal to :
A. $\frac{1}{3}$
B. 1
C. 3
1

D.
$$1\frac{-}{3}$$

Answer: C

67. The divisor when the quotient, dividend and the remainder are respectively 547, 171282 and 71 is equal to :

A. 333

B. 323

C. 313

D. 303

Answer: C

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68. The simplified value of $\sqrt{900} + \sqrt{0.09} - \sqrt{0.000009}$ is

A. 30.297

B. 30.197

C. 30.097

D. 30.397

Answer: A



69. The greatest integer that divides 358, 376, 232 leaving the same remainder in each case is:

A. 6

B. 7

C. 8

D. 9

Answer: D
70. The units digit of every prime number (other than 2 and 5) must be necessarily :

A. 1,3 and 5

B. 1,3,7 or9

C. 7 or 9

D.1 or 7

Answer: B

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71. If the number 243x51 is divisible by 9 then the value of the digit marked as *x* would be:

A. 3

B. 1

C. 2

Answer: A



72. The GCD of two whole numbers is 5 and their LCM is 60. If one of the number is 20, then other number would be :

A. 25

B. 13

C. 16

D. 15

Answer: D

73. The number of possible pairs of numbers , whose product is 5400 and

HCF is 30:

A. 1 B. 2 C. 3 D. 4

Answer: B



74. The least number which when divided by 2,3, 4,5 and 6 leaves the remainder 1 in each case. If the same number is divided by 7 it leaves no remainder. The number is :

A. 231

B. 301

C. 371

D. 441

Answer: B

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75. Three bells, toll at interval of 36 sec, 40 sec and 48 sec respectively. They start ringing together at particular time. They next toll together after:

A. 6 minutes

B. 12minutes

C. 18 minutes

D. 24 minutes

Answer: B

76. A has certain amount in his account. He gives half of this to his eldest son and one third of the remaining to his youngest son. The amount with him now is :

A.
$$\frac{1}{3}$$
 of the original
B. $\frac{2}{3}$ of the original
C. $\frac{3}{4}$ of the original
D. $\frac{1}{6}$ of the original

Answer: A

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77. If x + y + z = 0, then $x^3 + y^3 + z^3$ is equal to :

A. 0

B. 3xyz

C.
$$\frac{xy + yz + zx}{xyz}$$

D. xyz(xy + yz + zx)

Answer: B

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78. The remainder when $x^4 - y^4$ is divided by x - y is:

A. 0

 $\mathsf{B.} x + y$

C. $x^2 - y^2$

D. $2y^4$

Answer: A

79. if $x - \frac{1}{x} = 2$, then the value of $x^4 + \frac{1}{x^4}$ is A. 4 B. 8 C. 12 D. 34

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80. If the sum and the product of two numbers are 25 and 144 respectively then the difference of the numbers must be :

A. 3

B. 5

C. 7

D. 11

Answer: C

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81. The sum of two numbers is 9 and the sum of their squares is 41. The numbers are :

A.4&5

B.1&8

C.3&6

D. 2 & 7

Answer: A

82. If $3^n = 27$ then 3^{n-2} is:

A. 3 B. $\frac{1}{3}$ C. $\frac{1}{9}$ D. 9

Answer: A

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83. If $a = b^x$, $b = c^y$, $c = a^z$, then xyz is :

A. - 1

B. 0

C. 1

D. abc

Answer: C



84. If
$$p = x^{1/3} + x^{-1/3}$$
, then $p^3 - 3p$ is equal to :

A. 3
B.
$$\frac{1}{2}(x + x^{-1})$$

C. $x + x^{-1}$
D. $2(x + x^{-1})$

Answer: C



85. The sum of squares of first ten natural numbers is :

A. 375

B. 385

C. 475

D. 485

Answer: B

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86. If a language of natural numbers has binary vocabulary of 0 and 1, then which one of the following strings represents the natural number 7

?

A. 11

B. 101

C. 110

D. 111

Answer: D



87. The least number which must be substracted from 6708 to make it exactly divisible by 9 is :

B. 2 C. 3 D. 4

A. 1

Answer: C

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88. Which one of the following statements is not correct ?

A. b. If 'a' is a rational number and b is irrational , then $a \div b$ is

irrational

B. c. The product of a non-zero rational number with an irrational

number is always irrational

C. d. Addition of any two irrational numbers can be an integer.

D. Division of any two integers is an integer.

Answer: D

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89. The value of
$$\frac{10\sqrt{6.25}}{\sqrt{6.25} - 0.5}$$
 is:

A. 125

B. 0.125

C. 1.25

D. 12.5

Answer: D



90. The fundamental arithmetical operations on 2 recurring decimals can

be performed directly without converting them to vulgar fractions :

A. only in addition and subtraction

B. only in addition and multiplication

C. only in addition, subtraction and multiplication

D. in all the four arithmetical operations

Answer: D

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91. Find the largest number that will divide 398, 436 and 542 leaving remainders 7,11 and 15 respectively.

B. 17

C. 18

D. 19

Answer: B

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92. Which one of the following statements is correct?

A. If $x^6 + 1$ is divided by x + 1, then the remainder is -2

B. If $x^6 + 1$ is divided by x - 1, then the remainder is 2

C. If $x^6 + 1$ is divided by x + 1, then the remainder is 1

D. If $x^6 + 1$ is divided by x - 1, then the remainder is -1

Answer: B

93. The value of

$$\frac{(1.5)^3 + (4.7)^3 + (3.8)^3 - 3 \times 1.5 \times 4.7 \times 3.8}{(1.5)^2 + (4.7)^2 + (3.8)^2 - (1.5 \times 4.7) - (4.7 \times 3.8) - (1.5 \times 3.8)}$$
 is:

A. 8

- B. 9
- C. 10

D. 11

Answer: C



94. The smallest number which must be added to 803642 in order to obtain a multiple of 9 is :

A. 1

B. 2

C. 3

Answer: D



95. Simplified value of	$\frac{8.73 \times 8.73 \times 8.73 + 4.27 \times 4.27 \times 4.27}{100}$ is	
	8.73 × 8.73 - 8.73 × 4.27 + 4.27 × 4.27	
A. 11		
B. 12		
C. 13		
D. 14		

Answer: C

96. If
$$\left(x - \frac{1}{x}\right) = 5$$
, then $x^3 - \frac{1}{x^3}$ equals :

A. 125

B. 130

C. 135

D. 140

Answer: D

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97. Mohan gets 3 marks for each correct sum and loses 2 marks for each wrong sum. He attempts 30 sums and obtains 40 marks. The number of sums solved correctly is :

A. 10

B. 15

C. 20

D. 25

Answer: C



98.
$$|x - 1| + |x - 2| + |x - 3| \ge 6$$

A. $0 \le x \le 4$

B. $x \le 0$ or $x \ge 4$

 $\mathsf{C}.\, x \leq -2 \ \text{or} \ x \geq 4$

D. $x \ge -2$ or $x \le 4$

Answer: B



99. It costs Rs. 10 a kilometer to fly and Rs. 2 a km to drive. If one travels 200 km covering x km of the distance by flyng and the rest by driving, then the cost of the trip is:

A. Rs. 2000

B. Rs. 24000

C. Rs. (8x + 400)

D. Rs. (12x + 400)

Answer: C

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100. If 2^{x+3} . $4^{2x-5} = 2^{3x+7}$, then the value of x is :

A. 3

B. 4

C. 6

D. 7

Answer: D

101. The value
$$\left(\frac{x^a}{x^b}\right)^{\left(a^2+ab+b^2\right)} \left(\frac{x^b}{x^c}\right)^{\left(b^2+bc+c^2\right)} \left(\frac{x^c}{x^a}\right)^{\left(c^2+ca+a^2\right)}$$
 is :

A. - 1

B. *x*^{*abc*}

C. 1

D. x^{a+b+c}

Answer: C



102. The value of
$$4 \times 100 + 3 \times 10 + \frac{9}{1000}$$
 is:

A. 430.09

B. 430.0009

C. 430.009

D. 430.900

Answer: C



103. Which one of the following statement is correct?

A. There can be a real number which is both rational and irrational

B. The sum of two irrational number is always irrational

C. For any real numbers x and y, $x < y \Rightarrow x^2 < y^2$

D. Every integer is a rational number

Answer: D



104. The least number which is a perfect square and has 540 as a factor is

A. 8100

:

B. 6400

C. 4900

D. 3600

Answer: A



105. The set of netural numbers is closed under the binary operations of :

A. addition, subtraction, multiplication and division

B. addition, subtraction, multiplication but not division

C. addition and multiplication but not subtraction and division

D. addtion and substraction but not multiplication and division

Answer: C



106. If
$$\frac{100\sqrt{25}}{\sqrt{25} + x} = 50$$
 then the value of x is :
A. 25
B. $\frac{1}{\sqrt{25}}$
C. $\sqrt{25}$
D. $\frac{1}{25}$

Answer: C



107. The total number of prime number between 120 and 140 is :

C. 5

D. 4

Answer: D

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108. The number 12375 is divisible by :

A. 3,11 and 9

B. 3 and 11 only

C. 11 and 9 only

D. 3 and 9 only

Answer: A

109.
$$\left(1 - \frac{1}{3}\right) \left(1 - \frac{1}{4}\right) \left(1 - \frac{1}{5}\right) \dots \left(1 - \frac{1}{n}\right)$$
 equals:
A. $\frac{1}{n}$
B. $\frac{2}{n}$
C. $\frac{3}{n}$
D. $\frac{4}{n}$

Answer: B

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110. If
$$\frac{x}{2} = \frac{y}{3}$$
, then $\left[\frac{4}{5} + \frac{y - x}{y + x}\right]$ equals :
A. $\frac{3}{5}$
B. $\frac{4}{5}$
C. 1
D. $\frac{6}{5}$

ט. 5

Answer: C



111. The value of
$$\frac{(119)^2 + (119)(111) + (111)^2}{(119)^3 - (111)^3}$$
 is :
A. 8
B. $\frac{1}{8}$
C. 230
D. $\frac{1}{230}$

Answer: B



112. A number consists of two digits. The sum of the digits is 11, reversing

the digits, the number decreases by 45, the number is :

A. 38	
B. 65	
C. 74	
D. 83	

Answer: D



113. For a journey the cost of a child ticket is 1/3 rd of the cost of an adult ticket. If the cost of the tickets for 4 adults and 5 children is Rs. 85, the cost of a child ticket is :

A. Rs. 5

B. Rs. 6

C. Rs. 10

D. Rs. 15

Answer: A



114. $9^{3/2} \div (243)^{-2/3}$ simplifies to :

A. 3^{10/3}

B. 3^{19/3}

C. 3^{1/3}

D. 3¹⁹

Answer: B

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115. The solution of $(25)^{x-2} = (125)^{2x-4}$:

B. 0

C. 2

D. - 2

Answer: C

Watch Video Solution

116. If
$$a^{x} = b^{y} = c^{z}$$
 and $\frac{b}{a} = \frac{c}{b}then\frac{2z}{x+z}$ is equal to:
A. $\frac{y}{x}$
B. $\frac{x}{y}$
C. $\frac{x}{2}$
D. $\frac{z}{x}$

Answer: A

117. If x < 0 < y, then :

A.
$$\frac{1}{x^2} < \frac{1}{xy} < \frac{1}{y^2}$$

B.
$$\frac{1}{x^2} > \frac{1}{xy} > \frac{1}{y^2}$$

C.
$$\frac{1}{x} < \frac{1}{y}$$

D.
$$\frac{1}{x} > 1$$

Answer: C

Watch Video Solution

118. The expression $33.33 \div 1.1$ simplifies as :

A. 33.3

B. 303

C. 33.0

D. 30.3

Answer: D



119. If |*x* - 2| < 3 then :

A. 1 < *x* < 5

B. - 1 < *x* < 2

C. - 1 < *x* < 5

D. 0 < *x* < 6

Answer: C



120. A fraction becomes 4 when 1 is added to both the numerator and denominator and it becomes 7 when 1 is substracted from both the numerator and denominator. The numerator of the given fraction is :

A. 2	
B. 3	
C. 7	

Answer: D

D. 15

Watch Video Solution

121. The expression
$$(a - b)^3 + (b - c)^3 + (c - a)^3 = 0$$
 if :

A. *a* < *b* < *c*

B. a > b > c

C. *a* = *b* = *c*

D. $a \neq b = c$

Answer: C

122. If a + b + c = 11, $a^2 + b^2 + c^2 = 51$, what is the value of ab + bc + ac?

A. 24

B. 28

C. 32

D. 35

Answer: D

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123. If
$$x + y + z = 0$$
, then the value of $\frac{x^2}{yz} + \frac{y^2}{zx} + \frac{z^2}{xy}$ is:

A. 3

B. - 3

C. 0

D. 3xyz

Answer: A

Watch Video Solution

124. The value of
$$\left(\frac{e^x + e^{-x}}{2}\right)^2 - \left(\frac{e^x - e^{-x}}{2}\right)^2$$
 is :

A. 0

B. 1

C. 4

D. 16

Answer: B

125. The continued product of

$$(1 + x), (1 + x^2), (1 + x^4), (1 + x^8)$$
 and $(1 - x)$ is :
A. $(1 - x^8 + x^{16})$
B. $(x^8 + x^{16})$
C. $(1 - x^{16})$
D. $(x^{16} - 1)$

Answer: C

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126. Find the value of x and y in the given equation $5\frac{7}{x} \times y\frac{1}{13} = 12$:

A.-2,9

B. 9, 2

C. 4, 3
D. 9, 4

Answer: B





C. 5
$$\frac{10}{28}$$

D. None of these

Answer: A



128. Simplify
$$\frac{\sqrt{25.4016} - \sqrt{1.0609}}{\sqrt{25.4016} + \sqrt{1.0609}}$$
 :

A. $\frac{401}{607}$ B. $\frac{104}{706}$

C. 41/76

D. None of these

Answer: A

129. The square root of
$$\frac{\left(1\frac{3}{4}\right)^4 - \left(2\frac{1}{3}\right)^4}{\left(1\frac{3}{4}\right)^2 - \left(2\frac{1}{3}\right)^2}$$

A. $5\frac{7}{12}$
B. $5\frac{5}{12}$

C.
$$5\frac{12}{13}$$

D. $5\frac{1}{6}$

Answer: B

Watch Video Solution

130. Two numbers 34041 and 32506 when divided by a certain number of

three digits, leave the same remainder. The number is :

A. 307

B. 211

C. 247

D. 299

Answer: A



131. Mr. Black has three kinds of wine, of the first kind 403 litres, of the second 434 litres of the third 465 litres what is the least number of full

casks of equal size in which this can be stored without mixing?

A. 31 B. 39 C. 42

D. 51

Answer: C

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132. The largest sum of money which is contained in both Rs. 49.56 and

Rs. 38.94 an exact number of times is :

A. 2.7

B. 3.54

C. 4.28

D. None of these

Answer: B



133. Tanya gives away to each of four girls $\frac{1}{12}$, $\frac{5}{18}$, $\frac{7}{30}$, $\frac{7}{48}$ of the apples in a basket and has only just enough apples to be able to do so without dividing an apple. The minimum number of apple had she ?

A. 250

B. 720

C. 750

D. None of these

Answer: B

134. Abhishek, Bobby and Charlie start from the same point and travel in the same direction round an Island 6 km in circumference. Abhishek travels at the rate of 3, Bobby at the rate of $2\frac{1}{2}$ and Charlie at the rate of $1\frac{1}{4}$ km/hour. In how many hours will they come together at the starting point again?

A. 6 hrs

B. 12 hrs

C. 24 hrs

D. 15 hrs

Answer: C

135. The value of
$$\frac{4\frac{1}{7} - 2\frac{1}{4}}{3\frac{1}{2} + 1\frac{1}{7}} \div \frac{1}{2 + \frac{1}{2 + \frac{1}{5 - \frac{1}{5}}}}$$

A. 7/29

B.5/6

C. 1

D.9/13

Answer: C

Watch Video Solution

136. Malika travelled $\frac{5}{16}$ of his journey by coach and 7/20 by rail, she walked the remaining 10 km, how far did she go altogether?

A.
$$27\frac{17}{29}$$

B. $33\frac{7}{27}$
C. $19\frac{7}{27}$
D. $29\frac{17}{27}$

Answer: D

137. $2^{\sqrt{3}}$ is :

A. a.a natural number

B. b.an integer

C. c.a rational number

D. d.an irrational number

Answer: D

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138. If p > 0, q < 0 then which of the following is correct ?

A. p + q > 0

B. p - q > 0

C. *p* - *q* < 0

D. None of these

Answer: B

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139. Let n be a positive integer. If $\frac{1}{n}$ has a terminating decimal expansion, then which one of the following is true?

A. n is of the form 5^x , where x is a positive integer

B. n is of the form 2^{y} , where y is non-positive x and y

C. n is of the form 2^x . 5^y for some non-negative x and y

D. n is of the form 10^z for some positive integer z

Answer: C

140. If a number of two digit is 'k' times the sum of its digits then the number formed by interchanging the digits is the sum of the digits muliplied by :

A. (9 + *k*)

B. (10 - *k*)

C. (11 - *k*)

D. (k - 1)

Answer: C

D Watch Video Solution

LEVEL 1

1. When the natural numbers 1,2,3,....., 500 are written, then the digit 3 is

used n times in this way. The value of n is :

A. 100

B. 200

C. 300

D. 280

Answer: B

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2. In how many ways can 1146600 be written as the product of two factors?

