Mathematics

1. If $i = \sqrt{(-1)}$, then i^{237} =

   a. i b. -1
   c. 1 d. $-i$

2. a + ib = c + id, then

   a. a – c = i (d-b) b. a – ib = c – id
   c. a = d, b = c d. none of these

3. $\sqrt{i}$ =

   a. -1 b. $\pm\frac{1-i}{\sqrt{2}}$
   c. $\pm\frac{1+i}{\sqrt{2}}$ d. $1 \pm i$

4. $8^{\frac{1}{3}}$ =

   a. 2 b. 2, 2i, $2i^2$
   c. 2,-2,2i d. 2, 2w, $2w^2$

5. If w is a complex cube root of unity, then $\left(2+2w-w^2\right)^3-\left(1-w+w^2\right)^3$ =

   a. 9 b. 19
   c. -19 d. -9

6. $\frac{1+2i+3i^2}{1-2i+3i^2}$ =

   a. i b. -1
   c. – i d. 1

7. $1+w^n+w^{2n}$ = ..., if n is an integer not a multiple of 3

   a. o b. 3
   c. 1 d. w

8. If $z^2 = \left(\overline{z}\right)^2$ where z is a complex number, then

   a. z = 0
   b. z is purely real
   c. z is purely imaginary
   d. either (i) or (iii) is true

9. $\left|Z_1+Z_2\right|$ is

   a. $\leq \left|z_1\right|+\left|z_2\right|$ b. $\leq \left|z_1\right|+\left|z_2\right|$
   c. =. $\left|z_1\right|+\left|z_2\right|$ d. depends on z_1 and z_2

10. $\left(\cos\theta+i\sin\theta\right)^n = \cos n\theta + i\sin n\theta$ if

    a. n is a positive integer
    b. n is a negative integer
    c. n is a rational integer
    d. any of three cases(a), (b), (c)

11. When x^3+3x^2-kx-4 is divided by x – 2, the remainder is k, the value of k is

    a. 8 b. 0
    b. -8 d. 1

12. If $ax^3+9x^2+4x-10$ when divided by x =+ 3 leaves the remainder 5, then a =

    a. 4 b. 2
    c. 3 d. -413.

13. If $3^x = 4^y = 12^z$, then z =

    a. xy b. x + y
    c. $\frac{xy}{x+y}$ d. 4x+3y

14. $\left(\sqrt{7}-2\sqrt{10}\right)$ =

    a. $\pm\left(\sqrt{7}-\sqrt{5}\right)$ b. $\pm\left(\sqrt{5}+\sqrt{2}\right)$
    c. $\pm\left(\sqrt{5}-\sqrt{2}\right)$ d. $\pm\left(\sqrt{3}+2\sqrt{5}\right)$

15. $\log^0{}_{10}$ =

a. 0 b. ∞
c. $-\infty$ d. none of these

16. If $\log^{3}_{10} = 0.47712$, the number of digits in 3^{43} is
a. 21 b. 20
c. 22 d. 19

17. $\frac{1}{5}\overline{(2}.3465) =$
a. $4.\overline{85}3$ b. $\overline{5}.147$
c. $1.\underline{6}693$ d. -.4853

18. The roots of $a_1x^2 + b_1x + c_1 = 0$ and $a_2x^2 + b_2x + c_2 = 0$
a. $a_1 = a_2, b_1 = b_2, c_1 = c_2$ b. $c_1 = c_2 = 0$
c. $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$ d. None

19. If $x^2 + 10x + 21 = 0$ and $x^2 + 9x + m = 0$ have one root common then m =
a. 7 b. 21
c. 15 or 14 d. none of these

20. The maximum value of $5 + 4x - 4x^2$ is
a. 5 b. 6
c. 8 d. none of these

21. If $x = 2 + \sqrt{3}$, the expression $x^3 - 7x^2 + 13x - 2$ has the value
a. $3 + 2\sqrt{2}$ b. 1
c. $8 + 3\sqrt{3}$ d. -1

22. If the ratio of the roots of $ax^2 + bx + c = 0$ and of $px^2 + qx + r = 0$ is the same, then
a. $\frac{a}{p} = \frac{b}{q}$ b. $\frac{c}{r} = \frac{p}{q}$
c. $\frac{b^2}{ac} = \frac{q^2}{pr}$ d. $\frac{c}{a} = \frac{r}{p}$

23. If one root of $x^3 - 7x^2 + 19x - 13 = 0$, is 3+2i, the other roots are
a. 3-2i, 2-3i b. 3-2i, 1
c. 3,2 d. -1, 13

24. If the roots $x^4 - px^3 + qx^2 - rx + s = 0$ are α, β, γ, δ
then $\frac{1}{\alpha} + \frac{1}{\beta} + \frac{1}{\gamma} + \frac{1}{\delta} =$
a. p b. –q/s
c. r/s d. s

