MATHEMATICS

Real Numbers

1. The nearest integer to 58701 which is divisible by 567 is-@58968@58434 @58401@58989@A
2. The greatest number of five digits exactly divisible 279 is-@99603@99837 @99882@99881@C
3. The least perfect square number which is divisible by 8, 15, 20, 22 is @435600@43560@39600@465660@A
4. The greatest number of five digits which on being divided by 56, 72, 84 and 96 leaves 50, 66, 78 and 90 as remainders is - 98784@98778@98790@97778@B
5. H.C.F. of (x³ - 3x + 2) and (x² - 4x + 3) is -@(x - l) (B)(x - 2)²(C)(x - l)(x + 2) (D)(x - l)(x - 3)@A
6. A number lies between 300 and 400. If the number is added to the number formed by reversing the digits, the sum is 888 and if the unit's digit and the ten's digit change places, the new number exceeds the original number by 9. Find the number.@339@341@378@345@D
7. Euclid's division Lemma states that if a and b are any two positive integers, then there exist unique integers q and r such that-@a = bq + r, 0 < r ≤ b@a = bq + rm 0 ≤ q < b@a = bq + r, 0 ≤ r < b@a = bq + r, 0 < q ≤ b@ C
8. H.C.F of two numbers is 18 and the first 4 quotients obtained in the division are 2, 1, 2, 2. Then the two numbers are @342,126@343,126@342,125 @none@ A
9. The G.C.D of (2002, k) = 4, then the value of k is@All even values @4 only@All odd values @For all values of k, it is not possible@ D
10. The largest number which divides 62, 132 and 237 and leaves the same remainder in each case is @34 @33@35 @36@C
11. Three numbers which are co-primes to each other are such that the product of the first two is 551 and that of the last two is 1073. The sum of the three numbers is@75@81@85@89@C
12. The G.C.D of two numbers is 16 and the first 4 quotients obtained in the division are equal to 2. Then the numbers are@342,126@464,192@232,90 @768, 336@B

13. ln a problem involving division, the divisor is eight times the quotient and four times the remainder. If the remainder be 12, then the dividend is @400 @342@300@450@C

14. The traffic lights at three different road crossings change after every 48 sec, 72 sec and 108 sec respectively. If they all change simultaneously at 8.20.00 hours, then at what time will they again change simultaneously?@8:27:12 @7:23:06@8:20:24 @8:30:16@A

15. The number of prime factors in the expansion (6)⁴ × 9)⁶ × (10)⁸ × (12)¹⁶ is @76@78@77@79@A

16. $\sqrt{2}$ is–@An integer @A rational number@An irrational number @None of these@ C

17. $1/\sqrt{3}$ is –@A rational number @An irrational number@a whole number @None of these@ B

18. $7\sqrt{3}$ is –@An irrational@A natural number@A rational number@None of these@A

19. $5-\sqrt{3}$ is –@An integer @A rational number@An irrational number @None of these@C

20. π = Circumference of the/Diameter of the circle@A rational number@ A whole number @A positive integer @None of these @D

21. HCF(p, q) × LCM (p, q) =@p + q@p/q@p × q@p^q@ C

22. HCF(p, q, r) . LCM (p, q, r) =@pq/r@qr/p@p, q, r@None of these@ D

23. If $\sqrt[3]{32} = 2^x$ then x is equal to @5@3@3/5@5/3@D

24. 0.737373… =@(0.73)³@73/100@73/99@None of these @C

25. If p is a positive prime integer, then $\sqrt{p}$ is –@A rational number @An irrational number@a positive integer @None of these @B

26. LCM of three numbers 28, 44, 132 is –@528@231@462@924@D

27.If a is a positive integer and p be a prime number and p divides a², then @a divides p@p divides a @p² divides a@None of these @B

28. Evaluate $\sqrt[3]{\left(\frac{1}{6}\right)^{-2}}$ @4@16@32@64@B

29. If $a = \frac{a+\sqrt{3}}{2-\sqrt{3}}$, $b = \frac{2-\sqrt{3}}{2+\sqrt{3}}$ then the value of a + b is – @14@– 14 @8√ 3@-√ 3@B

30.If $x = 0.\overline{16}$, then 3x is – @$0.\overline{48}$ @$0.\overline{49}$ @$0.\bar{5}$ @0.5@A

31.Find the value of x then $\left(\frac{3}{5}\right)^{2x-3} = \left(\frac{5}{3}\right)^{x-3}$ @x = 2@x = - 2@x = 1@x = - 1@A

32.$1.\bar{3}$ is equal to – @3/4@2/3@4/3@2/5@C

33.The product of $4\sqrt{6}$ and $3\sqrt{24}$ is –@124@134@144@154@C

34. If x = (7 + 4√3), then the value of x²+1/x² is – @193@194@195@196@B

35. If 16 × 8ⁿ⁺² = 2^m, then m is equal to –@n + 8@2n +10 @3n + 2@3n + 10@D

36. The greatest possible number with which when we divide 37 and 58, leaves the respective remainder of 2 and 3, is -@2@5@10@None of these @B