A. 100

B. 108

C. 216

D. 273

Answer: B

3. How many natural number upto 990 are divisible by 5 & 9 both but not

by 7?

A. 18

B. 19

C. 22

D. none of the above

Answer: B

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4. The number of solution of $|x| + |y| \le 0$, for $(x, y) \in R$, is :

A. 0

B. 1

C. 2

D. infinitely many

Answer: B

0	Watch	Video	Solution

5. The remainder when 2³⁹ is divided by 39 is :

A. 0

B. 2

C. 8

D. 1

Answer: C

6. The unit digit of the following expression
(1!)⁹⁹ + (2!)⁹⁸ + (3!)⁹⁷ + (4!)⁹⁶ + (99!)¹ is :
A. 1
B. 3
C. 7
D. 6

Answer: C

Watch Video Solution

7. The sum of all four digit numbers which are divisible by 7 is :

A. 7071071

B. 7⁷

C. 7107073

D. 10019996

Answer: A



8. When the numerator of a positive fraction is incresed by 2 and the denominator of the same fraction is multiplied by 2, the new fraction can be reduced to $\frac{1}{2}$ to its lowest term. The sum of the numerator and denominator of the original fraction can be :

A. 13

B.45

C. 16

D. any even integer greater than 3

Answer: D

9. In the given expression pq = p - q + 9, q is a fraction and p is any positive integer. The value of p, which is inadmissible is :

A. 5 B. 4 C. 8 D. 7

Answer: D



10. The digits of a three digit number are in G.P. when the digits of this number are reversed and this resultant number is subtracted from the original number the difference comes out to be 792. The actual number is:

B. 961

C. 421

D. 931

Answer: D

Watch Video Solution

11. How many even integers n; $13 \le n \le 313$ are of the form of 3k +4,

where k is any natural number?

A. 101

B. 51

C. 50

D. None of these

Answer: C

12. In the above question the number of values of n which are odd:

A. 10

B. 51

C. 32

D. none of a,b,c

Answer: B

View Text Solution

13. if a and b are two odd distinct prime numbers and if a > b then $a^2 - b^2$ can never be divided by :

A. a. 13

B. b. 11

C. c. 17

D. d. None of these

Answer: D



14. If $P = (101)^{100}$ and $Q = (100)^{101}$, then the correct relation is:

A. P > Q

 $\mathsf{B}.\, P < Q$

$$C.P = Q$$

D.
$$P = \frac{11}{10}Q$$

Answer: B

15. If $k^2 - 25$ is an odd integer then which one of the following values gives the even number?

A. a. k^{2k-1}

B. b. (3k - 3)(2k - 2)

C. c. (k + 5)(k - 5)

D. d. any two of these

Answer: D

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16. (a + 1)(b - 1) = 625, $(a \neq b) \in I^+$ then the value of (a + b) is

A. a.*a* + *b* ≥ 25

B. **b**. *a* + *b* ≥ 50

C. c. *a* + *b* = 24

D. d. *a* + *b* = 26

Answer: B



17. If
$$p + \frac{1}{p} = q$$
, then for $p > 0$
A. $q = 0$
B. $-2 < q < 2$
C. $q \ge 2$

D. none of a,b,c

Answer: C



18. If $a^b = b^a$, $(a \neq b) > 1$, then the value of $(a \div b)$ is :

B. 6

C. 7

D. does not exist

Answer: B

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19. If $m^n - n^m = (m + n), (m, n) \in$ prime numbers, then what can be said

about m and n:

A. a. m , n are only even integers

B. b. m, n are only odd integers

C. c. m is even and n is odd

D. d. None of these

Answer: C

20. There is unique 3 digit number which is cube of a natural number, if we shift the position of the digits of this number. The new number also becomes the cube of another number. The number is :

A. 343

B. 729

C. 125

D. does not exist

Answer: C

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21. The give expression $n^4 - n^2$ is divisible by for $n \in I^+$ and n > 2:

A. 4

B. 8

C. 12

D. all of these

Answer: D

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22. If a, b represents two distinct positive integers and thus $(aa)^b = a\mathbf{a}$ is

a valid relation. Then the value of
$$(a^b, b^a + b^a, a^b)$$
 is :

A. 4

B. 6

C. 13

D. None of these

Answer: B

23. At out training institute we have p - 1, p - 2, p - 3 and p - 4 processors

in the ratio of $\frac{1}{6}$, $\frac{1}{5}$, $\frac{1}{3}$ and $\frac{1}{2}$ respectively. Minimum number of processors in out institute is :

A. 16

B. 30

C. 32

D. 36

Answer: D

Watch Video Solution

24. If n is natural number (greater than one) then $(392)^n - (392)^{n-1}$ is not divisible by :

A. 56

B. 23

C. 13

D. 17

Answer: C

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25. Mr. Chaalu while travelling by Ferry Queen has travelled the distance one kilometre more, than the fare he paid per km. Initially he had total amount of Rs. 350 in his wallet. Now he is only left with the minimum sum of (if all the distance travelled by him is in integers) :

A. a. Rs. 26

B. b. Rs. 8

C. c. Rs. 19

D. d. Can't be determined

Answer: B



26. A person starts typing the numbers from 1 to 1999. He press the keys total 'n' number of times. The value of n is L

A. 6889

B. 1000

C. 2888

D. None of these

Answer: A

Watch Video Solution

27. The remainder when $(20)^{23}$ is divided by 17 is :

A. 11

B. 3

C. 6

D. Can't be determined

Answer: A

Watch Video Solution

28. Let p be prime number such that $3 , then <math>p^2 - 1$ is :

A. always divisible by 8

B. always divisible by 24

C. always divisible by 12

D. all of a,b,c

Answer: D

29. If p be a prime number, then $p^2 + 1$ can not have its unit digit is :

A. 3 B. 9

C. 7

D. all of these

Answer: D

Watch Video Solution

30. The number of numbers from 1 to 200 which are divisible by neither 3

nor 7 is :

A. 115

B. 106

C. 103

D. less than 100

Answer: A



31. p is a prime number and $(p^2 + 3)$ s also a prime number. The number

of numbers that p can assume is

A. 3

B. 2

C. 1

D. can't say

Answer: C



32. In a bangle shop, the shopkeeper displays the bangles in the form of a

square then he is left with 38 bangles with him. If he wanted to increase

the size of square by one unit each side of the square he found that 25 bangles fall short of in completing the square. The actual number of bangles which he had with him in the shop was :

A. 1690

B. 999

C. 538

D. Can't be determined

Answer: B

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33. If a and b are two integers which are multiples of 5 which of the following is not necessarily true :

A. a - b is divisible by 5

B. a + b is divisible by 10

C. $a^2 - b^2$ is divisible by 5

D. None of these

Answer: B



34. What are the values of the digits a and b respectively, in the number a5523879b, if it is divisible by both a and b is

A. (8,6)

B. (7,2)

C. (8,1)

D. not unique

Answer: D

35. A six digit number of the form abcabc is written where $a, b, c \in I^+$, then which statement is true about this number:

A. it is divisible by 91

B. It can be divided by 143

C. it is divisible by 6

D. Only a and b are correct

Answer: D

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36. Two numbers a and b are such that one is odd and the other is even.

Which statement is necessarily true?

A. a^{2b} is even

B. (a + b) is even

C. $a^b \times b^a$ is even

D. $a^2 - b^2$ is even

Answer: C



37. A gardner plants his garden with 5550 trees and arranged them so that there is one plant more per row as there are rows then numbers of trees in a row is :

A. 56

B.74

C. 76

D. 75

Answer: D

38. The value of 'a' when $3^a = 9^b$ and $4^{(a+b+2)b} = 16^{ab}$ is :

A. 2

B. 1

C. 4

D. None of these

Answer: C

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39. The number of two digit prime number which remain prime even on inverting the position of its digits is :

A. 4 B. 5 C. 9

D. 10

Answer: C

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40. Half way through the journey from Delhi to Lahore Atalji began to look out of the window of the Samjhauta Express and continued it unit the distance which was remained to cover was half of what he has covered. Now at this time how much distance he has to cover?



Answer: C
41. Some times ago the height of my son 90 cm at the end of 1996. When I have observed that his height is increasing equally every year. After seven years in the last month of 2003. I have found that his height was $\frac{1}{9}th$ more than that at the end of 2002. Can you find the height of my son at the end of 2008 ?

A. 360 cm

B. 450 cm

C. 250 cm

D. 270 cm

Answer: B



42. Chris windener had a servent who was determined to be paid \$ 250, a wrist watch and a ration for whole year? But after 9 months Widener

migrated to India and he has just paid him \$270 and the ration for the 9 months. What is the cost of wrist watch?

A. 20

B. 120

C. 110

D. data insufficient.

Answer: C

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43. The sum of squares of a two digit number is 10. If we add 18 to this number we get another number consisting of the same digits written in reverse order. The original number is :

A. 10

B.46

C. 13

D. none of (a),(b),(c)

Answer: C



44. A two digit number ab is added to another number ba, which is obtained by reversing the digits then we get a three digit number. Thus a + b equals to :

A. at least 18

B. 2ab

C. 2(a + b)

D. $(a + b) \ge 10$

Answer: D

45. At wharton School every student is awarded with the grades A,B or C only. 57.1428571428% students obtained 'A' grade while 26.4444....% students obtained 'B' grade. If there are less than 3500 students then the maximum number of students obtained the grade 'C' while no one is declared fail.

A. 517

B. 533

C. 428

D. can't be determined

Answer: A

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46. Which one of the following is wrong?

A. The sum of two even numbers, each raised to an odd power is even.

B. The sum of two odd numbers, each raised to an off power is even

C. The remainder when dividing an even number by an odd number is

even or zero.

D. The remainder when dividing an odd number by an even number is

always odd

Answer: C

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47. The sum of the expression 551 + 552 + 553 + + 560 is :

A. 4350

B. 5555

C. 555

D. 6060

Answer: B

48. Find x, if $x^2 + x = x^3 - x$:	
A. 1	
B. 2	
C. 3	
D. 4	

Answer: B



49. In the above problem the number of values of x is :

A. 1

B. 2

C. 3

Answer: C



50. How many 3's you have to write down while writing the numbers from

3301 to 3401?

A. 220

B. 218

C. 198

D. none of these

Answer: A

51.
$$(2^{19} + 1)$$
 is divisible by :

A. 3

B. 4

C. 6

D. 3 & 6 both

Answer: A

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52. Which of these is a prime number 3123, 219, 573, 467 :

A. 219

B. 467

C. 573

D. 3123

Answer: B



Watch Video Solution

54. What is the least number which must be multiplied to 5400 to get a

perfect square ?

A. 2		
В. З		
C. 6		
D. 10		

Answer: C

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55. for every p, q positive integers at x = 0 or x = 1, the valid relation can be:

A.
$$p^{x}p^{(1-x)} = qx + p(1 - x)$$

B.
$$p^{x}q^{1-x} = px + q(1 - x)$$

$$\mathsf{C}.\,p^{x}q^{(1-x)}=p^{(1-x)}qx$$

D. either (b) or (c)

Answer: B

56. How many times does the sum of 3780 and 2835 contains their difference ?

A. 4 B. 5 C. 6 D. 7

Answer: D

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57. The expression $(x + y)^{-1}$. $(x^{-1} + y^{-1})$ is equivalent to :

A. 1

B. (*xy*)⁻¹

C. *x*^{*y*}

D. $xy^{-1} + x^{-1}y$

Answer: B

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58. For any odd prime number p there exists a positive integer k where 1 < k < p, such that the remainder of $\frac{k^2}{p}$ is 1. Then the number of positive integers have

integers k is :

A. a. 0

B. **b**. **b**. 1

C. c. p - 1

D. d. can't be determined

Answer: B

59. At Lucknow Public School $\frac{1}{9}$ students were absent in an exam and only $\frac{19}{24}$ of those who appeared for the exam passed it. Now we know that 500 students failed in the exam. what is the Total number of students who registered for the exam :

A. 2000

B. 2400

C. 2700

D. 3000

Answer: C

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60. If , 0 < m < n < 1. Then the expression km < kn is true if :

A. *k* < 0

B. k > 0

C.k = 1 only

D. all of a,b,c

Answer: D

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61. If a = 0.18181818... and b = 0.303003003... then (a + b) is :

A. a rational no.

B. perfect number

C. an irrational no.

D. both (b) and (c)

Answer: C

62. Half life of a substance is defined as the time period in which a substance becomes just half of it. If it is known that the half life of a substance "DECAY" is 1122 years, then after 4488 years , 80 gm of "DECAY" becomes:

A. a.4 gm

B. b. 20 gm

C. c. 5 gm

D. d. None of these

Answer: C

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63. In the examination of CBSE, a candidate must get $\frac{2}{5}th$ marks to pass, out of total marks. Vinod appeared in the same exam got 210 marks and still failed by 40 marks. The maximum marks which which a candidate can get is :

A. 500

B. 625

C. 390

D. Can't be determined

Answer: B

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64. Sunny gets $3\frac{1}{2}$ times as many marks in 'QA' as in 'English'. If his total combined marks in both the papers is 90. His marks in 'QA' is :

A. 50

B. 60

C. 70

D. None of these

Answer: C

65. I know a two digit number, but when its digits swap their places and we get another two digit number But when these two digit numbers are added, it amounts to 99. Further if I just consider the difference between these numbers, it comes out to be 45. What is the number which I know?

A. 27

B. 38

C. 72

D. data insufficient.

Answer: D



66. Which of the following is /are correct?

$$(i)a^{x+y} = ax + ay \quad (ii)\left(a^x\right)^y = ya^x$$

$$(iii)a(x \cdot y) = ax \cdot ay \quad (iv)\frac{a^x}{a^y} = a^{x-y}$$

A. (i) only

B. (ii) & (iii) only

C. (iv) only

D. None of these

Answer: C

Watch Video Solution

67. What is the digit in the tens in the product of the first 35 even natural

numbers ?

A. 16, 32

B. 28, 42

C. 31, 23

D. 12, 63

Answer: D



68. The relation
$$\frac{p}{(p+1)} > 1$$
 is valid when :

A. $p \ge -1$

B.p > -1

C. p < -1

D. - 1 < *p* < 0

Answer: C



69. A number when divided by 14 leaves a remainder of 8, but when the same number is divided by 7, it will leave the remainder :

A. 3

B. 2

C. 1

D. Can't be determined

Answer: C

Watch Video Solution

70. The unit digit of $(316)^{3^{4n}} + 1$ is :

A. 4

B. 5

C. 1

D. 7

Answer: D

71. The sum of two numbers is 18. The greatest product of these two numbers can be :

A. 17

B. 81

C. 80

D. can't be determined

Answer: B

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72. Largest four digit number which when divided by 15 leaves a remainder of 12 and if the same number is divided by 8 it leaves the remainder 5. Such a greatest possible number is :

B. 9957

C. 9945

D. 9999

Answer: B

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73. In a mobileshop $\frac{7}{12}$ mobiles are imported and rest are manufactured in India. Further $\frac{1}{5}$ th Indian mobiles are coloured while $\frac{5}{7}$ th imported mobile are black and white. If there are total 150 coloured mobile in his shop, then total number of mobile phones in his shop is :

A. 500

B. 600

C. 800

D. data insufficient.

Answer: B

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74. In a call centre at New Delhi, it is observed that it gets a call at a interval of every 10 minutes from California, at every 12 minutes from Texas, at the interval of 20 minutes from Washington DC and after every 25 minutes it gets the call from London. If in the early morning at 5 : 00 a.m. It has recieved the calls simultanously from all the four destrinations, then at which time it will receive the calls at a time from all the places on the same day?

