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Real Number

1. LCM of three numbers 28, 44, 132 is
   (1) 528 (2) 231
   (3) 462 (4) 924

2. The product of two numbers is 396 × 576 and their LCM is 6336. Their HCF is
   (1) 36 (2) 48
   (3) 24 (4) 60

3. The HCF of 616 and 1300 is
   (1) 6 (2) 4
   (3) 8 (4) 12

4. The HCF and LCM of 6, 72 and 120 is
   (1) 6, 360 (2) 6, 420
   (3) 3, 360 (4) 3, 420

5. The HCF of 18, 24, 60, 150 is
   (1) 6 (2) 10
   (3) 8 (4) 18

6. The [HCF × LCM] for the numbers 100 and 190 is
   (1) 19000 (2) 1900
   (3) 190000 (4) none of these

7. The HCF and LCM of two numbers are 9 and 360 respectively. If one number is 45, the other number is
   (1) 81 (2) 36
   (3) 144 (4) 72

8. The largest possible number with which when 38, 66 and 80 are divided the remainders remain the same is
   (1) 14 (2) 7
   (3) 28 (4) None of these

9. 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 remainder?
   (1) 147 (2) 145
   (3) 197 (4) None of these

10. If x and y are rational numbers such that $\sqrt{xy}$ is irrational, then $\sqrt{x} + \sqrt{y}$ is
    (1) Rational (2) Irrational
    (3) Non-real (4) None of these

11. $\frac{1}{\sqrt{5}}$ is
    (1) A rational number
    (2) An irrational number
    (3) A whole number
    (4) None of these

12. $2\sqrt{5}$ is
    (1) An irrational number
    (2) A natural number
    (3) A rational number
    (4) None of these

13. $2 + \sqrt{7}$ is
    (1) An integer
    (2) A rational number
    (3) An irrational number
    (4) None of these

14. If $\sqrt[3]{32} = 2^x$ then x is equal to
    (1) 5 (2) 3
    (3) $\frac{3}{5}$ (4) $\frac{5}{3}$

15. If x = $0.\overline{16}$, then 3x is
    (1) $0.\overline{48}$ (2) $0.4\overline{9}$
    (3) $0.\overline{5}$ (4) 0.5

16. The product of $4\sqrt{6}$ and $3\sqrt{24}$ is
    (1) 124 (2) 134
    (3) 144 (4) 154

17. If x and y are positive real numbers, then
    (1) $\sqrt{x} + \sqrt{y} > \sqrt{x+y}$
    (2) $\sqrt{x} + \sqrt{y} < \sqrt{x+y}$
    (3) $\sqrt{x} + \sqrt{y} = \sqrt{x+y}$
    (4) None of these

18. Between any two distinct rational numbers
    (1) There lie infinitely many rational numbers
    (2) There lies only one rational number.
    (3) There lie only finitely many numbers.
    (4) There lie only rational numbers.

19. The product of first five prime numbers is always
    (1) an odd integer (2) a prime integer
    (3) an irrational number (4) an even integer

20. $3.\overline{92}$ is equal to
    (1) $\frac{392}{100}$ (2) $\frac{389}{100}$
    (3) $\frac{389}{99}$ (4) $\frac{389}{999}$

21. The sum of two irrational number is
(1) always an irrational number
(2) always a rational number
(3) always an integer
(4) can'nt say anything

22. If $\frac{10+4\sqrt{3}}{2-\sqrt{3}} = a + b\sqrt{c}$, then $a+b+c$ is
(1) 47 (2) 41
(3) 53 (4) 50

23. The greatest possible number with which when we divide 37 and 58, leaves the respective remainder of 2 and 3, is
(1) 2 (2) 5
(3) 10 (4) None of these

24. Largest possible number with which when 59 and 131 are divided, leaves the remainder 5 in each case, is
(1) 21 (2) 18
(3) 19 (4) None of these

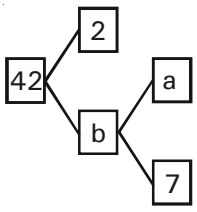
25. The least possible number which when divided by 15, 25 or 45 in each case it leaves the remainder 3?
(1) 225 (2) 233
(3) 228 (4) None of these

26. The least possible number which when divided by 18, 35 or 42 leaves 2, 19, 26 as the remainders respectively is
(1) 514 (2) 614
(3) 314 (4) None of these

27. How many numbers lie between 11 and 1111 which when divided by 9 leave a remainder of 6 and when divided by 21 leave a remainder of 12?
(1) 18 (2) 28
(3) 8 (4) None of these

28. HCF (p,q,r) · LCM (p,q,r) =
(1) $\frac{pq}{r}$ (2) $\frac{qr}{p}$
(3) pqr (4) None of these

29. If $16 \times 8^{n+2} = 2^m$, then m is equal to
(1) n + 8 (2) 2n + 10
(3) 3n + 2 (4) 3n + 10

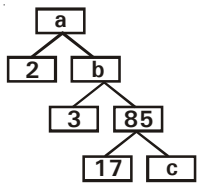
30. 