37. The largest possible number with which when 60 and 98 are divided, leaves the remainder 3 in each case, is –@38@18@19@None of these @C

38. The largest possible number with which when 38, 66 and 80 are divided the remainders remain the same is–@14@7@28 @None of these@ A

39.What is the least possible number which when divided by 24, 32 or 42 in each case it leaves the remainder 5?@557@677@777@None of these@ B

40.In how many numbers are possible between 666 and 888?@10@11@12@13@D

41.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?@147@145@197@None of these@ A

42.What is the least possible number which when divided by 18, 35 or 42 leaves 2, 19, 26 as the remainders respectively?@514@614@314@None of these@ B

43.What is the least possible number which when divided by 2, 3, 4, 5, 6 leaves the remainders 1, 2, 3, 4, 5 respectively?@39@48@59@None of these@ C

44. What is the least possible 3 digit number which is divisible by 11? @293@539@613@None of these@ B

45.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?@18@28@8@ None of these@ A

46.If x divides y (written as x | y) and y | z, (x, y, z ∈ z) then –@x | z@z | y@z | x @None of these@ A

47.If x | y, where x > 0, y > 0 (x, y ∈ z) then –@x < y@x = y@x ≤ y@x ≥ y@C

48.If a | b, then gcd of a and b is –@a@b@ab@Can't be determined @A

49.If gcd of b and c is g and d | b & d | c, then –@d = g@g | d@d | g@None of these@C

50.If x, y ∈ R and | x | +| y | = 0, then –@x > 0, y < 0@x < 0, y > 0@x = 0, y = 0@None of these@ C

51.If a, b, c ∈ R and a² + b² +c² = ab + bc + ca, then –@a = b = c @a = b = c = 0@a, b, c are distinct @None of these @A

52.If x, y ∈ R and x < y ⇒ x² > y² then –@x > 0@y > 0@x < 0@y < 0@ D

53.If x, y ∈ R and x > y | x | > | y | , then –(A)(B)(C)(D)@x > 0@y > 0@x < 0@y < 0@B

54.If x, y ∈ R and x > y ⇒ | x | < | y | , then –@x < 0@x > 0@y > 0@y < 0@ A

55. π and e are –@Natural numbers @Integers @Rational numbers @Irrational numbers. @D

56.If a, b ∈ R and a < b, then –@1/a < 1/b@1/a > 1/b@a² > b²@Nothing can be said @ D

57.If x is a non-zero rational number and xy is irrational , then y must by–@a rational number @an irrational number@non-zero@an integer@ B

58.The arithmetical fraction that exceeds its square by the greatest quantity is –@1/4(B)1/2(C)3/4@None of these@ B

59.If x and y are rational numbers such that $\sqrt{xy}$ is irrational , then $\sqrt{x} + \sqrt{y}$ is –@Rational @Irrational @Non-real@None of these@ B

60.If x and y are positive real numbers, then –@$\sqrt{x} + \sqrt{y} > \sqrt{x + y}$@$\sqrt{x} + \sqrt{y} < \sqrt{x + y}$@$\sqrt{x} + \sqrt{y} = \sqrt{x + y}$@None of these@ A

61.If $(\sqrt{2} + \sqrt{3})$² = $a + b\sqrt{6}$, where a, b ∈ Q, then –@a = 5, b = 6@a = 5, b = 2@a = 6, b = 5@None of these@B

62.If x ∈ R, then | x | =@x@–x@max {x, -x}@min {x, -x}@ C

63. $\frac{15}{\sqrt{10}+\sqrt{20}+\sqrt{40}-\sqrt{125}}$ is equal to –@$\sqrt{5}$ (5+ $\sqrt{2}$) @$\sqrt{5}$ (2+ $\sqrt{2}$) @$\sqrt{5}$ ($\sqrt{2}$+1) @$\sqrt{5}$ (3+$\sqrt{2}$)@D

64. $\sqrt{2+\sqrt{3}}+\sqrt{2-\sqrt{3}}$ is equal to –@$\sqrt{3}$@$\sqrt{3}/\sqrt{2}$@$\sqrt{2}/\sqrt{3}$@ $\sqrt{6}$ @ D

65.The expression $\frac{\sqrt{3}-1}{2\sqrt{2}-\sqrt{3}-1}$ is equal to –@$\sqrt{2} + \sqrt{3} + \sqrt{4} + \sqrt{6}$ @$\sqrt{6} - \sqrt{4} + \sqrt{3} - \sqrt{2}$ @$\sqrt{6} - \sqrt{4} - \sqrt{3} + \sqrt{2}$ @None of these@ A

66.If x, y, z are real numbers such that $\sqrt{x - 1} + \sqrt{y - 2} + \sqrt{z - 3} = 0$ then the values of x, y, z are respectively @1, 2, 3@0, 0, 0@2, 3, 1@None of these@ A