A. 10:00 a.m.

B. 3:00 a.m.

C. 5:00 p.m.

D. both (a) and (b)

Answer: D



75. The H.C.F. and L.C.M. of 2⁴, 8², 16², 20³ are:

A. 2³, 32000

B. 2⁴, 32000

C. 2⁴, 25600

D. 2³, 3200

Answer: B

Watch Video Solution

76. When we divide 15192327 by 99 the remainder will be :

A. 98

B. 84

C. 30

D. None of these

Answer: B



77. The number of lying between 1 and 200 which are divisible by either of

2,3 or 5 is:

A. 146

B. 145

C. 158

D. none the these

Answer: B

78. If xAy means x + y, xSy mean x - y, xMy means $x \times y$ and xDy means

 $x \div y$. Then the value of 4D2S3M6A12 is :

A. - 4

B. 18

C. $\frac{-47}{4}$

D. None of these

Answer: A

Watch Video Solution

79. The L.C.M. of two numbers is 1020 and their H.C.F. is 34 the possible pair of numbers is :

A. 255, 34

B. 102, 204

C. 204, 170

D. None of these

Answer: C



80. The sum of 100 terms of the series

 $1 + 3 + 5 + 7 + 9 + 11 + 13 + 15 + \dots$ is :

A. 100

B. 50

C. 200

D. None of these

Answer: D

81. The value of
$$\left(1 - \frac{1}{2}\right)\left(1 - \frac{1}{3}\right)\left(1 - \frac{1}{4}\right)\left(1 - \frac{1}{5}\right)\dots\left(1 - \frac{1}{n}\right)$$
 is :

A. 1

$$B. \left(1 - \frac{1}{n}\right)^n$$
$$C. \frac{1}{n}$$

D. Can't be determined

Answer: C

Watch Video Solution

82. The minimum and maximum possible value of $\frac{x}{y}$, where $2 \le x \le 8$ and $16 \le y \le 32$ respectively are :

A.
$$\frac{1}{8}$$
, $\frac{1}{4}$
B. $\frac{1}{16}$, $\frac{1}{2}$
C. $\frac{2}{16}$

D. not unique

Answer: B



83. A rectangular floor in my office has its area equal to $56m^2$. The minimum number of tiles required, if all the tiles are in square shape is:

A. 15

B. 9

C. 14

D. Can't be determined

Answer: C

84. A string of length 221 metre is cut into two parts such that one part is

 $\frac{9}{4}$ th as long as the rest of the string, then the difference between the

larger piece and the shorter piece is :

A. 58 m

B. 53 m

C. 85 m

D. None of these

Answer: C

Watch Video Solution

85. Total number of prime numbers between 1 and 200 is :

A. 34

B.46

C. 56

Answer: B



86. What is the remainder of
$$\frac{6^{36}}{215}$$
?

A. 0

B. 1

C. 2

D. None of these

Answer: B

Watch Video Solution

87. The remainder when $(12^{13} + 23^{13})$ is divided by 11 :

A. 0

B. 1

C. 2

D. None of these

Answer: C

Watch Video Solution

88. The four digit smallest positive number which when divided by 4,5,6 or

7, it leaves always the remainder as 3 :

A. 1000

B. 1257

C. 1263

D. 1683

Answer: C

89. Which one of the following is correct ?

 $(i)13^{31} > 31^{13}$ $(ii)10^{100} < 100^{10}$

 $(iii)2^{32} < 32^2.$

A. (i) and (ii)

B. (i) and (iii)

C. (ii) and (iii)

D. (i) only

Answer: D



90. If $n_1, n_2, n_3, \ldots, n_k$ are such that, out of these k elements $\frac{k}{2}$ elements are even and rest are odd numbers. Which is necessarily even?

A.
$$\left(n_{1} + 2n_{2} + 3n_{3} + 4n_{4} + \dots + k. n_{k}\right)$$

B. n_{1} . n_{2} . n_{3} $n_{\frac{k}{2}+1}$
C. $\left(n_{1} + n_{3} + n_{5} + n_{7} + \dots + n_{k-1}\right)$
D. $n_{2} + n_{4} + n_{6} + \dots + n_{k}$

Answer: B



91. The H.C.F. of two numbers is 43 and their sum is 430.Total number of distinct pairs of two such numbers is :

A. 5

B. 2

C. 6

D. date insufficient

Answer: B

92. 2⁷³ - 2⁷² - 2⁷¹ is same as :

A. 2⁷²

B. 2⁷¹

C. 2⁷⁰

D. none of these

Answer: B

Watch Video Solution

93. $N = 55^3 + 17^3 - 72^3$, then N is divisible by :

A. 3 & 17

B. 40 & 11

C. 11 & 15

D. all of these

Answer: D



94. abcde is a five digit number when multiplied by 13 it gives a number, purely formed by the digit 9. Then the value of a + b + c + d + e is :

A. divisible by 8

B. equal to 27

C. divisible by 11

D. all of these

Answer: B
95. The sum of the 3 consecutive even numbers is always divisible by :

A. 24

B.48

C. 10

D. none of these

Answer: D

Watch Video Solution

96. When a number is divided by 54, the remainder obtained is 39.

A. a. 4

B. b. 5

C. c. 3

D. d. 7

Answer: A

0	Watch	Video	Solution

97. The largest possible number with which when 76,132 and 160 are divided the remainders obtained are the same is

A. 120

B. 160

C. 100

D. none of these

Answer: A



98. If $x^2 + y^2 = 25$ and xy = 12, then the value of $x^{-1} + y^{-1}$ is :

A.
$$\frac{12}{5}$$

B. $\frac{7}{12}$
C. $\frac{-7}{12}$

D. both (b) and (c)

Answer: D



99. The remainder when $75^{75^{75}}$ is divided by 37 :

A. 0

B. 1

C. 5

D. 7

Answer: B

Watch Video Solution

100. Let p be a prime number strictly greater than 3. Then $p^2 + 17$ will leave remainder k, when divided by 12 . find value of k?

A. 1

B. 5

C. 6

D. none of these

Answer: C

Watch Video Solution

101. The unit digit of $(12345k)^{72}$ is 6. The value of k is :

A. 6

B. 8

C. 2

D. all of these

Answer: D



102. What is the least number which must be subtracted from 369 to make it a perfect cube ?

A. 8

B. 26

C. 2

D. 25

Answer: B

Watch Video Solution

103. The product of two consecutive even numbers is 624, then one of the

numbers is :

A. 13

B. 25

C. 26

D. 28

Answer: C

Watch Video Solution

104. What is the remainder when $1719 \times 1715 \times 1713$ is divided by 17 ?

A. 1

B. 16

C. 3

D. none of these

Answer: B



106. Kavita has to do a multiplication. Instead of taking 23 as a multiplicant she took 32 and got the result increased by 315. The original product was :

A. 135

B. 805

C. 775

D. data insufficient.

Answer: B

Watch Video Solution

107. A fraction in its lowest form is such that when it is squared and then its numerator is reduced by $\frac{1}{3}rd$ and denominator is reduced by $\frac{1}{5}th$, it results as twice of the original fraction the sum of numerator and denominator can be :

A. 7

B. 8

C. 9

D. 17

Answer: B

Watch Video Solution

108. The largest number which will divide the numbers 104, 221 and 377 leaving the same remainder in each case is :

A. 56

B. 13

C. 39

D. it does not exist

Answer: C



109. If F = a. (|b|). c. (|d|). e. (|f|). g(|h|). i. (|j|) and G = a. b. c. d. e. f. g. h. i. j Again, $a = (-1)^1$, $b = (2)^{-2}$, $c = (-3)^3$, $d = (4)^{-4}$,, $j = (10)^{-10}$ then the correct relation is :

A. *a* = *b*

B. $a = b^4$

C. $a^{3/2} = b^{2/3}$

D. None of these

Answer: B

Watch Video Solution

110. If 100! divisible by 3ⁿ then find the maximum value of n.

A. 4 B. 9 C. 16 D. 10

Answer: B

111. If a fraction is divided by its reciprocal and then multiplied by itself then the fraction becomes $\frac{512}{125}$. The difference between the actual fraction and its reciprocal fraction is :

- A. $\frac{29}{30}$ B. $\frac{39}{40}$
- C. data insufficient
- D. None of these

Answer: B



112. Mr. A starts a business with an investment of Rs. 28,000. Mr. B joins the business after 5 months, After 2 more months Mr. C joins. If the ratio of their profit after one year is 4:2:3, then find out the investments made

by Mr. B and Mr. C in rupees? Options are (a) Rs. 20,000, Rs. 30,000 (b) Rs. 50,000, Rs. 20,000 (c) Rs. 12,000, Rs. 25,200 (d) Rs. 24000, Rs. 50,400.

A. a. 33600rs.

B. b. 33000rs.

C. c. 23000rs.

D. d. none of the above

Answer: C

Watch Video Solution

113. If $(11)^a = (19)^b = (209)^c$ then the correct relation is :

A.
$$ab = (c)^{ab}$$

 $\mathsf{B.}\,a^b=c$

 $\mathsf{C.}\,ab = c(a+b)$

D. None of these

Answer: C





115. A number 1 < N < 100 is such that it is a perfect square and perfect

cube both, then the sum of digits of N is :

A. 1

B. 10

C. 20

D. Can't be determined

Answer: B

Watch Video Solution

116. The product of the digits of a three digit number which is a perfect square and perfect cube both is :

A. 126

B. 256

C. 18

D. None of these

Answer: A

117. A natural number N is such that $N = a^2 = b^4 = c^8$, where a, b, c are distinct positive integers, then the least possible value of N is :

A. 729

B. 1000

C. 256

D. None of these

Answer: C

Watch Video Solution

118. The possible value of |x| + |x - 1| = 2 is :

$$A. \left(\frac{3}{2}, -\frac{1}{2}\right)$$
$$B. \left\{\frac{3}{2}, \frac{1}{2}\right\}$$

$$\mathsf{C}.\left\{\frac{3}{2},\ -\frac{1}{2}\right\}$$

D. None of these

Answer: A

Watch Video Solution

119. If $(pqr)^2 = (ijkpqr)$, where $i, j, k, p, q, r \in W$, are pqr and ijkpqr are three digits and 6 digits numbers respectively. Then the value of $i \times j \times k \times p \times q \times r$ is :

A. 0

B. 720

C. can't say

D. None of these

Answer: A

Watch Video Solution

120. $3^{6n} + 4^{6n}$ is necessarily divisible by 25 when :

A. n is an even integer

B. n is an odd integer

C. only n is a prime

D. $n \ge 6, n \in I^+$

Answer: B

Watch Video Solution

121. The number of zeros at the end of 100!, is

A. (100)¹⁰⁰

 $\textbf{B.100}\times 10$

C. data insufficient

D. None of these

Answer: D

Watch Video Solution

122. the greatest power of 3, when 41! Is expressed in prime factors :

A. a. 13

B. b. 18

C. c. can't be determined

D. d. None of these

Answer: B

Watch Video Solution

123. A two digit number is such that it is the product of the two distinct perfect squares. The tens digit, unit digit and the sum of these two digits

are in A.P. Further if we reverse the digits mutually, it increases by 27. The oringinal number is

A. a. 72

B. b. 19

C. c. 36

D. d. none of these

Answer: C

Watch Video Solution

124. The value of the expression

 $7777 + 7777 \times 7777 \times (5 \div 77) \times (11 \div 35)$:

A. 1234321

B. 12344321

C. 7⁷⁷⁷⁷

D. None of these

Answer: D



125. The sum and difference of a number with its reciprocal are $\frac{113}{56} \text{ and } \frac{15}{56} \text{ respectively, the number is :}$ A. $\frac{11}{4}$ B. $\frac{13}{6}$ C. $\frac{14}{8}$ D. $\frac{7}{8}$

Answer: D

Watch Video Solution

126. If 4 is added to the numerator of a fraction, it becomes $\frac{1}{3}$ and if 3 is added to the denominator of the same fraction it becomes $\frac{1}{6}$ then the sum of the numerator and denominator is :

A. 32 B. 7 C. 4 D. 3

Answer: A

Watch Video Solution

127. In an opera house, there are 7777 chairs to be placed, but the organiser of the event arranged all the chairs in such a way that there were as many columns as there were rows. So he had to remove minimum 'n' chairs from the total 7777 charis. The minimum value of n is :

A .	171
А.	121

B.44

C. 33

D. 25

Answer: C

Watch Video Solution

128. If
$$p^r \cdot P^{-1} \cdot P^s = \left(\sqrt{p^3}\right)^2$$
 and $p^{3/2} \cdot p^r = p^s \cdot p^{-1/2}$ then the value of $(r+s)^{(r+s)}$ is :

A. a. 27

B. **b**. 64

C. c.4

D. d. None of these

Answer: D

129. If
$$5^{-k} = \frac{1}{l}$$
, then the value of 5^{3k} is equal to :

A.
$$\frac{1}{3l}$$

B. 31

C. *l*³

D. data insufficient.

Answer: C

Watch Video Solution

130. $5^{x-1} + 5^x + 5^{x+1} = 775$ then the value of x for every positive integer x, is :

A. 1

B. 3

C. 2

D. Can't be determined

Answer: B

Watch Video Solution

131. If a, b are two perfect square digits and ab is a two digit perfect square number , such that $(a \times b) + (a + b) = ab$ then the value of [ba - (b + a)] is :

A. a. 27

B. b. *b*²

C. c. 81

D. d. either of (b) or (c)

Answer: D

132. The greatest possible number which can always divide the sum of the

cubes of any three consecutive integer is:

A. 3 B. 4 C. 9

Answer: C

D. 11

Watch Video Solution

133. The least possible divisor of 25930800 by which we divide this number, we get the quotient as a perfect square :

A. 2

B. 3

C. 5

D. Can't be determined

Answer: B

Watch Video Solution

134. Arun and Prabhat have some books with them. Once Prabhat said to Arun that if Arun gives 3 books to Prabhat then Arun will have only $\frac{1}{2}$ of the books that Prabhat will have with him. Then Arun asked frankly that if Prabhat gives him only two books (to Arun), then Prabhat will have as many books as Arun will have. The total number of books that Arun and Prbhat have with them is :

A. 25

B. 56

C. 30

D. can't be determined

Answer: C Watch Video Solution 135. The number of co-primers of 200 lying between 1 to 100 is : A. 10 B.40 C. 50 D. None of these Answer: B



136. A soda water bottle is exactly filled with coke weighs 1600 gm but when it is $\frac{1}{3}$ rd filled it weights only 900 gm. The weight of the empty bottle is :

A. 650

B. 1100

C. 550

D. data insufficient.

Answer: C

Watch Video Solution

137. If ab, cd, ba and dc are two digit numbers then the maximum value of

 $(ab \times cd)$ - $(ba \times dc)$ is , where a,b,c,d are distinct non-zoro integers:

A. a. 7938

B. b. 7128

C. c. 6930

D. d. none of these

Answer: C

138. In how many ways 12600 can be expressed as a product of two factors which are relatively prime is :

A. a. 12

B. b. 4

C. c. 8

D. d. 72

Answer: C

Watch Video Solution

139. The solution set of the expression $\frac{1}{(1+p)^n} = 1$ is :

A. a.[- 1, 2]

B. b.(0, 1)

C. c.{ - 2, 0}

D. d.{ - 1, 1}

Answer: C

Watch Video Solution

140. The number of zeros at the end of

$$(2^{123} - 2^{122} - 2^{121}) \times (3^{234} - 3^{233} - 3^{232}):$$

A. 0

B. 1

C. 121

D. none of these

Answer: B

Watch Video Solution

1. In Mahabalipuram Temple there are some magical bells which tolls 18 times in a day, simulateneously. But every bell tolls at a different interval of time, but not in fraction of minutes. The maximum number of bells in the temple can be :

A. a.18

B. b.10

C. c.24

D. d.6

Answer: B

Watch Video Solution

2. Three numbers p, q, r are such that $p^q = q^r$, where p, q, r > 1 then the

correct relation between q and r is :

A. a.
$$\frac{q}{r} = 1$$

B. b. $q < r$
C. c. $q > r$

D. d.indeterminable

Answer: D

Watch Video Solution

3.
$$p^{q} - q^{r} = (p + q)^{r-q}$$
, where $1 < q < r < p < 10$ then the value of $p + q + r$
is :
A. 31
B. 21

C. 15

D. 12

Answer: C

4. If $a^2 + b^2 + c^2 + d^2 = 1$, then the maximum value of 16abcd is :

A. 1

B.2

C. $\frac{1}{16}$

D. data insufficient.

Answer: C

Watch Video Solution

5. The value of n in the expression $n^2 - 2(n!) + n = 0$ for every $n \in N$ is :

A. a.6

B. b.1

C. c.3

D. d.data insufficient.

Answer: D



6. In m, n, p are in A.P. and $m^n = p^m = n! + p$, m, $n, p \in N$, then the value of m.n.p is, where 2 < m, n :

A. 136

B. 72

C. 162

D. none of these

Answer: C

Watch Video Solution

7. The value of $(n!)^n$ if n + (n - 1) + (n - 2) = n(n - 1)(n - 2), where $n^3 > 9$, a

positive number:

A. 27

B. 216

C. 256

D. 331776

Answer: B

Watch Video Solution

8. If $(n)^3 - (n)^2 - n = n$, then the number of values of n that satisfy the given relation is :

A. 1

B. 2

C. 3

D. can't be determined

Answer: C



9. For what value of 'k', k-3, 2k+1 and 4k+3 are in A.P.?

Watch Video Solution

10. The given relation
$$n^{n-1} + n^{n-1} = (n^2 + 1)^2 - (n^2 + 1)$$
 is valid for every

 $n \in N$ if n equals to:

A. a.3

B. b.5

C. c.1

D. d.both (a) and (c)
Answer: D

Watch Video Solution

11. The smallest possible number that can be expressed as the sum of cube of two natural numbers in two different combinations.

A. a.1000

B. b.1728

C. c.1729

D. d.none of these

Answer: C

Watch Video Solution

12. $8^6 - 5^6$ is divisible by individually:

A. 91

B. 49

C. 129

D. all of these

Answer: D

Watch Video Solution

13. Total number of factors of a number is 24 and the sum of its 3 prime factors out of four, is 25. The product of all 4 prine factors of this number is 1365. Then such a greatest possible number can be :

A. a.17745

B. b.28561

C. c.4095

D. d.can't be determined

Answer: A



14. If p be any odd natural number, greater than 3 then which digit will never appear as the last digit in the product of $(p^2 - 1)(p^2 + 1)$ is :

A. 9 and 7

B. 5 and 3

C. 1 and 5

D. all of these

Answer: D



15. The relation R(m, n) can be defined for every positive integer m,n as

 $R(m, n) = m \times (m + 1) \times (m + 2) \times (m + 3) \times \dots (m + n)$ and the relation

R(1, n) is equal to n! or can be written as R (n).

the value of *R*(17). *R*(19, 62) is :

A. 99!

B.100!