25. If the roots of $6x^2 - 5x + m^2 - m = 0$ are reciprocal of each other, then m=
a. 0 b. 1
c. 0 or 1 d. 3 or -2

26. The expression $ax^2 + bx + c$ has the same sign as of a if
a. $b^2 + -4ac > 0$ b. $b^2 - 4ac = 0$
c. $b^2 - 4ac \le 0$ d. None of the above

27. In an A.P. a = -14, d = 3, S = -35, then n =
a. 7 b. $3\frac{1}{3}$
c. 7 or $3\frac{1}{3}$ d. None of these

28. The sums of n terms of two arithmetic progressions are in the ratio $\frac{2n+1}{3n+5}$. The ratio of the fifth terms of the two series is
a. 11/20 b. 1/5
c. 19/32 d. 2/3

29. The sum of n terms of a series is given by $3n^2 + 5n + 1$. Then the 7^{th} term of the series is
a. 139 b. 24
c. 59 d. none of these

30. If we square either of the imaginary cube roots of unity, we obtain
a. its real root b. the other imaginary root

c. 1 d. none of the above

31. The sum of p terms as well as the sum of q terms of an A.P is S, then the sum of p+q is
    a. 2S b. o
    c. p+q d. none of the above
32. $\log_2 2 =$
    a. 1 b. ∞
    c. $-\infty$ d. -1/2
33. $\log_3 9 =$
    a. 2 b. 1
    c. 0 d. -1/2
34. If one root of $ax^2 + bx + c = 0$ is three times the other, then
    a. $b^2 = 3ac$ b. $3b^2 = 16ac$
    c. $b^2 = 2ac - ab$ d. $b^2 = 2ac + ab$
35. $x^5 = 1$, then x has …….values
    a. 5 b. 1
    c. 2 d. 10
36. The value of $\frac{x^2 - 1}{x - 1} when$ x = 1 is
    a. 2 b. 0
    c. 1 d. none of these
37. If in A.P., the pth term is q: qth term is p, then the nth term is
    a. p+q+n b. p+q-n
    c. pq+n d. pq-n
38. If the sum of p terms is q and of q terms is p in an A.P. the sum of p+q terms is
    a. p+q b. 0
    c. –(p+q) d. pq
39. If in an A.P. the pth terms is 1/q and the qth term is 1/p, then the sum of pq terms is
    a. $\frac{1}{pq}$ b. $\frac{1}{p} + \frac{1}{q}$
    c. $(pq)\left(\frac{1}{p} + \frac{1}{q}\right)$ d. $\frac{1}{2}(pq + 1)$
40. Between 100 and 70, eight arithmetic means are inserted. The third mean is
    a. $93\frac{1}{3}$ b. 90
    c. $96\frac{2}{3}$ d. none of these
41. The number of terms between 200 and 800 which are divisible by 7 is
    a. 80 b. 86
    c. 87 d. 85
42. The sum of natural numbers from 1 to 100 is
    a. 5000 b. 6000
    c. 5050 d. none of these
43. The sum of first n odd natural number is
    a. $\frac{n(n+1)}{2}$ b. $\frac{n(n+1)(2n+1)}{6}$
    c. $\frac{(n+1)(n+2)}{2}1$ d. n^2
44. An arithmetic progression remains A.P. if each term is
    a. added to same quantity
    b. same number is subtracted from each of them
    c. multiplied to or divided by the same non zero number
    d. zero number
45. The sum of the cubes of first n natural numbers is……..of the sum of first n natural numbers
    a. cube b. square
    c. square root of the cube d. none of these
46. The sum of n terms when nth term is $\frac{1}{2}n(n+1)$ is
    a. $\frac{n(n+1)(2n+1)}{6}$ b. $\frac{n(n+1)(n+2)}{6}$