67.If a, b, c ∈ R and a > b ⇒ ac < bc, then–@c ≥ 0@ c ≤ 0@c > 0@c < 0@D

68.If a, b, c ∈ R and ac = bc ⇒ a = b, then –@ c ≥ 0@ c ≤ 0@c = 0@c ≠ 0@D

69.Between any two distinct rational numbers–@There lie infinitely many rational numbers.@There lies only one rational number. @There lie only finitely many numbers.@There lie only rational numbers.@A

70.The total number of divisors of 10500 except 1 and itself is –@48@5@46@56@C

71.The sum is the factors of 19600 is –@54777@33667@5428@None of these@ A

72.The product of divisors of 7056 is–
@(84)⁴⁸@(84)⁴⁴@(84)<sup>45@None of these@ C

73.The number of odd factors (or divisors) of 24 is –@2@3@1@None of these@ A

74.The number of even factors (or divisors) of 24 is –@6@4@8@None of these@ A

75.In how many ways can 576 be expressed as a product of two distinct factors?

@10@11@21@None of these@ A

76.The value of i⁴⁵⁷ is -@1@– 1 @i@– i@ C

77.The value $i^{37}+\frac{1}{i^{67}}$ is – @1@– 1 @2i@–2@C

78.The value of $\left(i^{41}+\frac{1}{i^{257}}\right)^{9}$ is –@1@0@–1@2@B

79.The value of (i⁷⁷ + i⁷⁰ + i⁸⁷ + i⁴¹⁴)³@– 8@– 6@6@8@A

80.The value of the expression $\frac{i^{592}+i^{590}+i^{588}+i^{586}+i^{584}}{i^{582}+i^{580}+i^{578}+i^{576}+i^{574}}$ is-@–1@1@0@i@A

81.The standard form of (1 + i) (1 + 2i) is –@3 + I(B)–3 + i @1 – 3i @1 – + 3i@B

82.The standard form of $\frac{(1+i)(1+\sqrt{3i})}{(1-i)}$ is –@- √3 + i@√3 - i@l – i √3@l + i √3 @A

83.The standard form of $\frac{3-4i}{(4-2i)(1+i)}$ is –@$\frac{1}{4}+\frac{3}{4}i$ @$\frac{1}{4}-\frac{3}{4}i$ @$\frac{3}{4}+\frac{1}{4}i$ @$\frac{3}{4}-\frac{1}{4}i$ @B

84.If (x + iy) (2 – 3i) = 4 + i , then real values of x and y are –@x = 5, y = 14@ $x = \frac{13}{5},\ y = \frac{14}{13}$@ $x = \frac{5}{13},\ y = \frac{14}{13}$@None of these@ C

85.If $\frac{(1+i)x-2i}{3+i} + \frac{(2-3i)y+i}{3ii} = i,$ then real values of x and y are –@x = 3, y = - 1@x = - 1, y = 3@=1, y = -2 @x = -1, y = - 3@A

86.The conjugate of 4 – 5i is –@4 + 5i@– 4 – 5i@– 4 + 5i @4 – 5i @A

87.The conjugate of 1/3 + 5i is –@ $\frac{1}{34}(3+5i)$ @3 + 5i@ $\frac{1}{3-5i}$@ $\frac{34}{3-5i}$ @A

88.The conjugate of $\frac{(1+i)(2+i)}{3+i}$ is –@ $\frac{3}{5}+\frac{4}{5}i$ @ $\frac{3}{5}-\frac{4}{5}i$ @ $-\frac{3}{5}-\frac{4}{5}i$ @ $\frac{3}{5}+\frac{4}{5}i$ @B

89.The multiplicative inverse of 1 – i is –@1 + i@1/1+i @1/2 + 1/2 i @None of these@ C

90.The multiplicative inverse of (1+√3)² is –@ $-\frac{1}{8}-\frac{i\sqrt{3}}{8}$ @(1- i√3)² @ $\frac{1}{8}+\frac{i\sqrt{3}}{8}$ @None of these@ A

91.The value of 2x³ + 2x² – 7x + 72, when x = 3 – 5i/2 is –@4@– 4 @2@0@A

92.The value of x⁴ + 4x³ + 6x² + 4x + 9 when x = - 1+ √2 is –@12@10@14@8@A

93.If $a + ib = \frac{c+i}{c-i},$ where c is real, then $a^2 + b^2$ = @i@1@– 1 @0@B

94.If (x + iy)^{1/3} = a + ib, x, y, a b ∈ R, then x/a + y/b = x/a + y/b = @4@4(a² + b²)@4(a²b²)@(a² – b²)@C

95.The greatest possible number with which when we divide 37 and 58, leaves the respective remainder of 2 and 3, is–@2@5@10@None of these@ B

96.The largest possible number with which when 60 and 98 are divided, leaves the remainder 3 in each case, is–@38@18@19@None of these@ C

97.The largest possible number with which when 38, 66 and 80 are divided the remainders remain the same is–@14@728@None of these@ A

98.What is the least possible number which when divided by 24, 32 or 42 in each case it leaves the remainder 5?@557@677@777@None of these@ B

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