C. 270

D. None of these

Answer: A

Watch Video Solution

16. The relation R(m, n) can be defined for every positive integer m,n as

 $R(m, n) = m \times (m + 1) \times (m + 2) \times (m + 3) \times \dots (m + n)$ and the relation

R(1, n) is equal to n! or can be written as R (n).

The H.C.F. of R 1(139, 2) and R(141):

A.
$$\frac{81!}{18}$$

B. (81!) × 18

C. 36!

D. 17 × (19 + 62)

Answer: A

Watch Video Solution

17. The relation R(m, n) can be defined for every positive integer m,n as $R(m, n) = m \times (m + 1) \times (m + 2) \times (m + 3) \times \dots (m + n)$ and the relation

R(1, n) is equal to n! or can be written as R (n).

The H.C.F. of R 1(139, 2) and *R*(141):

A. 1994

B. 996!

C. 997!

D. Can't be determined

Answer: C



18. The relation R(m, n) can be defined for every positive integer m,n as $R(m, n) = m \times (m + 1) \times (m + 2) \times (m + 3) \times \dots (m + n)$ and the relation R(1, n) is equal to n! or can be written as R (n).

The L.C.M. of R (2,995) and R (996,1) is :

A. 141

B. 2743860

C. 32, 16, 839

D. 19599

Answer: B

Watch Video Solution

19. A six digit number of the form abcabc is written where $a, b, c \in I^+$,

then which statement is true about this number:

A. It is always divisible by 7 and 11

B. it is divisible by 143

C. it is divisible by 1001

D. all of (a),(b) and (c) are correct

Answer: D

Watch Video Solution

20. How many natural numbers upto 1155 are divisible by either 5 or 7 but

not by 11?

A. a) 105

B. b) 330

C. c) 333

D. d) none of these

Answer: B

21. In a class of 45 students, the ratio of boys and girls is 2 : 3. How many more boys are to be added to make the ratio 1 : 1 ?

A. 9 B. 12 C. 15

D. 30

Answer: B

Watch Video Solution

22. When any two natural numbers N_1 and N_2 , such that $N_2 = N_1 + 2$ are multiplied with each other, then which digit appears least time as a unit digit if $N_2 \le 1000$?

A. 0

B. 9

C. 4

D. both (a) and (c)

Answer: B

Watch Video Solution

23. In the above problem , if all such unit digits will be added the maximum sum can be :

A. 4491

B. 4500

C. 3609

D. 5400

Answer: A

24. A diamond expert cuts a huge cubical diamond into 960 identical diamond pieces in minimum number of 'n' cuts. If he wants to maximize the number of identical diamond pieces making same number of n cuts to it. So the maximum number of such diamond pieces are :

A. a.1000

B. b. 1331

C. c. 1200

D. d. none of (a),(b),(c)

Answer: A



25. The sum of all the factors of 45000 which are exactly the multiples of

10 is :

A. 152295

B. 141960

C. 600

D. None of these

Answer: B

Watch Video Solution

26. The unit digit of the expression

 $(1!)^{1!} + (2!)^{2!} + (3!)^{3!} + \dots + (100!)^{100!}$:

A. 0

B. 1

C. 2

D. 7

Answer: D

27. When $(1!)^{1!} + (2!)^{2!} + (3!)^{3!} + \dots + (100!)^{100!}$ is divided by 5, the

remainder obtained is :

A. 2

B. 0

C. 4

D. none of these

Answer: A

Watch Video Solution

28. The digit at the tens place in the sum of the expression :

 $(1!) + (2!)^2 + (3!)^3 + (4!)^4 + (5!)^5 + (111!)^{111}$ is :

D	1
р.	1

C. 8

D. 9

Answer: D

Watch Video Solution

29. A number is divided strictly into two unequal parts such that the difference of the squares of the two parts equals 50 times the difference between the two parts. The number is :

A. 100

B. 250

C. 50

D. can't be determined

Answer: C



30. A positive number p is such that (p + 4) is divisible by 7, 'N' being a smallest possible number larger than first prime number, which can make $(p + N^2)$ divisible by 7. The value of N is :

A. 3

B. 9

C. 5

D. 7

Answer: C



31. Anjali and Bhagwat fired 45 shots each. Total 66 bullets hit the target and the remaining bullets missed it. How many times does the Anjali hit per one miss shown by the Anjali is twice that of Bhagwat? A. a. 30

B. b. 36

C. c. 40

D. d. 35

Answer: B

Watch Video Solution

32. The remainder when n is divided by 3 is 1 and the remainder when (n+1) is divided by 2 is 1. The remainder when (n-1) is divided by 6 is :

A. 2

B. 3

C. 5

D. none of (a),(b),(c)

Answer: B

33. The expression 2222⁷⁷⁷⁷ + 7777²²²² is divisible by :

A. 99

B. 101

C. 13

D. any two of these

Answer: B

Watch Video Solution

34. The only library of a business school has total 91 books that are shared among all the students in such a way that every two students share a book on Organizational Behaviour, every three students share a book on Financial Management and every four students share a book on Operations Research. The number of students in the school is :

A. 81

B. 84

C. 48

D. Can't be determined

Answer: B

Watch Video Solution

35. After two successive rises, the salary of Eckhrat Tolle, working in a BPO company became equal to $\frac{15}{8}$ times of his initial salary. By how much percent was the salary was half of the rise in second time in percent?

A. 82.5 %

B. 60 %

C. 50 %

D. Can't be determined

Answer: C



Answer: B



37. A student of 5^{th} standard started writing down the counting number as 1, 2, 3, 4, . . and then he added all those numbers and got the result

500 . But when I checkedthe resultI have found that he had missed a number. What is the missing number?

A. 25 B. 32 C. 30 D. 28

Answer: D

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38. A stairway of 20 ft height is such that each step account for half a foot upward and one foot forward. What distance will an ant travel if it strats from ground level to reach the top of the stairway ?

A. a.59

B. b.60

C. c.58

D. d.None of these

Answer: A



39. Paltry and Sundry, the two bird hunters went to woods. Paltry fires 5 shots when Sundry fires 7 shots. But Paltry kills 2 out of 5 whike Sundry kills 3 out of 7. When Sundry has missed 32 shots, then how many birds has Paltry killed?

A. 25

B. 24

C. 16

D. 12

Answer: C

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40. A cigarette pack is $\frac{5}{6}$ th full of its capacity, then 5 cigarettes were taken out and 2 another cigarettes were put inside the pack. Now it is $\frac{4}{5}$ full. How many cigarettes can this pack contain when it is full?

A. 90

B. 80

C. 72

D. can't be determined

Answer: A

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41. Around a square table chairs are arranged in a sequence starting from one corner, numbered as 1,2,3, ... etc. The chair number 2 is opposite the chair number 14. How many chairs are there in all?

B. 20

C. 14

D. Can't be determined

Answer: B

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42. The value of y for which the expression $p = \frac{1}{(|y-1|-3)}$ becomes

undefined:

A. {2, 8}

B. { - 2, 4}

C. { - 1, 3}

D. {1, 2}

Answer: B

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Answer: A

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44. If Ruperts has 4 more coins than Laxmi has 1 more coin than Bill and Bill has 1 more coin than Hawkins. Finally Hawkins has 4 more coins than Ajim. Then minimum number of coins that must be transfered if all of them wish to have an equal number of coins :

A. a.25

B. b.23

C. c.20

D. d.None of these

Answer: B

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45. If
$$f(x) = \frac{7}{x^7} + \frac{5}{x^5} + \frac{3}{x^3} + 1 + 3x^3 + 5x^5 + 7x^7$$
. Now, if the value of $f(2)$ is 1081.58 then the value of $f\left(\frac{1}{2}\right)$ is:

A. 540.79

B. $\frac{1}{1081.58}$

C. 1081.58

D. 367.42

Answer: C



46. The last digit of the expression

 $4 \times 9^2 \times 4^3 \times 9^4 \times 4^5 \times 9^6 \times \dots \times 4^{99} \times 9^{100}$ is:

A. 4

B. 6

C. 9

D. 1

Answer: B



47. The last digit of the expression

 $4 + 9^2 + 4^3 + 9^4 + 4^5 + 9^6 + \dots + 4^{99} + 9^{100}$ is:

A. 0

B. 3

C. 5

D. none of these

Answer: A

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48. p,q,r are the decimal numbers (e.g. 5.8) and [x] means the greatest integer less than or equal to x and A = [p + q + r] and B = [p] + [q] + [r], then the maximum value of A - B is:

A. a.0

B. b.2

C. c.2.99

D. d. none of these

Answer: B



49. If p,q,r be integers such that $p^2 = q^2$. r then :

A. a. p is an even number

B. b. q is an even number

C. c. r is an even number

D. d. r is a perfect square

Answer: D

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50. If m and n are positive integers and (m - n) is an even number, then

$$\left(m^2 - n^2\right)$$
 will be always divisible by

A. odd

B. even

C. (n - 1)

D. none of these

Answer: B

Watch Video Solution

51. If $1 + 2 + 3 + ... + k = N^2$ and N is less than 100 then the value of k can be, where $N \in N$ Natural Numbers:

A. a.8

B. b. 1 and 49

C. c.8 and 36

D. d. both (a) and (b)

Answer: D

52. if a and b are two odd distinct prime numbers and if a > b then $a^2 - b^2$ can never be divided by :

A. are always co-primes

B. have atleast one common factor othe than 1

C. if (a + b) or (a - b) is not a prime number, then their HCF is 2

D. none of the above

Answer: C

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53. The G.M. of two positive numbers is 35 and the A.M. of the same number is $43\frac{3}{4}$, then the greater of these numbes is:

B. 30

C. 70

D. 35

Answer: C

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54. When a number is divided by 1,2,3,4,5, ,(n-1), n individually it leaves

0,1,2,3,4,.... ,(n-2), (n-1) respective remainders, then this number can be :

(i) (*n*!)

(ii) (*n*! - 1)

(iii) [L.C.M. of 1,2,3, ..., n)-1]

A. both (i) and (ii)

B. both (ii) and (iii)

C. only (iii)

D. only (ii)

Answer: B

Watch Video Solution

55. Four consecutive even numbers are such that 3 times of the first number is equal to twice of the third of the number The sum of all the four numbers is :

A. 20

B.40

C. 44

D. can't be determined

Answer: C

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56. In the morning batch at Lamamia we have observed that when five-five students took seat on a bench, 4 students remained unseated. But when eleven students took seat per bench, 4 benches remained vaccant. The number of students in our morning batch were?

A. 55

B. 48

C. 26

D. none of these

Answer: D

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57. When
$$\left(\frac{m}{n}\right) = 25\left(\frac{n}{m}\right)$$
, Then the value of m : n is :

A. 1/25

C. 1/5

D. 2.5

Answer: B

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58. Which one of the following is greatest one?

A. a. 3³³²²

B. b. 33³²²

C. c. 333²²

D. d. 22³³³

Answer: A

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59. The product of any two integers is 25, then the minimum possible sum

is :

A. 5

B. 10

C. 26

D. none of these

Answer: D

Watch Video Solution

60. If $4 \le p \le 5$ and $-10 \le q \le -9$, then the least value is given by the expression :

A. p. q

B. *pq*⁶

 $C. p^6 q$

D. (pq)^5`

Answer: D



61. The remeainder obtained when 1! + 2! + 3! + ... + 77! is divided by 7 is :

A. 0

B. 5

C. 4

D. can't be detemined

Answer: B

D Watch Video Solution

62. The remainder left out when 8 2n -(62) 2n+1 is divided by 9 is

A. a. 1

B. b. *a* - 1

С. с. п

D. d. none of these

Answer: D

Watch Video Solution

63. A typist starts to type the serial numbers of candidates in a list, upto 500. Minimum how many times he has to press the keys of numerals only

?

A. 1389

B. less than 1000

C. 1392

D. can't say
Answer: C



64. If a,b,c,d,e,f are sequentially the terms of an A.P. belong to set $\{1, 2, 3, \ldots, 9\}$ where all the terms a,b,c,... are in increasing order, then the last digit of $a^b \times c^d \times e^f$ is :

A. 5

B. 2

C. 7

D. either of (a) and (b)

Answer: D

65. Total number of factors of a greatest possible number which when divides 1313 and 621, the respective remainders obtained are 17 and 9 :

A. 9

B. 10

C. 11

D. can't be determined

Answer: A

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66. The set of values of x for which |(x - 5)x| > 0 is :

A. a. all real numbers

B. b. *R* - {0}

C. c. *R* - {0, 5}

D. d. *R* - {0, 5}

Answer: C

Watch Video Solution

67. The sum of four prime numbers of two digits is 204. The sum of the first and last i.e, $(p_1 + p_4)$ is same as the sum of second number p_2 and third number p_3 (i.e., $p_2 + p_3$). Again $p_3 - p_2 = 2(p_2 - p_1) = 2(p_4 - p_3)$. The average number of all the four numbers is not a prime number, but a product of two prime numbers one of these prime numbers (out of four) is :

A. a. 23

B. b. 89

C. c. 71

D. d. can't be determined

Answer: C

68. Jai Bhan wanted to sell his mobilephone consists of the instrument and a SIM card, but Praveen who intended to but it, asked the price of SIM card only ? Jai Bhan told him that the price of the SIM card is Rs. 4000 less than the price of the instrument but if he wished to buy the complete set he had to pay Rs. 5000 only. The price of the instrument was

A. 5500

:

B. 2500

C. 4500

D. can't be determined

Answer: C

69. If |x + y| = |x - y| then the number of ordered pairs of (x, y) which satisfy the given condition is :

A. a. 1

B. b. 4

C. c. infinite

D. d. none of these

Answer: C

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70. If 292k + 7 = 23l, where $(k, l) \in 1$, then the value of l is:

A. 23

B. 31

C. does not exist

D. none of these

Answer: D



71. If ab + 4 = cd and ba + 40 = dc, where ab, cd, ba and dc are the two digit prime numbers. Further b and d are the prime number digits and a,c are neither prime nor composite. The value of $\frac{(ab + ba)}{(ca + dc)}$ is:

A. a. 1

C. c. 2

D. d. can't be determined

Answer: B

72. A man sells chocolate which are in the boxes. Only either full box or half a box of chocolate can be purchased from him. A customer comes and buys half the number of boxes which the seller had plus half a box more. A second customer comes and purchases half the remaining number of boxes plus half a box. After this the seller is left with no chocolate boxes. How many chocolate boxes the seller had initially?

A. 2

B. 3

C. 4

D. 3.5

Answer: B



73. If $n^2 = 123454321$, then the value of n is :

A. 1001

B. not a nutural number

C. 111111

D. none of these

Answer: D

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74. 1² - 2² + 3² - 4² + - 198² + 199² :

A. 19900

B. 12321

C. 19998

D. none of these

Answer: A

75. The quotient when L.C.M. is divided by the H.C.F. of a G.P. with first term 'a' and common ratio 'r' is:

A. r^{n-1} B. r^n C. $a^{-1}r^{n-2}$ D. $(r^n - 1)$

Answer: A

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76. Once I met two persons of the same parents namely Ashmit and Amish. Mean while Ashmit told me that he has twic the number of sisters as the number of brothers. Further Amisha told me that he has twice the number of sisters as the number of brothers. Furtger Amisha told me that she has twice the number of brothers are the number of sisters. Actually it was very confusing for me, so do you know that how many brothers and sisters are in their family?