In the above factor tree, the possible value of $a+b$ is
(1) 21 (2) 24
(3) 28 (4) 42

31. The greatest number which divides 285 and 1249 leaving remainder 9 and 7 respectively, is
(1) 128 (2) 138
(3) 150 (4) 238

32. If the HCF of 65 and 117 is expressible in the form of $65k-117$, then the value of k is
(1) 1 (2) 2
(3) 3 (4) 4

33. The least number which is divisible by all the numbers from 1 to 10 (both inclusive) is
(1) 10 (2) 100
(3) 504 (4) 2520

34. 

In the given factor tree, the value of $a+b+c$ is
(1) 670 (2) 770
(3) 560 (4) 755

35. If $a|b$, then gcd of a and b is
(1) a
(2) b
(3) ab
(4) Can't be determined

36. If gcd of b and c is g and $d|b$ & $d|c$, then
(1) d = g (2) g|d
(3) d|g (4) None of these

37. π is
(1) A rational number (2) A whole number
(3) A positive interger (4) None of these

38. If x is a non-zero rational number and xy is irrational, then y must be
(1) a rational number
(2) an irrational number
(3) non-zero
(4) an integer

39. $0.\overline{65}$ is equal to
(1) $\frac{65}{90}$ (2) $\frac{65}{100}$
(3) $\frac{65}{99}$ (4) None of these

40. If a is a positive integer and p be a prime number and p divides a^2, then
(1) a divides p (2) p divides a
(3) p^2 divides a (4) None of these

41. Evaluate $\sqrt[3]{\left(\frac{1}{64}\right)^{-2}}$
(1) 4 (2) 16
(3) 32 (4) 64

42. If $\left(\frac{2}{7}\right)^{2x-3} = \left(\frac{7}{2}\right)^{x-3}$, then x is equal to

(1) 2 (2) – 2
(3) 1 (4) – 1

43. $1.\overline{6}$ is equal to

(1) $\frac{16}{9}$ (2) $\frac{5}{3}$
(3) $\frac{3}{5}$ (4) $\frac{8}{5}$

44. If $x = (7 + 4\sqrt{3})$, then the value of $x^2 + \frac{1}{x^2}$ is

(1) 193 (2) 194
(3) 195 (4) 196

45. If $(\sqrt{3} - \sqrt{5})^2 = a + b\sqrt{15}$, where $a, b \in Q$, then $a + b$ is
(1) 10 (2) 8
(3) 6 (4) 16

46. $\frac{15}{\sqrt{10} + \sqrt{20} + \sqrt{40} - \sqrt{125}}$ is equal to

(1) $\sqrt{5}(5 + \sqrt{2})$ (2) $\sqrt{5}(2 + \sqrt{2})$
(3) $\sqrt{5}(\sqrt{2} + 1)$ (4) $\sqrt{5}(3 + \sqrt{2})$

47. The expression $\frac{\sqrt{3} - 1}{2\sqrt{2} - \sqrt{3} - 1}$ is equal to

(1) $\sqrt{2} + \sqrt{3} + \sqrt{4} + \sqrt{6}$
(2) $\sqrt{6} - \sqrt{4} + \sqrt{3} - \sqrt{2}$
(3) $\sqrt{6} - \sqrt{4} - \sqrt{3} + \sqrt{2}$
(4) None of these

48. If x, y, z are real numbers such that $\sqrt{x-1} + \sqrt{y-2} + \sqrt{z-3} = 0$ then the value of $x + y + z$ is

(1) 1 (2) 0
(3) 3 (4) 6

49. If $x = 5.23696969.....$, then which of the following is True/False ?
i. x is a terminating decimal
ii. x is a rational number
iii. x is a non-terminating recurring decimal
iv. x is an irrational number

(1) FTTT (2) TFTF
(3) FTTF (4) TTFF

50. Let $y = \frac{7}{22 \times 53}$ be a rational number, then y has decimal expansion which
(1) terminates after two places of decimal
(2) terminates after 3 places of decimal
(3) terminates after 4 places of decimal
(4) non-terminates decimal