A. a. 4

B. b. 5

C. c. 6

D. d. can't be determined

Answer: A

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77. If p < q, then p@q = p#q else p@q = q#p where $a#b = \frac{a}{b}$. Then the value of (4@5)@(6@5) is :

A. a. $\frac{24}{25}$ B. b. $\frac{2}{3}$ C. c. 3/4

D. d. none of these

Answer: A

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78. A six digit number is such that every alternate digit is a prime digit and the three leftmost digit forms a G.P. while last three digits (i.e. Hundreds, tens and unit) form an A.P. If it is expressed as pqrstu, where p + p + r = u, q + r = t, p + r = s, $\frac{r}{t} = \frac{2}{3}$ and $p \neq q \neq r \neq s \neq t \neq u$. Then the sum of all the digits must be :

A. 25

B. 16

C. 21

D. can't be determined

Answer: A



79. Total number of digits in the product of $(4)^{1111} \times (5)^{2222}$ is :

A. 3333

B. 2223

C. 2222

D. can't be determined

Answer: B

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80. If p = N + 5 when N is the product of any three consecutive postivie

integer. Then :

A. pis prime

B. p is odd

C. p is divisible by 6

D. either of (b), (c)

Answer: B

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81. If
$$\frac{p}{q}$$
 and $\frac{r}{s}$ are two rational numbers then the relation $\left|\frac{p}{q}\right| < \left|\frac{r}{s}\right|$ is :

A. A. always true

B. B. always false

C. C. never true

D. D. none of these

Answer: D

82. If $u^{v} + v^{w} + w^{x} = 0$ For every negative integer u, v, w, x the value of

 $u \times v \times w \times x$ is necessarily be :

A. A. 0

B. B. less than zero

C. C. even

D. D. odd

Answer: C

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83. The unit digit of
$$2^{3^4} \times 3^{4^5} \times 4^{5^6} \times 5^{6^7} \times 6^{7^8} \times 7^{8^9}$$
 is :

A. 0

B. 5

C. can't be determined

D. none of these

Answer: A



Answer: A



85. If the number 23^{32} - 9 is divided by 16, then the remainder is :

B. 0

C. 6

D. none of these

Answer: A

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86. If (x - 5)(y + 6)(z - 8) = 1331, then the minimum value x + y + z is :

A. 40

B. 33

C. 19

D. not unique

Answer: A

87. If x + y + z = 21, then the maximum value of (x - 6)(y + 7)(z - 4) is :

A. 343

B. 216

C. 125

D. not unique

Answer: B

Watch Video Solution

88. The remainder 'R' when $3^{37} + 4^{37}$ is divided by 7 is :

A. 0

B. 1

C. 3

D. none of these

Answer: A



D. D)both (A) and (B)

Answer: D



90. The factorial of a number n is exactly divisible by $(2^{11} \times 11^2)$ then the

least possible value of n is :

A. 22

B. 25

C. dose not exist

D. none of these

Answer: A

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91. The number of zeros at the end of the product of :

 $2^3 \times 3^4 \times 4^5 \times 5^6 + 3^5 \times 5^7 \times 7^9 \times 8^{10} + 4^5 \times 5^6 \times 6^7 \times 7^8 - 10^2 \times 15^3 \times 20^4$ is :

A. 5

B. 6

C. 28

D. none of these

Answer: B



92. A nine digit number abcdefght is such that a is divisible by 1, ab is divisible by 3 and abcd is divisible by 4 and so on where none of a, b, c, d, ... is same and every digit is a non-zero digit such a number is :