51. Let $a^2 = 3b + c$, where $a, b, c \in Z^+$, the sum of the possible values of c is
(1) 1 (2) 2
(3) 3 (4) none of these

52. Let $a^3 = 9b + c$, where $a, b, c \in Z^+$, the sum of the possible values of c is
(1) 3 (2) 9
(3) 8 (4) 7

53. Every odd integer is of the form (for some $n \in Z^+$)
(1) 2n (2) 3n
(3) $2n + 2$ (4) $2n + 1$

54. $\frac{1}{2 + \sqrt{3} + \sqrt{5}}$ is
(1) a rational number (2) an irrational number
(4) an integer (4) none of these

55. 0.322322232222322222..... is a
(1) terminating decimal
(2) non-terminating repeating decimal
(3) non-terminating non-repeating decimal
(4) none of these

56. If $0.57777..... = \frac{p}{q}$, where $r \neq 0$ and p, q are co-prime, then $\sqrt{q - p}$ is
(1) a natural number neither prime nor composite
(2) an irrational number
(3) a prime number
(4) a composite number

57. If $(m)^n = 128$, then n.mmm..... is

(1) $\frac{65}{9}$ (2) $\frac{72}{99}$
(3) $\frac{65}{90}$ (4) $\frac{7}{2}$

Level-II

1. The unit digit in the product $784 \times 618 \times 917 \times 763$ is
(1) 2 (2) 3
(3) 4 (4) 5

2. What is the unit digit in 7^{105} ?
(1) 1 (2) 5
(3) 7 (4) 9

3. What is the unit digit in the product $(3^{65} \times 6^{59} \times 7^{71})$?
(1) 1 (2) 2
(3) 4 (4) 6

4. What is the unit digit in $(7^{95}-3^{58})$?
(1) 0 (2) 4
(3) 6 (4) 7

5. What is the unit digit in $\{(6374)^{1793}\times(625)^{317}\times(341)^{491}\}$?
(1) 0 (2) 2
(3) 3 (4) 5

6. $(1000)^9 \div 10^{24} =$
(1) 10000 (2) 1000
(3) 100 (4) 10

7. $587 \times 999 =$
(1) 586413 (2) 587523
(3) 614823 (4) 615173

8. $3897 \times 999 =$
(1) 3883203 (2) 3893103
(3) 3639403 (4) 3791203

9. $72519 \times 9999 =$
(1) 725117481 (2) 674217481
(3) 685126481 (4) 696217481

10. $8796 \times 223 + 8796 \times 77 =$
(1) 2736900 (2) 2738800
(3) 2658560 (4) 2716740

11. $\dfrac{(489+375)^2-(489-375)^2}{(489\times375)} =$
(1) 144 (2) 864
(3) 2 (4) 4

12. $\dfrac{768\times768\times768+232\times232\times232}{768\times768-768\times232+232\times232} =$
(1) 1000 (2) 536
(3) 500 (4) 268

13. $\dfrac{854\times854\times854-276\times276\times276}{854\times854+854\times276+276\times276} =$
(1) 1130 (2) 578
(3) 565 (4) 1156

14. $\dfrac{753\times753+247\times247-753\times247}{753\times753\times753+247\times247\times247} =$
(1) $\dfrac{1}{1000}$ (2) $\dfrac{1}{506}$
(3) $\dfrac{253}{500}$ (4) none of these

15. On dividing 2272 as well as 875 by 3-digit number N, we get the same remainder. The sum of the digits of N is
(1) 10 (2) 11
(3) 12 (4) 13

16. n is a whole number which when divided by 4 gives 3 as remainder. What will be the remainder when 2n is divided by 4?
(1) 3 (2) 2
(3) 1 (4) 0

17. Which one of the following numbers will completely divide$(4^{16}+4^{62}+4^{63}+4^{64})$?
(1) 3 (2) 10
(3) 11 (4) 13

18. Which one of the following numbers will completely divide $(3^{25}+3^{26}+3^{27}+3^{28})$?
(1) 11 (2) 16
(3) 25 (4) 30

19. How many natural numbers are there between 23 and 100 which are exactly divisible by 6?
(1) 8 (2) 11
(3) 12 (4) 13

20. The value of $(256)^{5/4}$ is
(1) 512 (2) 984
(3) 1024 (4) 1032

21. The value of $(\sqrt{8})^{\frac{1}{3}}$ is
(1) 2 (2) 4
(3) $\sqrt{2}$ (4) 8

22. The value of $\left(\dfrac{32}{243}\right)^{-\frac{4}{5}}$ is
(1) $\dfrac{4}{9}$ (2) $\dfrac{9}{4}$
(3) $\dfrac{16}{81}$ (4) $\dfrac{81}{16}$