A. 123456789

B. 381654729

C. 126453789

D. 826435791

Answer: B



93. If Minimum (x,y,z) = Minimum of (xy, yz, zx)

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Maximum (x,y,z) = Maximum of (x^y, y^z, z^x)
```

Labh (x,y,z) = Average of (x, y, z)

Hani (x, y, z) = Modulus of (x - y - z) i.e., |x - y - z|

The value of Minimum (1, 2, 3) + Maximum (1, 2, 3, is :

A. 10

B. 8

C. 12

D. 4

Answer: A

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94. If Minimum (x,y,z) = Minimum of (xy, yz, zx)

Maximum (x,y,z) = Maximum of (x^y, y^z, z^x)

Labh (x,y,z) = Average of (x, y, z)

Hani $(x, y, z) = Mod\underline{u}sof(x - y - z)i. e., |x - y - z|$

Labh [Hani (1, 2, 3), Hani (2, 3, 4), Hani (3, 4, 5)] is equal to :

A. 4

B. 5

C. 6

D. can't be determined

Answer: B

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95. If Minimum (x,y,z) = Minimum of (xy, yz, zx)

Maximum (x,y,z) = Maximum of (x^y, y^z, z^x)

Labh (x,y,z) = Average of (x, y, z)

Hani $(x, y, z) = Mod\underline{u}sof(x - y - z)i. e., |x - y - z|$

Labh [Hani (1, 2, 3), Hani (2, 3, 4), Hani (3, 4, 5)] is equal to :

A. (a) 4

B.(b) 5

C. (c) 6

D. (d) can't be determined

Answer: D

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96. When $(55)_{10}$ represented in base 25 then the expression is

A. (25)₂₅

B. (35)₂₅

C. (55)₂₅

D. none of these

Answer: A

97. The perimeter of a triangle is 54m and the sides are in the ratio of

5:6:7. The area of the triangle is:

A. a. 54sq m

B. b. 54√6 sq. m

C. c. 52√6 sq. m

D. d. none of these

Answer: C

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98. A typist while typing the numbers from 600 to 799 mistakenly he typed 8 every time in place of 6. So the total number of times he has typed 8 is :

A. A. 300

B. B. 230

C. C. 180

D. D. none of these

Answer: C

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99. If p and q are two distinct inegers such that $p^2 - pq = 0$ then we can

deduce that

A. p = q

B. q is only negative integer

C. p = 0

D. either (a) or (c)

Answer: C

100. In a survey it was found that YTC sells the cigarettes of Rs. 15990 per day. If the cost of a pack is not less than Rs. 100 then what can be the price of each pack which it sells per day is :

A. 150

B. 420

C. 78

D. 205

Answer: D

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101. if n=3, then the value of 'l' which is incorrect

A. 5 < *n* < 12

B. $3n^2 \le 150$

 $C.4n + 5 \le 23$

D. $4n^2 + 3 > 200$

Answer: C



102. If A and B are divided by D, then the remainder obtained are 13 and 31 respectively where A, B, C are natural numbers. Further A + B is divided by the same divisor D the remainder is 4, then the divisor D is :

A. 14

B. 23

C. 40

D. 18

Answer: C

103. The unit of N^{2p} and $(N)^{(2p-1)}$ are 6 and 4 respectively. The greatest two digit number that follows the afore - said condition is :

A. 49

B. 84

C. 94

D. 98

Answer: C

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104. If $f(x) = x^3 + 3x^2 - 4x$ then f(x + 1) is :

A. $x^3 + 7x^2 - 5x$

B. $x^3 + 6x^2 + 5x$

 $C.(x+1)^3$

D. none of these

Answer: A



Answer: A



106. If a sequence is as given below :

1, 1, 2, 3, 5, 8, 13, 21, 34,

The unit digit of the 75 th term of this sequence will be:

A. 0

B. 5

C. 7

D. none of these

Answer: A

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107. If a sequence is a given below:

1,1,2,3,5,8,13,21,34,

In the above sequence the 55th term will be :

A. an even number

B. an odd number

C. either even or odd

D. can't be determined

Answer: B

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108. If a sequence is as given below :

1, 1, 2, 3, 5, 8, 13, 21, 34,

The unit digit of the sum of the 88th and 89th term of the same sequence

will be :

A. 5

B. 2

C. 0

D. none of these

Answer: C

109. The unit digit of the product of n consecutive numbers of the form 2k+1, where $k \in I^+$ and n must be at least 5.

A. zero

B. any odd number

C. 5

D. both (b) and (c)

Answer: C

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110. In the above question the sum of the n terms of the sequence is :

A. *n*² - 1

B. *n*(2*n* - 1)

C. [(n - 1)!]n

D. none of these

Answer: D



111. If $n_1, n_2, n_3, \dots, n_k \in I$ such that $-5 \le n_k \le 25$, then the least possible

product of any 3 numbers can be :

A.-60

B. 0

C.-3000

D. none of these

Answer: C



112. If p,q,r are such that q-p = r-q = 2 for every $p, q, r \in I^+$, then the least

possible value of (p+q)(q+r)(r+p) is :

A. 192

B. 720

C. 129

D. data insufficient

Answer: A

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113. The H.C.F. of 38024 and 16296 is :

A. 1234

B. 6431

C. 5432

D. none of these

Answer: C

114. For any positive real number R, [R] is the greatest interger less than

or equal to R, then the value of $\left[\frac{R}{2}\right] + \left[\frac{R+1}{2}\right]$ is :

A. [R]

B. [2R]

 $\mathsf{C}.\left[R+\frac{1}{3}\right]$

D. can't be determined

Answer: A

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115. For the natural numbers n_1 and n_2 if $2n_1 + 3n_2 = n_1 \times n_2$, then the least possible value of the $2n_1 + 3n_2$ is :

B. b. 12

C. c. 24

D. d. can't be determined

Answer: C

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116. A company offers total 150 pens to its customers. As per the scheme one pen will be offered on the purchase of a "Quantitative Aptitude" book. Out of 150 pens the cost of some pens is Rs. 3 and the cost of the rest pens is Rs 5. Maximum how many customers can avail a pen of Rs. 5 as an ofer from the company if the total cost of the pens cannot exceed Rs. 745.

A. 45

B. 120

C. can't be determined
D. none of these

Answer: D



117. A number of 109 digits is written as follows:

 $1\ 2\ 3\ 4\ 5\ 6\ 7\ 8\ 9\ 10\ 11\ 12\ 13\ 14\ 15\ 16\ 17\ \ldots.$

What is the least possible a positive number is required to add up in the

given number to make it divisible by 2 and 5 both ?

A. 0

B. 1

C. 3

D. can't be determined

Answer: B

118. The ratio in which a man must mix rice at rs. 10.20 per kg and rs. 14.40 per kg so as to make a mixture worth rs. 12.60 per kg.

A. 8

B. 3

C. 0

D. none of these

Answer: B



119. Each family in Gyanpur village has atmost two adults and the total number of boys in this village is less than the number of girls. Similarly the number of girls is less than the number of adults in the village. Raghubir Singh, the chief of this village is the only adult in his family. The minimum number of families in his village is:

A. 2

B. 3

C. 4

D. none of these

Answer: C

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120. Which of the following is correct it $A = 3^{3^3 \land 3}, B = 3^{33^3}, C = 3^{3^{33}} \text{ and } D = 3^{333}$? A. a. A > B = C > DB. b. C > A > B > DC. c. A > C > D > BD. d. C > B > D > A

Answer: B

121. When two positive integers A and B are divided by another number D, then the remainders obtained were 23 and 3 respectively. Further when (A + B) is divided by D, the remainder is 26, then value of D is :

A. 62

B. 69

C. 26

D. Any value greater than 26

Answer: D

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122. In how many ways can 729 be expressed as a difference of the square

of whole numbers?

A. 4

B. 6

C. 8

D. none of these

Answer: A

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123. In how many can 2310 be expressed as a product of 3 factors?

A. a. 41

B. b. 23

C. c. 56

D. d. 46

Answer: A

1. Sania wanted to cut a cubical cake into 120 identical pieces applying minimum number of 'n' cuts. Later on she realised that she had to cut this cake into maximum number of identical pieces i.e., 125 pieces. Now she applies the number of cuts is:

A. n

B. *n* + 5

C. *n* + 1

D. can't be determined

Answer: A

2. If $s_1 = (1)$, $s_2 = (2)(3)$ $s_3 = (4)$, (5), (6) $s_4 = (7)$, (8), (9), (10), $s_5 = (11)$, (12), (13), (14), (15)....etc. Where s_1, s_2, s_3, \dots , etc arc the first, second adn third terms of the given

Then the sum of the numbers in S_{50}

A. 7,0

given sequence.

B. 6,9

C. 9,6

D. none fo (a),(b) (c)

Answer: B

3. If $s_1 = (1)$, $s_2 = (2)(3)$ $s_3 = (4)$, (5), (6) $s_4 = (7)$, (8), (9), (10), $s_5 = (11)$, (12), (13), (14), (15)....etc. Where s_1, s_2, s_3, \dots , etc arc the first, second adn third terms of the given

given sequence.

Then the sum of the numbers in S_{50}

A. 62525

B. 57567

C. 62505

D. none of these

Answer: B



4. Direction : $s_{1} = 1$; $s_{2} = 2,3$; $s_{3} = 4, 5, 6$; $s_{4} = 7, 8, 9,10$; $s_{5} = 11, 12, 13, 14, 15$etc. where s_{1} , s_{2} , s_{3} , s_{4} , s_{5} , $s_{4} = 7, 8, 9,10$; $s_{5} = 11, 12, 13, 14, 15$etc. where s_{1} , s_{2} , s_{3} , s_{3} , s_{5} , s_{5} , s_{1} , s_{1} , s_{2} , s_{1} , s_{2} , s_{2} , s_{3} , s_{3} , s_{2} , s_{3} , s_{3} , s_{2} , s_{3}

A. A. 10

B. B. 9

C. C. 19

D. D. can't be determined

Answer: A

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5. A set 'S' contains first 50 elements of the form $2n, n \in N$. Further a subset 'P' of set 'S' is formed such that the product of any 3 elements of 'P' is not divisible by 16. Then maximum number of elements that 'p' can have is :

A. 12

B. 13

C. 25

D. none of (a),(b),(c)

Answer: C

View Text Solution

6. A cuboid of dimensions 51, 85 and 102 cm is first painted by red colour then it is cut into minimum possible identical cubes. Now the total surface area of all those faces of cubes which are not red is :

A. 119646*cm*²

B. 52020*cm*²

C. 18514*cm*²

D. 36414*cm*²

Answer: A



7. A number 'p' is such that it is divisible by 7 but not by 2. Another number 'q' is divisible by 6 but not by 5, then the following experssion which necessarily be an interger is:

A. $\frac{7p + 6q}{42}$ B. $\frac{5p + 6q}{71}$ C. $\frac{6p + 7q}{42}$

D. none of these

Answer: C

8. If $p^q - q^r = (p+q)^{r-q}$, $p > r > q \in$ Prime numbers less than 11 then p+q is equal to:

A. a. *r*(*r* - *q*)

B. b. *r*(*q* - *p*)

C. c. *r*(*p* + *q*)

D. d. *pq*

Answer: A

Watch Video Solution

9. To visit the Republic Day Parade on 26th January 2005, the people from every nook and corner including intellectuals, artists, farmers and mathematicians thronged in New Delhi. There were 100 seats in front row numbered 1, 2, 3, ..., 100. But the smart mathematician chose not to sit on those seats which are the multiples of any number greater than unity. How many mathematician could sit on these front row chairs? A. a.25

B. b.26

C. c.33

D. d.none of these

Answer: B

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10. In South-Asia the New Desh follows a septarian calender in which every month starts with Monday and a week has 7 days. There are only four months, the first 3 months consists of 98 days each and the last month has 70 days only.

Which day falls on the 88th day of the first month?

A. a.Sunday

B. Monday

C. c.Thursday

D. d.Saturday

Answer: C



11. In South-Asia the New Desh follows a septarian calender in which every month starts with Monday and a week has 7 days. There are only four months, the first 3 months consists of 98 days each and the last month has 70 days only.

Which date cannot fall on the Thursday of the first month?

A. a.46

B. b.18

C. c.81

D. d.64

Answer: D

12. In South-Asia the New Desh follows a septarian calender in which every month starts with Monday and a week has 7 days. There are only four months, the first 3 months consists of 98 days each and the last month has 70 days only.

Which day occurs maximum number of time in a year?

A. a.Monday

B. b.Saturday

C. c. none

D. d.none of these

Answer: D

Watch Video Solution

13. The last two digit in the expansion of $(1989)^{91}$ are :

A. 9,1	
B. 8,1	
C. 6,9	

D. 8,9

Answer: D



14. Earlier when I have created my e-mail-ID, the password was consisting of first 4 prime numbers. Recently when 1 tried to check my emails I got dumbfounded since I could not remember my password exactly. So when I have written 2735, my computer indicated me that no digit is correctly placed. Again I tried 5273, I got the same response. So once again I have writen only 3 as the left most digit for my password it again indicated me that it was wrong. Finally I have taken one more attempt and got the account open. The code of my passward is :

B. b.7352

C. c.7325

D. d.none of these

Answer: B

Watch Video Solution

15. The remainder when (888!)⁹⁹⁹⁹ is divided by 77 is :

A. 1

B. 2

C. 3

D. none of these

Answer: D

16. We publish a monthly magazine of 84 pages. Once I found that in a magazine 4 pages were missing. One out of them was page number 29 it is known that the page number of the last page of the magazine is 84, (including the coverpages).The numbers printed on the missing pages were:

A. 29,52, 53

B. 30,55,56

C. 28,52,53

D. can't be determined

Answer: B



17. There are six locks exactly with one key for each lock. All the keys are mixed to each other. The maximum number of attempts needed to get the correct combination is :

A. 21

B. 15

C. 6

D. can't be determined

Answer: B

Watch Video Solution

18. If n is an integer, how many values of n will give an integral value of $\frac{51n^2 + 17n + 6}{n}$? A. 4 B. 3 C. 2

D. none of these

Answer: A

19. Sania always beats Plexur in tennis, but loses to Venus. Lindse usually beats Plexur and sometimes Sania, but cannot win against Venus. The worst player can be:

A. Venus

B. plexur

C. Sania

D. can't say

Answer: B

Watch Video Solution

20. Simplify:- 25% of 48 + 50% of 120 = ?% of 1200

A. a. 4

B. b. 5

C. c. 6

D. d. 8

Answer: C

Watch Video Solution

21. The sum of the last 10 digits of the sum of the expression:

$$\begin{pmatrix} 1^1 \times 2^2 \times 3^3 \times 4^4 \times 5^5 \end{pmatrix} + \begin{pmatrix} 1^6 \times 2^7 \times 3^8 \times 4^9 \times 5^{10} \end{pmatrix} + \begin{pmatrix} 1^{11} \times 2^{12} \times 3^{13} \times 4^{14} \times 4^{19} \times 2^{19} \times 3^{19} \times 5^{100} \end{pmatrix}$$

+ $\begin{pmatrix} 1^{96} \times 2^{97} \times 3^{98} \times 4^{99} \times 5^{100} \end{pmatrix}$ is :

A. 16

B. 18

C. 20

D. none of these

Answer: B

22. What would be the C.I. on rs. 17500 at the rate of 12% p.a. after 2

years?

A. a. rs. 4442

B. b. rs. 4452

C. c. rs. 4462

D. d. rs. 4482

Answer: C

Watch Video Solution

23. What would be the C.I. obtained on an amount of rs. 12000 at the rate

of 9% p.a. for 3 years?

A. a. rs.3840

B. b. rs.3740.75

C. c. rs.3540

D. d. rs.3640

Answer: B

Watch Video Solution

24. Kavita a student of IIMA, told me that she did everyday 3 more passages of English than that of previous day and thus she completed all the passages in 10 days. Later on she told me that the number of passages she did on the last but one day were four times that she did on the second day :

Number of passages she has done on the last day

A. 30

B. 41

C. 32

D. none of these

Answer: D

Watch Video Solution

25. Kavita , a student of *i*4*IIM*, told me that she did everyday 3 more passages of English than that of previous day and thus she completed all the passages in 10 days. Later on she told me that the number of passages she did on the last but one day were four times that she did on the second day.

Total number of passages that she has completed in those 10 days :

A. 84

B. 180

C. 175

D. can't be determined

Answer: C

26. Recently, a small village, in Tamilnadu where only male shephered reside with four sheep each, was devastated by Tsunami waves. Therefore 8 persons and 47 sheep were found to be dead and the person who luckily survived, left the village with one sheep each since 21 sheep were too injured to move so have been left on their own luck, in the village. The number of sheep which were earlier in the village is :

A. a. 84

B. b. 120

C. c. can't be determined

D. d. none of these

Answer: D

27. The number of 3-digit numbers which consists of the digits in A.P., strictly in increasing order using the non-zero digits of the decimal system is :

A. 14

B. 16

C. 15

D. none of these

Answer: B

Watch Video Solution

28. The sum of :

$$(2^2 + 4^2 + 6^2 + \dots + 100^2) - (1^2 + 3^2 + 5^2 + \dots + 99^2)$$
 is :

A. 5555

B. 5050

C. 888

D. 222

Answer: B

Watch Video Solution

29. If an integer p is such that (8p+1) is prime, where p > 2, then (8p-1) is:

A. divisible by 7

B. divisible by 3

C. a prime number

D. none of these

Answer: B

30. The remainder when $3^0 + 3^1 + 3^2 + \dots + 3^{200}$ is divided by 13 is :

A. 0

B. 12

C. 3

D. none of these

Answer: A

Watch Video Solution

31. The remaider when $4^0 + 4^1 + 4^2 + 4^3 + \dots + 4^{10}$ is divided by 17 is:

A. a. 0

B. b. 16

C. c. 4

D. d. none of these

Answer: D



Answer: B



33. A monkey wanted to climb on the smooth vertical pole of height of 35 metre. In the first one minute he climbs up 5 meter in the next one

minute he slips down by 2 metre. Further he repeated the same process till he has reached on the top of the pole. How many times it has to go upward to reach the apex of the pole ?

A. 35

B. 12

C. 11

D. can't say

Answer: C

Watch Video Solution

34. A man can write 4 pages in 2 minutes. he have to write total 44 pages.

In the above question the minimum time required for this job is:

A. a.21 minute

B. b.22 minute

C. c.24 minute

D. d.none of these

Answer: A

Watch Video Solution

35. A monkey wanted to climb on the smooth vertical pole of height of 35 metre. In the first one minute he climbed up 5 metre in the next on minute he slipped down by 2 metre. Further he repeated the same process till he had reached on the top of the pole: If the height of the pole is 36 metre then the time taken by monkey to reach at the top of the pole is:

A. 22 min. 36 sec.

B. 22 min. 24 sec.

C. 23 min. 12 sec.

D. none of these

Answer: A

36. The remainder when 1³ + 2³ + 3³ + + 999³ + 1000³ is divided by
13 is :

A. 7
B. 11
C. 12
D. none of these

Answer: D

Watch Video Solution

37. If $22^3 + 23^3 + 24^3 + \dots + 87^3 + 88^3$ is divided by 110 then the remainder will be :

B. 1

C. 0

D. 44

Answer: A

Watch Video Solution

38. The sum of the n terms of a series in $nl + n^2$ then the 6th terms is, if

 $n \in N$.

A. a. 756

B. b. 611

C. d. data insufficient

D. d. none of these

Answer: B

39. A smallest possible number which is divisible by either 3,5 or 7 when represented by only two digits either 0 or 1, then the minimum number of digits required to represent it :

A. 6 B. 5

C. 7

D. can't be determined

Answer: C

Watch Video Solution

40. The sum of first n odd numbers (i.e., $1 + 3 + 5 + 7 + \dots + 2n - 1$) is divisible by 11111 then the value of n is :

A. a. 12345

B. b. 11111

C. c. can't be determined

D. d. none of these

Answer: B

Watch Video Solution

41. Anjuli bought some chocolates from Nestle's exclusive shop, she gave to Amit one less than half of what she had initially. Then she had given 3 chocolates to Bablu and then half of the chocolates which she had then given to charles. Thus finally she gave one chocolate to Deepak and the remaining one she ate herself. The number of chocolates she had purchased.

A. a. 9

B. b. 12

C. c. 10

D. d. 15

Answer: B

Watch Video Solution

42. By selling 20 articles for a rupee a man loses 10%. How many for a rupee did he buy ?

A. 16

B. 18

C. 14

D. none of these

Answer: A
43. If [x] read as the greatest ingeger less than or equal to x, $\{x\}$ is the least integer greater than interger less than or equal to x, $\{x\}$ is the least interger greater than or equal to x. Further, $f(x, y) = [x] + \{y\}$ and $g(x, y) = \{x\} - \{y\}$ and P(x, y) = f(x, y) + g(x, y)

and Q(x, y) = f(x, y) - g(x, y)

If x = 16 and y = 25 then the value of P(x, y) + Q(x, y) is:

A. 90

B. 200

C. can't be determined

D. none of these

Answer: D



44. If [.] denotes the greatest integer less than or equal to x and (.) denotes the least integer greater than or equal to x, then domain of the function $f(x) = \sin^{-1}\{x + [x] + (x)\}$ is

A. 80

B.-80

C. 72

D. none of these

Answer: D

Watch Video Solution

45. If [x] read as the greatest integer less than or equal to x, $\{x\}$ is the least integer greater than or equal to x, Further, $f(x, y) = [x] + \{y\}$ and $g(x, y) = \{x\} - \{y\}$ and P(x, y) = f(x, y) + g(x, y) and Q(x, y) = f(x, y) - g(x, y)

If $x, y \in I^+$ then P(x, y) + Q(x, y) is always:

A. A) an even number

B. B) an odd number

C. C) can't say

D. D) none of these

Answer: A

Watch Video Solution

46. Which of the following is/are true?

- (i) $43^3 1$ is divisible by 11
- (ii) $56^2 + 1$ is divisible by19
- (iii) 50^2 1 is divisible by 17
- (iv) (729)⁵ 729 is divisible by 5

A. (i) and (ii)

B. (iii) and (iv)

C. (ii),(iii) and (iv)

D. (ii) and (iii)

Answer: B

Watch Video Solution

47. Capt.Manoj Panday once decided to distribute 180 bullets among his 36 soldiers. But he gave n bullets to a soldier of nth row and there were same number of soldiers in each row. Thus he distributed all his 180 bullets among his soldiers. The number of soldiers in (n - 1)th row was:

A. 3

B. 8

C. 9

D. none of these

Answer: D



48. If (n-5) is divisible by 17 for every $n \in I^+$ then the greatest integer which will necessarily divide (n+12)(n+29) is :

A. 578

B. 289

C. such a number does not exist

D. none of these

Answer: D



49. A certain number 'n' can exactly divide $(3^{24} - 1)$, then this number can

also divide the number:

A.
$$(3^{16} + 1)$$

B. $(3^8 - 1)$
C. $(3^{70} - 1)$
D. $(3^{96} - 1)$

Answer: D

Watch Video Solution

50. If a number 'n' can exactly, divide $(5^{14} - 1)$ then 'n' can necessarily divide:

A. $(5^{28} - 1)$ B. $(5^{42} - 1)$ C. $(5^{21} + 1)$

D. both (a) and (b)

Answer: D

51. The nth term of a series of which all the terms are positive is defined as $T_n = n^2 + n$ then the sum of n terms of the series is :

A. a.
$$\frac{n(n + 1)(n + 2)}{6}$$

B. b. $\frac{n^3 + 4n}{n}$
C. c. $\frac{5n}{9} [n^2 + n]$
D. d. $\frac{n(n + 1)(n + 2)}{3}$

Answer: D

Watch Video Solution

52. The number of zeros at end of the product of

 $222^{111} \times 35^{53} + (7!)^{6!} \times (10!)^{5!} + 42^{42} \times 25^{25}$ is :

B. 53

C. 1055

D. none of these

Answer: A

Watch Video Solution

53. $\frac{12345}{12346} + \frac{12346}{12347} + \frac{12347}{12345}$ is equal to :

A. a. 2.67

B. b. 6.27

C. c. 3

D. d. 5

Answer: C

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54. The set $S_1 = \{1\}, S_2 = \{3, 5\}, S_3 = \{7, 9, 11\}$, etc. forms a sequence.

Sum of all the elements of S_{10} is:

A. 55

B. 300

C. 3375

D. none of these

Answer: D

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55. The set $S_1 = \{1\}, S_2 = \{3, 5\}, S_3 = \{7, 9, 11\}$, etc. forms a sequence.

The 11th element of the set S_{21} is :

A. 21

B. 121

C. 221

D. 441

Answer: D

Watch Video Solution

56. The set $S_1 = \{1\}, S_2 = \{3, 5\}, S_3 = \{7, 9, 11\}$, etc. forms a sequence.

The 11th element of the set S_{21} is :

A. 5202

B. 5151

C. 5152

D. 5102

Answer: A

Watch Video Solution

57. During my studies once I brought a book from library which was written in early days, when there were only 9 digits i.e., the digit 0 did not exist. There was a sum in that book as follows:

k = 13 + 17 + 31 + 2

Then the value of k if 9 + 1 = 11, 19 + 4 = 24 etc.

A. 70

B. 26

C. 29

D. none of these

Answer: D



58. The sum of 4 + 16 - 5 + 12 is according to book.

B. 26

C. 29

D. none of these

Answer: A

Watch Video Solution

59. The value of x for which the unit digits of $(2357)^{\log_{10}x}$ and $(5723)^x$ is

same for x > 1.

A. 10

B. 100

C. 1000

D. none of these

Answer: D

Watch Video Solution

60. The value of x for which the unit digits of the following two expression $(1 + 2 + 3 + 4 + 7)^{x^2 + x}$ and $(11 \times 11 \times 13)^x$ are same for x > 0.

A. 1

B. 2

C. 3

D. none of these

Answer: B

Watch Video Solution

61. When any odd number greater than unity multiplied by even times by

itself than dividing this product by 8, we get the remainder as :

A. a. 1

B. b. 7

C. c. not unique

D. d. none of these

Answer: A

Watch Video Solution

62. Stephen's birthday, this year falls on 2nd April, Wednesday. But coincidently his marriage anniversary is 2 days before the 23rd of the same month. On which day he will celebrate his marriage anniversary?

A. Monday

B. Wednesday

C. Friday

D. can't be determined

Answer: A

Watch Video Solution

63. In the above problem if there are only 6 days in a week i.e., there is no Sunday and the week starts with Monday and ends with Saturday then his marriage anniversary will fall on :

A. Wednesday

B. Thursday

C. Friday

D. data insufficient

Answer: B

Watch Video Solution

64. An N.G.O (non- government organisation) STRANGE working for the relief of Tsunami Victims in Srilanka consisting of 7 members S,T,R,A,N,G,E of the same family.

The eldest one 'S' spoke to me "I have deployed equal number of brothers

and sisters for medical relief and psychological counselling under the supervision of myself'. Later on the youngest member E spoke to me as "we have been working for rehabilitation and food supply as twice the number of sisters as the number of brothers have been deployed there, but I did not actually do any thing due to a severe injury in my leg". Then we can conclude that:

A. youngest person is a lady

B. eldest person's wife is youngest

C. the brother of S is youngest

D. nothing can be said

Answer: C



65. When the sum of n digits of an n digit number is subtracted from the number itself, where the number must be atleast two digit number, then the correct statement is :

A. the difference is a prime number

B. the resultant value is a perfect square

C. the resultant value is an odd number

D. the resultant value is a multiple of 9

Answer: D

Watch Video Solution

66. How many integer values of x and y satisfy the expression 4x + 7y = 3

where |x|<1000 and |y| < 1000?.

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67. The $S = \{(1, 3, 5, 7, 9, \dots, 99)(102, 104, 106, \dots, 200)\}$ i.e., in the first part there are odd integers less than 100 and in the second part there are even integers greater than 100, but upto 200.

The highest power of 3 in the product of the element of the set is :

A. 52

B. 51

C. 97

D. can't be determined

Answer: A

Watch Video Solution

68. The $S = \{(1, 3, 5, 7, 9, \dots, 99)(102, 104, 106, \dots, 200)\}$ i.e., in the first part there are odd integers less than 100 and in the second part there are even integers greater than 100, but upto 200.

The highest power of 5 that can exactly divide the product is :

A. 25

B. 24

C. 30

D. 26

Answer: B



Watch Video Solution

70. 1,2,3,4,10,11,12,13,14,20,21,22,23,24,... are the consecutive numbes written

in base 5. The twenty fifth number in the above sequence would be :

A. 52

B. 100

C. 25

D. none of these

Answer: B

Watch Video Solution

71. Watch India Corporation made a wrist watch in which the minute hand makes one complete round of dial in 12 minute and accordingly the hour hand too. When I have set this watch at 12:00 noon on Ist February this year. Which time will be shown by this watch at 3 O'clock on the same day.

A. 2:30 P.M.

B. 6: 15 A.M.

C. 3 O' clock

D. can't be determined

Answer: C



72. The sum of first n numbers of the form (5k + 1), where $k \in I^+$ is :

- A. $\frac{n}{2} [5n^2 3]$ B. n(20 - 3n)C. $\frac{n}{2}(5n + 7)$
- D. none of these

Answer: C

Watch Video Solution

73. A series is given as : 1, 4, 9, 16, 25, 36,

Then the value of T_{n+1} - T_n is, where T_n is the nth term of the series is:

A. *n*² - 1

B. 2*n* + 1

 $C. n^2 + 1$

D. none of these

Answer: B

Watch Video Solution

74. The area of paper can be divided into 144 squares, but if the dimensions of each square, were reduced by 2 cm each, then the number of squares so formed are 400. The area of the paper initially was :

A. 544*cm*²

B. 1444*cm*²

C. 3600*cm*²

D. none of these

Answer: C



- C. can't be determined
- D. none of these

Answer: D

Watch Video Solution

76. If A = 555 !*AndB* = $(278)^{555}$ then which one of the following relation is

appropriate?

A.A > B

B.A = B

C.A < B

D. can't say

Answer: C

Watch Video Solution

77. For any natural number n the sets S_1, S_2, \ldots are defined as below:

 $S_1 = \{1\}, S_2 = \{2, 3\}, S_3 = \{4, 5, 6\}$

 $S_4 = \{7, 8, 9, 10\}, S_5 = \{11, 12, 13, 14, 15\}$: etc.

The last element in the S_{24} is :

A. 599

B. 600

C. 300

D. 625

Answer: C



78. For any natural number n the sets S_1, S_2, \ldots are defined as below:

$$S_1 = \{1\}, S_2 = \{2, 3\}, S_3 = \{4, 5, 6\}$$

 $S_4 = \{7, 8, 9, 10\}, S_5 = \{11, 12, 13, 14, 15\}$: etc.

The middlemost element of the set S_{15} is:

A. 196

B. 169

C. 131

D. none of these

Answer: D

Watch Video Solution

79. For any natural number n the sets S_1, S_2, \ldots are defined as below:

$$S_1 = \{1\}, S_2 = \{2, 3\}, S_3 = \{4, 5, 6\}$$

 $S_4 = \{7, 8, 9, 10\}, S_5 = \{11, 12, 13, 14, 15\}$: etc.

The sum of the elements of set S_{25} is :

A. 7825

B. 3125

C. 3250

D. none of these

Answer: A

Watch Video Solution

80. N, the set of natural numbers, is partitioned into subsets S1 ={1},S2 = $\{2,3\},S3 = \{4,5,6\},S4 = \{7,8,9,10\}$. The last term of these groups is 1,1+2,1+2+3,1+2+3+4, so on. Find the sum of the elements in the subset S50.

A. a. S₁₂

B. b. S₁₃

C. c. S_{12} and S_{13}

D. d. S₉, S₁₂, S₁₃

Answer: D

Watch Video Solution

81. For any natural number n the sets S_1, S_2, \ldots are defined as below:

$$S_1 = \{1\}, S_2 = \{2, 3\}, S_3 = \{4, 5, 6\}$$

 $S_4 = \{7, 8, 9, 10\}, S_5 = \{11, 12, 13, 14, 15\}$: etc.

On which set the sum of all the elements of the set is even :

A. a. S₃₉ B. b. S₅₀ C. c. S₇₂

D. d. S₉₄

Answer: C



82. The sequence of sets

$$S_1, S_2, S_3, S_4, \dots$$
 is defined as
 $S_1 = \{1\}, S_2 = \{3, 5\}, S_3 = \{7, 9, 11\}, S_4 = \{13, 15, 17, 19\}\dots$ etc.
The first element of the nth set S_n is:
A. n
B. $n^2 - 1$
C. $2n + 1$
D. $n^2 - n + 1$

Answer: D

Watch Video Solution

83. The sequence of sets $S_1, S_2, S_3, S_4, \dots$ is defined as $S_1 = \{1\}, S_2 = \{3, 5\}, S_3 = \{7, 9, 11\}, S_4 = \{13, 15, 17, 19\}$etc. The last element of the set S_{100} is:

A. 10099

B. 9899

C. 9900

D. none of these

Answer: A



84. The sequence of sets $S_1, S_2, S_3, S_4, \dots$ is defined as $S_1 = \{1\}, S_2 = \{3, 5\}, S_3 = \{7, 9, 11\}, S_4 = \{13, 15, 17, 19\}$etc.

The middlemost element of an odd numbered set S_{125} is:

B. 15625

C. 3125

D. none of these

Answer: B

Watch Video Solution

85. The sequence of sets $S_1, S_2, S_3, S_4, \dots$ is defined as $S_1 = \{1\}, S_2 = \{3, 5\}, S_3 = \{7, 9, 11\}, S_4 = \{13, 15, 17, 19\}$etc.

The sum of all the elements of S_{101} :

A. 1531441

B. 1189811

C. 1030301

D. none of these

Answer: C



86. The sum of the series :

$$S = \frac{1}{1.2} + \frac{1}{2.3} + \frac{1}{3.4} + \frac{1}{4.5} + \dots + \frac{1}{99.100}$$
 is:
A. $a \Big) \frac{98}{99}$
B. $b \Big) \frac{99}{100}$

C. *c*)*S* > 1

D. d)none of these

Answer: B

Watch Video Solution

87. A number P when divided by D it leaves the remainder 18 and if another number Q is divided by the same divisor D it leaves the remainder 11. Further if we divide P + Q by D then we obtain the remainder 4. then the common divisor D is:

A. 22

B. 15

C. 25

D. can't be determined

Answer: C

Watch Video Solution

88. If the product of $1 \times 2 \times 3 \times 4 \times ...n$ contains 68 zeros in the end of the number. Then the maximum possible number of values of n is:

A. 1

B. 3

C. 5

D. 6

Answer: C

89. The remainder when $6^{6^6 \wedge 6^6 \wedge (\dots \infty \text{ times})}$ is divided by 10

A. 3 B. 6

C. 0

D. can't be determined

Answer: B

Watch Video Solution

90. $53^3 - 46^3 - 7^3$ is divided by:

A. a)6 and 9

B. 2 and 21

C. 21 and 23

D. both (b) and (c)

Answer: D



91. A gear 12 cm in diameter is turning a gear 18 cm in diameter. When the smaller gear has 42 revolutions, how many has the larger one made ?

A. 28

B. 20

C. 15

D. can't be determined

Answer: B

Watch Video Solution

92. In the above question how many values of n are possible ?

A. 0 B. 2 C. 4 D. 7

Answer: B

View Text Solution

93. Pandavas won a hen in the war of the Mahabharat. They brought it on the Ist January , 2002. This hen gave birth to the 7 new hens on the very first day. After it every new hen irrespective of its age everyday gave birth (only once in a lifetime) to 7 new hens. This process continued throughout the year, but no any hen had been died so far. On the 365th day all the Pandav shared equally all the hens among all the five brothers. The remaining (if these can not be shared equally) hens were donated to Krishna. The number of hens which the Krishna had received is :

A. 3

B. 2

C. can't be determined

D. none of these

Answer: A

Watch Video Solution

94. Total number of natural numbers being the perfect square whose root is equal to the sum of the digits of the perfect square is :

A. a. 0

B. b. 1

C. c. 2
D. d. 12

Answer: C

Watch Video Solution

95. At our training Institute the number of boys is same as that of the girls, Last week, except 2/3rd of the girls all the students, went to picnic,where they bought some samosas but later on they found exactly one dozen samosas were not fresh so those 12 samosas had been throuwn away. After it the samosas were divided equally between boys and girls. Further when boys dealtout the samosas equally among themselves 39 samosas left undistributed, but when the girls dealtout the same number of samosas equally among themselves 12 samosas were still left undistributed. The number of students at our training institute is:

A. 60

B. 156

C. 162

D. can't be determined

Answer: C

Watch Video Solution

96. Darwin Miya has 6 kinds of fruits in large amount and has suffcient number of indentical bixes to store the fruits. He can put at least 10 and atmost 15 fruits in any box and he put only eone kinds of fruits in a box. Further not more than 5 boxes can contain same number of fruits. Maximum number of fruits that he put in the boxes is :

A. 325

B. 375

C. 75

D. can't be determined

Answer: B

97. A fruit basket contains 4 oranges, 5 apples and 6 mangoes. The number of ways a person make selection of fruits from among the fruits in the basket is?

Watch Video Solution

98. If $n \in [1, 3, 5, 7, ...$ etc., then the value of $19^n - 23^n - 43^n + 47^n$ is necessarily divisible by :

A. 264

B. 246

C. 76

D. 129

Answer: A

99. The sum of the following series:

$$1.1^{2}\left(1-\frac{0}{1}\right)+2.2^{2}\left(1-\frac{1}{2}\right)+3.3^{2}\left(1-\frac{2}{3}\right)+4.4^{2}\left(1-\frac{3}{4}\right)+\ldots \text{ upto } n$$

terms is :

A.
$$n. n^2 \left(1 - \frac{1}{n}\right)$$

B. $\frac{n(n+1)(2n+1)}{6}$
C. $\frac{n(n+1)^2}{4}$

D. none of these

Answer: B



100. The distace between the houses of Sarvesh and Ravi is 900 km and the houses of former is at 100 th milestone where as the house of Ravi's is at 1000th milestone. There are total 901 milestones at a regular interval of 1 km each. When you go to Ravi's house from the house of Sarvesh which are on the same highway, you will find that if the last digit (i.e., unit digit) of the 3 digit number on every milestone is same as the first (i.e., hundreds digit) of the number on the next mile stone is same, then these milestones must be red colour and rest will be of black.Total number of red colour milestone is :

A. 179

B. 90

C. can't be determined

D. none of these

Answer: A

Watch Video Solution

101. The highest power of 17 which can divide exactly the following expression:

$$(18^2 - 1)(18^4 - 1)(18^8 - 1)(18^{10} - 1) \times \dots (18^{16} - 1)(18^{16} - 1)(18^{18} - 1)$$

is:

A. 1

B. 17

C. 9

D. can't be determined

Answer: C

Watch Video Solution

102. "Help India Foundation" and "People for People Organisation" decided to distribute the blankets among 22 men and 28 women who are Tsunami victims. When HIF and PPO distributed their respective blankets evenly among 28 women they were left with 24 and 16 blankets respectively. If they distributed their blankets evenly among 22 men they were left with 12 blankets each. So finally they decided to combine all their blankets and then distributed among 22 men and 28 women altogether then no any blanket remained undistributed . Minimum total blankets distributed by them were:

A. 960

B. 700

C. 1300

D. none of these

Answer: C

Watch Video Solution

103. "Help India Foundation" and "People for People Organization" decided to distribute the blankets among 22 men and 28 women who are Tsunami victims. When HIF and PPO distributed their respective blankets evenly among 28 women they were left with 24 and 16 blankets respectively. If they distributed their blankets evenly among 22 men they were left with 12 blankets each. So finally they decided to combine all their blankets and then distributed among 22 men and 28 women altogether then no any blanket remained undistributed . In the above problem the ratio of blankets between HIF and PPO is :

A. $\frac{43}{157}$ B. $\frac{147}{179}$ C. $\frac{59}{101}$

D. can't be determined

Answer: D

Watch Video Solution

104. The number of three-digit numbers having only two consecutive digits identical is

A. 171

B. 170

C. 90

D. 180

Answer: A



105. The expression, for
$$p \neq 1, (1+p^{256}) \times (1+p^{128}) \times (1+p^{64}) \times (1+p^{32}) \times (1+p^{16}) \times (1+p^8) \times (1+$$

is equivalent to :

A.
$$\frac{1 + p^{256}}{1 + p^{128}}$$

B.
$$\frac{1 - p^{512}}{1 - p}$$

C.
$$\frac{1 - p^{256}}{1 - p}$$

D. p^{255}

Answer: B

Natch Video Solution

106. For the given fixed perimeter of 50 cm, the total number of rectangles which must have its sides in integers (cm) is:

A. 50

B. 25

C. 12

D. infinite

Answer: C

Watch Video Solution

107. The total number of factors of a number is 24 and the product of the prime factors of the same number is 30. The square root of the ratio of such a smallest and the greatest possible numbers is:

A. 5/6

C.9/25

D. 4/25

Answer: D

Watch Video Solution

108. Two numbers are in the ratio 4 : 5. If each number is increased by 8,

the ratio becomes 8 : 9. The numbers are

A. 16, 20

B. 8, 10

C. 12, 15

D. data insufficient

Answer: A

Watch Video Solution

109. Mr. Oberaiappered in CAT for four consecutive years, but coincidently each time his net score was 75. He told me that there was $\frac{1}{3}$ rd negative marking for every wrong answer and 1 mark was alloted for every correct answer. He has attempted all the questions every year, but certainly some answer have been wrong due to stress and conceptual problems. Which is not the total number of questions asked for CAT in any year, in that period?

A. 231

B. 163

C. 150

D. 123

Answer: C

Watch Video Solution

110. A thief somehow managed to steal some golden coins from a bank's cash but while coming out of it at the first door he was caught by the watch man and he successfully dealt him by paying 1 coin plus half of the rest coins. Further he had to pay 2 coins, hten half of the rest to the second watchman. Once again at the rest to the second watchman. Once again at the rest to the second watchman. Once again at the rest to the second watchman and the first does again at the rest to the second watchman. Once again at the rest to the second watchman. Once again at the rest to the second watchman. Once again at the rest is a coins and then half of the rest. After it he was left with only coin. How many coins had he stolen?

A. 32

B. 36

C. 25

D. none of these

Answer: C

Watch Video Solution

111. The number $\log_2 7$ is :

A. an integer

B. a rational number

C. an irrational number

D. a prime number

Answer: C

Watch Video Solution

112. The product of n positive numbers is unity. Then their sum is:

A. a positive integer

B. divisible by n

C. equal to
$$\left(n + \frac{1}{n}\right)$$

D. never less than n

Answer: D

113. Let n > 1, be a positive integer. Then the largest integer m, such that

$$(n^m + 1)$$
 divides $(1 + n + n^2 + n^3 + \dots + n^{127})$ is:

A. a. 127

B. b. 63

C. c. 64

D. d. 32

Answer: C

Watch Video Solution

114. Number of divisors of the form 4n + 2, $n \ge 0$ which can divide 240 is :

A. 4

B. 8

C. 10

D. 3

Answer: A

Watch Video Solution

115. If the integers m and n are chosen at random between 1 and 100, then atmost distinct numbers of the form $7^m + 7^n$ is divisible by 5 equals to :

A. 1250

B. 10000

C. 2500

D. none of these

Answer: A

Watch Video Solution

116. If a, b, c, d are positive real umbers such that a = b + c + d = 2, then M = (a + b)(c + d) satisfies the relation $0 \le M \le 1$ $1 \le M \le 2 2 \le M \le 3 3 \le M \le 4$ A. $0 \le M \le 1$ B. $1 \le M \le 2$

 $\mathsf{C.2} \leq M \leq 3$

 $\mathsf{D.3} \le M \le 4$

Answer: A

Watch Video Solution

TEST OF YOU - LEARNING - 1

1. A monkey wants to climb up a pole of 50 metre height. He first climbs up 1 metre but he falls back by the same height. Again he climbs up 2 metre but he falls back by 1 metre. Once again he climbs up 3 metre but he falls back by 1 metre. Again he climbs up 4 metre but he falls back be 1 metre. In this way he reaches at the top of the pole. If it is known that the monkey needs 10 seconds for 1 metre in upward direction , then the total time required by monkey to reach at the top of the pole. For your kind information it must be clear to you that when he will reach on the top, he will not be slip back. The total time required by this monkey to reach on the top of the poll is:

A. 9 minutes 10 seconds

B. 10 minutes

C. 8 minutes 20 seconds

D. none of these

Answer: A

> Watch Video Solution

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2. Which one of the following is correct ?

(i)(123)^{369} > (369)^{123} (II)(246)^{642} < (642)^{246}

(iii)(50)^{50!} = (50!)^{50} (iv)3^{4^5} > 5^{4^3}

A. (i) and (ii)
```

B. (ii) and (iii)

C. (i) only

D. (i) and (iv)

Answer: D

Watch Video Solution

3. The tens digit of the 2^{248} is :

A. 1

B. 7

C. 5

D. none of these

Answer: C

Watch Video Solution

4. For a community marriage 300 boys and 300 girls gathered for their marriage. But out of 600 people 200 were from America and 200 from France and rest 200 were from India itself. The rule was that no any person can marry with a person of different ethnicity or nationality. Minimum how many married couples will be formed, after marriage?

A. 100

B. 150

C. 200

D. none of these

Answer: A

Watch Video Solution



Answer: C

Watch Video Solution

6. If P = 3[x] + 5 and Q = 4[x + 3] + 6 and P: Q = 1:2, where [x] is the

greatest integer less than or equal to x then the value of $\left[P + \frac{Q}{2}\right]$ is :

B. 51

C. 40

D. data insufficient

Answer: A

Watch Video Solution

7. The maximum possible value of a+b+c+d will be where (a+b)=c (b+c)=d,

(c+d)=a, for every a, b, c, d $\in I^+$:

A. - 4

B. 0

C. 16

D. can't be determined

Answer: D

Watch Video Solution

8. The number of divisiors of 720 which are multiples of perfect square of first prime number is:

A. 12

B. 14

C. 18

D. can't be determined

Answer: C

Watch Video Solution

9. The number of zeros at the end of 100! Is :

A. 82

B. 73

C. 156

D. none of these

Answer: B



10. The following sequence is given below:

1, 3, 3, 3, 5, 5, 5, 5, 5, 7, 7, 7, 7, 7, 7, 7, 9, 9, 9, 9, 9, 9, 9, 9, 9, 9,

The 111th term of this sequence will be :

A. a. 111

B. b. 19

C. c. 21

D. d. none of these

Answer: C

Watch Video Solution

11. The following sequence is given below:

The \sum *ofthe1st*, 3*rd*, 8*th*, 15*th*, 24*th*, 35*th*, 99*th* term will be :

A. a. 100

B. b. 101

C. c. 121

D. d. 81

Answer: A

Watch Video Solution

12. The following sequence is given below:

1, 2, 2, 3, 3, 3, 4, 4, 4, 4, 5, 5, 5, 5, 5, 6, 6, 6, 6, 6, 6, etc.

The sum of the first 100 terms of this sequence is :

A. a. 945

B. b. 358350

C. c. 100!

D. d. none of these

Answer: A

Watch Video Solution

13. The following sequence is given below:

1,2,2,3,3,3,4,4,4,4,5,5,5,5,5,6,6,6,6,6,6,6,6,....`etc.

The 77th element is :

A. 10

B. 12

C. 15

D. 13

Answer: B

Watch Video Solution

14. The following sequence is given below:

1,2,2,3,3,3,4,4,4,4,5,5,5,5,5,6,6,6,6,6,6,6,....

etc. The \sum of the 1st, 2nd, 4th, 7th, 11th, 16th, . .211th term is :

A. 221

B. 400

C. 231

D. 211

Answer: C

Watch Video Solution

15. Which one of the following is true?

(i) The least positive value of n for which n! can be divided by (n + 1) is 5

(ii) The square root of 123454321 is 1111

(iii) The sum of the squares of the first 24 natural numbers is a perfect square

A. (i) and (ii)

B. (ii) and (iii)

C. (i) and (iii)

D. all of these

Answer: C

Watch Video Solution

16. The number of zeros at the end of $1^{99} \times 2^{98} \times 3^{97} \times ...99^1$ is:

A. 1100

B. 1111

C. 1099

D. none of these

Answer: A

Watch Video Solution

17. A fruit vendor buys 30 oranges for 187.50. At what price did he sell each orange to get a profit of 12% ?

A. 7

B. 7.50

C. 8

D. can't be determined

Answer: D



18. Two numbers are in the ratio 7 : 9. If k be subtracted from each, they

are in the ratio of 2 : 3. Find the difference of two numbers

A. 20

B. 30

C. 60

D. can't be determined

Answer: D

Watch Video Solution

19. The ages of Mira, Tina and Sania are in the ratio of 6 : 4 : 7, respectively. If the sum of their ages is 34 years. what is sania's age ?

A. 12

B. 20

C. 14

D. can't be determined

Answer: B

20. Mewalal is selling fruits in Charbagh, Lucknow, which were imported from Kesharbagh and Dayalbagh only. He has 13 apples, 25 bananas , 17 cherries, 29 goose barries, 35 mangoes and 42 pine apples. When I wanted to purchase some fruits from his shop, he told bananas or total cherries etc. but anyhow he can't sell say 12 bananas or 10 apples) and he told me that he himself can import any type of fruits without any lot, say 20 mangoes from Kesharbagh and 15 mangoes from Dayabagh and so on if he wished .