23. The value of $\left(-\dfrac{1}{216}\right)^{-\frac{2}{3}}$ is
(1) 36 (2) -36
(3) $\dfrac{1}{36}$ (4) $-\dfrac{1}{36}$

24. The value of $5^{1/4}\times(125)^{0.25}$ is
(1) $\sqrt{5}$ (2) 5
(3) $5\sqrt{5}$ (4) 25

25. The value of $\dfrac{1}{(216)^{-\frac{2}{3}}}+\dfrac{1}{(256)^{-\frac{3}{4}}}+\dfrac{1}{(32)^{-\frac{1}{5}}}$ is
(1) 102 (2) 105
(3) 107 (4) 109

26. The value of $[(10)^{150}\div(10)^{146}]$ is
(1) 1000 (2) 10000
(3) 100000 (4) 10^6

27. $(2.4\times10^3)\div(8\times10^{-2}) =$
(1) 3×10^{-5} (2) 3×10^4
(3) 3×10^5 (4) 30

28. $\left(\dfrac{1}{216}\right)^{-\frac{2}{3}}\div\left(\dfrac{1}{27}\right)^{-\frac{4}{3}} =$
(1) $\dfrac{3}{4}$ (2) $\dfrac{2}{3}$
(3) $\dfrac{4}{9}$ (4) $\dfrac{1}{8}$

29. $(0.04)^{-1.5} =$

(1) 25 (2) 125
(3) 250 (4) 625

30. The value of $(8^{-25} - 8^{26})$ is

(1) 7×8^{-25} (2) 7×8^{-25}
(3) 8×8^{-26} (4) None of these

31. $(64)^{-\frac{1}{2}} - (-32)^{-\frac{4}{5}} =$

(1) $\frac{1}{8}$ (2) $\frac{3}{8}$
(3) $\frac{1}{16}$ (4) $\frac{3}{16}$

32. The value of $\frac{(243)^{0.13} \times (243)^{0.07}}{(7)^{0.25} \times (49)^{0.075} \times (343)^{0.2}}$ is

(1) $\frac{3}{7}$ (2) $\frac{7}{3}$
(3) $1\frac{3}{7}$ (4) $2\frac{2}{7}$

33. If $2^{2n-1} = \frac{1}{8^{n-3}}$, then the value of n is

(1) 3 (2) 2
(3) 0 (4) -2

34. If $5^a = 3125$, then the value of $5^{(a-3)}$ is

(1) 25 (2) 125
(3) 625 (4) 1625

35. If $5\sqrt{5} \times 5^3 \div 5^{-\frac{3}{2}} = 5^{a+2}$, then the value of a is

(1) 4 (2) 5
(3) 6 (4) 8

36. If $(\sqrt{3})^5 \times 9^2 = 3^n \times 3\sqrt{3}$, then the value of n is

(1) 2 (2) 3
(3) 4 (4) 5

37. If $\frac{9^n \times 3^5 \times (27)^3}{3 \times (81)^4} = 27$, then the value of n is

(1) 0 (2) 2
(3) 3 (4) 4

38. If $2^{n+4} - 2^{n+2} = 3$, then n is equal to

(1) a (2) 2
(3) -1 (4) -2

39. Given that $10^{0.48} = x, 10^{0.70} = y$ and $x^z = y^2$, then the value of z is close to

(1) 1.45 (2) 1.88
(3) 2.9 (4) 3.7

40. If $x = 5 + 2\sqrt{6}$, then $\frac{(x-1)}{\sqrt{x}}$ is equal to

(1) $\sqrt{2}$ (2) $2\sqrt{2}$
(3) $\sqrt{3}$ (4) $2\sqrt{3}$

41. If $abc = 1$, then

$\left(\frac{1}{1+a+b^{-1}} + \frac{1}{1+b+c^{-1}} + \frac{1}{1+c+a^{-1}}\right) =$

(1) 0 (2) 1
(3) $\frac{1}{ab}$ (4) ab

42. If a, b, c are real numbers, then the value of $\sqrt{a^{-1}b}\,\sqrt{b^{-1}c}\,\sqrt{c^{-1}a}$ is

(1) abc (2) $\sqrt{abc}$
(3) $\frac{1}{abc}$ (4) 1

Answers (Real Numbers)

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Level-II

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