If all the fruits were bought by a single person and were distributed equally among maximum possible number of children and each child has must received more than one fruit, then minimum how many children had received different kind of fruits?

A. 2

B. 3

C. 4

D. can't be determined

Answer: A

View Text Solution

21. Total number of factors of the expression $62^3 - 54^3 - 8^3$ is

A. 60

B. 62

C. 46

D. can't be determined

Answer: A



22. The least possible number with which (180)! should be multiplied so that it can be divided by (45)⁴⁴ is:

A. 44

B. 25

C. 9

D. none of these

Answer: D



23. If P = abc and Q = uv are three digits and 2 digits two natural numbers respectively, such that u and v must be distinct integers. How many pairs of P and Q are there in total which gives the same result when we multiply abc with uv as the product of cba with vu (i.e., the position of digits is inter changed):

A. a. 2

B. b. 8

C. c. 5

D. d. can't be determined

Answer: B

Watch Video Solution

24. There is a three digits number 'abc' and a two digit number 'xy' such that the product of 'abc' with 'xy' is same as the product of cba with 'yx', if x and y can be similar digits, then the number of such pairs of P and Q is :

A. 99

B. 900

C. 810

D. can't be determined

Answer: C



25. If $(N)_{10} = (ab)_n$ and $(3N)_{10} = (ba)_n$, where 3 < n < 10, then the least

possible value of *n* is :

A. 4

B. 6

C. 7

D. can't be determined

Answer: C



26. At his birthday party Pravesh invited his 100 friends and they took their seats numbered as 1,2,3,,100. Starting from seat number 1 every

third guest was served with Chapatis, every fourth guest was served with Poori and every fifth guest was served with Dahibara and the remaining guests were served with coca-cola only. How many guests enjoyed cocacola in that party?

A. a. 33

B. b. 13

C. c. 41

D. d. can't be determined

Answer: A



27. In the above question if Pravesh served every guest who were sitting on the chair number 3,6,9,12,15....etc. with chapatis and to those who were , sitting on the chair number 5,10, 15,20,..etc. with poori and to the rest with Idli. The number of guests who has not received the Idli is :
A. a. 38

B.b.47

C. c. 41

D. d. none of these

Answer: B

Watch Video Solution

28. The number of ways in which 5^7 can be expressed as a product of three factors:

A. a. 7

B. b. 8

C. c. 9

D. d. none of these

Answer: B

29. If [x] means the greatest integer less than or equal to x and {x} means the least greater than or equal to x and |x| means the absclute value value of x, then {x} equal to :

A. a. -1

B.b.0

C. c. 1

D. d. any one of (a),(b),(c)

Answer: D

Watch Video Solution

30. Three partners started a business with 80000. At the end of the year,

they receive 1800, 3000, 4800 as profit. Find the investment of the second

person.

A. 20000

B. 25000

C. 27000

D. 32000

Answer: C

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31. A and B enter into a partnership. A contributed 5000 for 8 months and

B, 6000 for 5 months. Find A's share in a total profit of 8400.

A. 4800

B. 2400

C. 3600

D. none of these

Answer: C

32. A square field is fenced by fixing the polls all around it is such a way that in each side of the field the farmer fixed 19 polls. The total number of polls required to fence the field is:

A. 76 B. 75 C. 72 D. 80

Answer: C



33. Swarn Jayanti Park is a regular hexagonal park, around which there are

'n' trees on each side. Which of the following can't be the total number of

trees around it ?

A. 74070

B. 81474

C. 59!

D. 35960

Answer: D



34. Pentabhai purchased the ticket of a movie for all his 200 friends. Luckily he was the first person to buy the ticket for the evening show. So he got the tickets number 1, 2, 3, 4, 6, 7,etc. Since he denied to have the tickets on wich the digit '5' is printed as the part of ticket number. The last ticket number which he has purchased if no one else has bought the tickets until he has purchased for all his friends.

A. a. 244

B. b. 242

C. c. 222

D. d. can't be determined

Answer: B

- - -



$$N = \frac{1}{1+1\times 1} + \frac{1}{2+2\times 2} + \frac{1}{3+3\times 3} + \frac{1}{4+4\times 4} + \dots + \frac{1}{n+n\times n'} \quad \text{where}$$

n = 100, then value of N is:

A.
$$\frac{100}{101}$$

B. $\frac{99}{100}$

C. 9900

D. none of these

Answer: A

36. Anjuli has written all the letters (or characters) of English alphabets (i.e., A,B,C,D,.....Y,Z) horizontally in a single line. She started counting as A - 1, B - 2, C - 3, D - 4, ..., Y - 25, Z - 26 and reversed back as Y - 27, X - 28, W - 29, V - 30, ..., B - 50, A - 51 and further reversed back as B - 52, C - 53, D - 54, ... etc. She continued counting till she reached the 777th character. At which letter or character she stopped counting ?

A. Y

B. B

C. R

D. none of these

Answer: A

Watch Video Solution

37. The reading style of Sunny is quite unusual. He reads one page on the first day, 2 pages on the second day, 3 pages on the thrid day etc. How many pages Sunny can read in 24 days?

A. 242

B. 300

C. 276

D. none of these

Answer: B

Watch Video Solution

38. The number of numbers less than 1000 that can be formed out of the

digits 0,1,2,3,4 and 5, no digit being repeated, is:

A. a. 111

B. b. 212

C. c. can't be determined

D. d. none of these

Answer: C

Watch Video Solution

39. A shopkeeper told me when I have asked him the total number of cellphones in his shop, that he had all Kyocera except three, all Nokia except three, all samsung except three and all L.G. except three. The number of mobile(i.e., cell phones) he had is :

A. 24

B. 256

C. can't be determined

D. none of these

Answer: D



40. The number of zeros at the end of the product of all the prime numbers between 1 and 1111 is :

A. 222

B. 21

C. can't be determined

D. none of these

Answer: D

Watch Video Solution

TEST OF YOU - LEARNING - 2

1. The remainder when 888222888222888222... upto 9235 digits is divided

by 5^3 is :

A. 103

B. 38

C. can't be determined

D. none of these

Answer: A

Watch Video Solution

2. Shankuntala asked Aryabhatta to assume any two values of three digits say P and Q then she told him to multiply P by R and Q by S where the values of R and S were given by Shakuntala herself. Aryabhatta exactly told her the values of PR + QS = 888222. Then Shankuntala told him the value of P by Q (i.e. P/Q) is :

A. a. 43834

B. b. 4

C. c. can't be determined

D. d. none of these

Answer: C

Watch Video Solution

3. Shankuntala asked Aryabhatta to assume any two values of three digits say P and Q then she told him to multiply P by R and Q by S where the values of R and S were given by Shakuntala herself. Aryabhatta exactly told her the values of PR div QS = 888222. Then Shankuntala told him the value of P + Q is :

A. a. 1001

B. b. 1110

C. c. 3108

D. d. none of these

Answer: B

Watch Video Solution

4. The sum of the following series

$$(1^{2} + 1) + (2^{2} + 2) + (3^{2} + 3) + (4^{2} + 4) + \dots + (n^{2} + n)$$
is:
A. $a)n^{3}$
B. $b)\frac{(n^{2} + n)5}{3}$
C. $c)\frac{n(n + 1)(n + 2)}{3}$

D. d)can't be determined

Answer: C

Watch Video Solution

5. Find a fraction which shall bear the same ratio to 1/27 that 3/5 does to

3/40.

A. 5/27

B. 13/27

C. 8/27

D. can't be determined

Answer: D

Watch Video Solution

6. Three times the cube of a number is seven times the other number.

What is the ratio of the first number to the second number ?

A. 6

B.49

C. 144

D. can't be determined

Answer: D

Watch Video Solution

7. 40% of a number is equal to three fourth's of another number. What is the ratio between the first number and the second number ?

A. 15 : 8

B. 12 : 19

C. 14 : 17

D. can't be determined

Answer: C

Watch Video Solution

8. In a class of 60 students, each student got sweets that are 15% the total number of students. How many sweets were there?

A. 540

B. 520

C. 550

D. none of these

Answer: C

Watch Video Solution

9. Under the scheme of Kisan Vikas, the Govt. of U.P. purchased 't' number of tractors and these were allocated equally among 7 districts of U.P. and thus 4 tractors remained unallocated. Similarly every district and still 3 tractors remained without allocation, in every district. Further every block assigned these tractors equally to every 16 village in eahc block and thus 2 tractors per block remained unallocated .

According to the scheme every village must receive at least one tractor. The number of tractors allocated to each block is :

A. 18

B. 30

C. 34

D. can't be determined

Answer: D

Watch Video Solution

10. Under the scheme of Kisan Vikas, the Govt. of U.P. purchased 't' number of tractors and these were allocated equally among 7 districts of U.P. and thus 4 tractors remained unallocated. Similarly every district and still 3 tractors remained without allocation, in every district. Further every block assigned these tractors equally to every 16 village in eahc block and thus 2 tractors per block remained unallocated .

According to the scheme every village must receive at least one tractor. The number of tractors allocated to each block is :

A. 161

B. 181

C. 24

D. can't be determined

Answer: A

Watch Video Solution

11. If 2^n can exactly divide p! such that the quotient is an odd positive integer, then the value of n which is not possible is:

A. a. 43

B. b. 44

C. c. 45

D. d. all of these

Answer: D



12. A shopkeeper bought 72 oranges for 324. He sold 50 of them at rs 6

each and the remaining at 165. Find his profit.

A. 121

B. 131

C. 141

D. 161

Answer: B

Watch Video Solution

13. In the above question number 12, the minimum number of x_i (i.e, $x_1, x_2, x_3, ..., x_n$) are equal to -1, is:

A. $\frac{n}{3}$ B. $\frac{n}{2}$ C. $\frac{(n-2)}{2}$

D. can't be determined

Answer: C

14. In an examination 90% of the student passed and 240 failed. How many students appeared for the examination

A. 2360

B. 2400

C. 2450

D. none of these

Answer: A

Watch Video Solution

15. If m + n = mn - 5, then the maximum number of ordered pairs of (m,n)

for every m, n is a natural number.

B. 5

C. 6

D. none of these

Answer: A

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16. At the eve of marriage anniversary of Tristan and Iseult some special couples were invited. Out of them only 23 couples were there having one child per couple with them. When I observed it, I found that 13 men were without any child and 20 women were also without any child. It is known that there were only couples allowed to attend the ceremony. For your kind information we will not consider the couple (i.e., Tristan and Iseult) for any calculation, since they are hosts. The total number of couples who attended the party (i.e., anniversary).

A. 28

B. 30

C. 33

D. can't be determined

Answer: A

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17. The number of numbers less than or equal to 666 which are the products of exactly 4 distinct positive prime numbers is:

A. 4

B. 8

C. 7

D. can't be determined

Answer: C

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18. Tata, Hutch and Idea started of with a same. The rule is that the loser of the game distributes $\frac{1}{3}$ rd of his money amongst the other two players in the ratio of the amount as they are holding with them. After playing three round game Tata, Hutch and Idea endup with Rs. 450, 150 and 300 respectively. The total amount of money what they were initially holding is:

A. 575

B. 750

C. $\frac{5}{4}(6!)$

D. can't be determined

Answer: C



19. When N is divided by 4, the remainder is 3. What is the remainder

when 2N is divided by 4?



20. All the soldiers are arranged in the form of an equilateral triangle i.e., one soldier in the front and 2 soldiers in the second row and 3 soldiers in the third row, 4 soldiers in the fourth row and so on. If 669 more soldiers of another company are added in such a way that all the soldiers now are in the form of an square and each of the sides then contain 8 soldiers less than each side of equilateral triangle. Initially, how many soldiers were there ?

A. a. 2056

B. b. 1540

C. c. 1400

D. d. 1220

Answer: B

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21. Seema purchased an item for 9600 and sold it for loss of 5%. From that money she purchased another item and sold it for gain of 5%. What is her overall gain/loss ?

A. 36 B. 24 C. 54

D. 38

Answer: C



22. One day my friend Dorsey told me from LA, that he gets the same salary in each month but when he adds up his six figure salary of two months, three months, four months, five months, or six months each time the figures (or digits) of his salary remains the same, but not in a fix

order. Later, he told me that when he add up his salary of 7 months his total salary become $(10^6 - 1)$. What is the salary of Dorsey?

A. a. 123456

B. b. 285614

C. c. 142857

D. d. can't be determined

Answer: C

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23. A leading chocolate producing company produces 'abc' chocolates per hour (abc is a three digit positive number). In how many hours it will produce 'abcabc' chocolates?

A. abc

B. 101

C. 1001

D. can't be determined

Answer: C



24. A number D236DO can be divided by 36 if D is :

A. a. 8

B. b. 6

C. c. 1

D. d. more than one values are possible

Answer: A



25. In the christmas eve of his 7th birthday anniversary, Martin the eldest son of his parents, went to picnic with all his family members. The entire family consists of 3 childred, 1 grand father, 1 grand mother, two fathers and two mothers 1 brother and 1 sister. Also there is one daughter-in-law, one father in law, one mother in law. Minimum how many tickets his family has purchased for the entire family ?

A. a. 5

B. b. 6

C. c. 8

D. d. 14

Answer: B



26. In the above question, if the rate of ticket for a child (considered to be

unmarried and below 18 years) is Rs. 6, while the price of a ticket for an

adult (i.e., married and above 18) is Rs. 10. So what is the minimum price has to pay for the tickets?

A. a. Rs. 52

B. b. Rs. 58

C. c. Rs. 90

D. d. data insufficient

Answer: A

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27. Which one of the following is not the correct relation?

A.
$$(25)^3 + (38)^3 + (87)^3 = (90)^3$$

$$\mathsf{B.}\,(3)^3 + (4)^3 + (5)^3 = (6)^3$$

$$\mathsf{C.}\,(17)^3 + (29)^3 = (57)^3$$

$$\mathsf{D}.\,1^3 + 6^3 + 8^3 = 9^3$$

Answer: C

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28. In a college of 300 students , every student reads 5 newspapers and every newspapers is read by 60 students. The number of newspapers is :

A. at least 30

B. at most 20

C. 25

D. none of (a), (b) and (c)

Answer: C



29. At East End Mall, burgers can be bought in quantities of either 6,9 or

20 only. For example one can purchase

26(20 + 6), 15(6 + 9) and $24(9 \times 2 + 6)$ etc. but can't purchase 10 burgers i.e., without any lot. What is largest number of burgers that can be purchased ?

A. a. 83

B. b. 37

C. c. can't be determined

D. d. none of (a), (b) and (c)

Answer: D



30. Let there be a fraction whose denominator is one less than the square of its numerator. If we add 2 to both the numerator and denominator , the fraction will exceed to $\frac{1}{3}$ and if we subtract 3 from numerator and denominator the fraction will lie between 0 and 1/10[°]. The actual fraction is:

A.
$$\frac{3}{8}$$

B. $\frac{7}{48}$
C. $\frac{4}{17}$

D. none of these

Answer: D



31. When a two digit number is subtracted from another two digits number consisting of the same digits in reverse order, then the resultant value we get is equal to the sum of the digits of that number. The square of sum of digits of that number can be :

A. 49

B. 64

C. 81

D. 36

Answer: C



32. If
$$A = \left[k^3 + (k+2)^3 + (k+4)^3 + (k+6)^3 + (k+8)^3 + \dots + (k+38)^3\right]$$
 and
 $B = \left[k + (k+2) + (k+4) + (k+6) + (k+8) + \dots + (k+38)\right]$

Now, if 'A' is divided by 'B', then the remainder will be (for every positive integer k) :

A. A)0

B. B)1

C. C)k

D. D)none of these

Answer: A

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1^3 = 1, 2^3 = 3 + 5, 3^3 = 7 + 9 + 11, 4^3 = 13 + 15 + 17 + 19, 5^3 = 21 + 23 + 25 + ., etc. Then the value of (100)^3 is equal to :
A. 9901 + 9903 + ..... + 10099
```

If

B. 9999 + 10001 + 10003 ++ 10199

C. 9989 + 9991 ++ 10089

D. Any two of (a) , (b) , (c)

Answer: A

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A. 1/8

B.1/4

C. 5/8

D. 0.625

Answer: A

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35. Which one of the following is correct ?

A. a. $25^{26} > 26^{25}$

B. b. $100^{101} < 101^{100}$

C. c. 199¹⁹⁸ > 198¹⁹⁹

D. d. $399^{400} < 400^{399}$

Answer: A

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36. If x and y are possible prime number and if $x^2 - 2y^2 = 1$, then the value

of x + y is :

A. 7

B. 24

C. 13

D. none of these

Answer: D

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37. The greatest possible divisor of $3n^{2n+3} - 24n - 27$ for every $n \in N$, which necessarily divides is :

A. 64

B. 24

C. 96
D. none of these

Answer: D



38. If $(8 + 3\sqrt{7})^n$ = P+F, where P is an integer ad F is a proper fraction then

A. P is an odd integer

B. P is an even integer

C. F(P+F)=1

D. (1-F)(P+F)=1

Answer: B



39. When product of r consecutive positive integers is divided by r! then

the quotient is:

A. any natural number

B. a perfect square

C. a perfect cube

D. a proper fraction

Answer: A

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40. In what time would 5000 amount to 5800 at 8% per annum simple

interest?

A. 2

B. 3

C. 4

Answer: A