c. $\frac{n(n+1)(n+2)(n+3)}{6}$ d. none of these

47. The arithmetic mean of two numbers is $25\frac{1}{2}$ and the geometric mean is 12. The numbers are
    a. 40, 11 b. 45, 6
    c. 48, 3 d. 36, 15
48. The sum of eight terms of a G.P is 17 times the sum of four terms. The common ratio is
    a. 4 b. 2
    c. 6 d. 3
49. If in a G.P. a = 1, r = 2, s = 1023, then n =
    a. 9 b. 8
    c. 10 d. 12
50. $1-\frac{3}{2}+\frac{9}{5}-\frac{27}{8}+.....\text{inf}.=$
    a. 2/5 b. -2/5
    c. -1/2 d. none of them
51. $\left(1+\frac{1}{2^{2`}}\right)+\left(\frac{1}{2}+\frac{1}{2^4}\right)+\left(\frac{1}{2^2}+\frac{1}{2^6}\right)+.....\text{inf}.=$
    a. 2 b. $2\frac{1}{2}$
    c. 7/3 d. 4
52. The sum of three numbers of G.P. is 61 and their product is 8000. The numbers are
    a. 10, 20, 40 b. 5, 25, 31
    c. 16, 20, 25 d. 12, 18, 31
53. In a G.P. (p+q) term is m and (p-q) term is n. The pth term is
    a. m/n b. $\sqrt{\left(\frac{m}{n}\right)}$
    c. $\sqrt{(mn)}$ d. $\sqrt{(m+n)}$
54. In the two-digit number x, both the sum and the difference of its digits is 4. What is the value of x?
    a. 13 b. 31 c. 40
    d. 48 e. 59
55. The fractional form of .2342 is
    a. $\frac{2342}{10000}$ b. $\frac{2341}{10000}$
    c. $\frac{26}{110}$ d. $\frac{26}{111}$
56. The second, third and sixth terms of an A.P. are in G.P. The common ratio is
    a. 3 b. 4
    c. 2 d. 1
57. If 5,x,y,z,405 are in G.P., then z =
    a. 15 b. 45
    c. 135 d. None of these
58. The smallest prime number greater than 53 is
    a. 54 b. 55 c. 57
    d. 59 e. 67
59. A sum of Rs. 5000 is loaned at 12% per annum interest, the interest being compounded every three months. The amount after 4 years is
    a. $5000\times\left(\frac{122}{100}\right)^4$ b. $5000\left(\frac{106}{100}\right)^8$
    c. $5000\times\left(\frac{103}{100}\right)^{16}$ d. $5000\times\left(\frac{103}{100}\right)^{12}$
60. Five geometric means are inserted between 1/3 and 243. The fourth mean is
    a. 9 b. 27
    c. 37 d. none of these
61. If x+9,x-6,4 are three consecutive terms of a G.P. then x =
    a. 0 b. 6
    c. 0,16 d. 0,6

62. If two non-zero positive integers p and q are such that p = 4q and p<8, then q=

a. 1 b. 2 c. 3 d. 4 e. 5

63. The sum of n terms of a series whose nth term is $2^n + n^2$ is

a. $\frac{n(n+1)(2n+1)}{6}$ b. $2(2^n - 1) + \frac{n(n+1)(2n+1)}{6}$

c. $\frac{1}{6}n(2n^2 - 3n + 1)$ d. $\frac{1}{3}n(2n^2 + 3n + 1)$

64. $\frac{1}{1.2} + \frac{1}{2.3} + \frac{1}{3.4} + \ldots\ldots\ldots$ inf. =

a. ∞ b. $\frac{1}{2}$

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

65. $\begin{vmatrix} 3 & 6 & 9 \\ 9 & 12 & 18 \\ 21 & 24 & 27 \end{vmatrix}$ =

a. $3\begin{vmatrix} 1 & 2 & 3 \\ 3 & 4 & 6 \\ 7 & 8 & 9 \end{vmatrix}$ b. 0

c. $6\begin{vmatrix} 1 & 1 & 1 \\ 3 & 2 & 2 \\ 7 & 4 & 3 \end{vmatrix}$ d. . $162\begin{vmatrix} 1 & 1 & 1 \\ 3 & 2 & 2 \\ 7 & 4 & 3 \end{vmatrix}$

66. If (x + 1/x) = 4, then x – 1/x =

a. 12 b. √12 c. 6 d. √6

e. cannot be determined

67. After being marked down 20%, a calculator sells for $10. The original selling price was

a. $ 20 b. $ 12.5 c. $ 12 d. $ 9

e. $ 7

68. If each element in a determinant D is replaced by its cofactor, the new determinant so formed =

a. D b. 0 c. – D d. D^2

69. Let A denote the area of a circular region. Which of the following denotes the circumference of that circular region?

a. $(A/\pi)^{1/2}$ b. $2A/\sqrt{\pi}$ c. $2\pi\sqrt{A}$

d. $2(A/\pi)^{1/2}$ e. $2\pi(A/\pi)^{1/2}$

70. The value of $\begin{vmatrix} 1 & 2 & 3 \\ 0 & x & 0 \\ 0 & 0 & x \end{vmatrix}$ is

a. x b. 2x

c. 6x d. x^2

71 If A = $\begin{vmatrix} a_1 & a_2 & a_3 \\ b_1 & b_2 & b_3 \\ c_1 & c_2 & c_3 \end{vmatrix}$ and B = $\begin{vmatrix} c_1 & a_1 & b_1 \\ c_2 & a_2 & b_2 \\ c3 & a_3 & b_3 \end{vmatrix}$ then

a. A = B b. A = -B

c. B = 0 d. $B = A^2$

72. A determinant is unaltered if

a. every element in any row is multiplied by the same factor

b. two columns are interchanged

c. two rows are interchanged

d. rows are changed into columns and columns into rows

73. The determinant $\begin{vmatrix} x+2 & x & x+2 \end{vmatrix}$

$\begin{vmatrix} 0 & x+2 & x+5 \\ 0 & 0 & x-2 \end{vmatrix} = 0$ has ……number of roots.

a. 6 b. 4

c. 2 d. 3

74. $\begin{vmatrix} x_1 & y_1 & 1 \\ x_2 & y_2 & 1 \\ X_3 & y3 & 1 \end{vmatrix} = 0$ is the condition that the points (x_1, y_1), (x_2, y_2), (x_3, y_3)

a. from an equilateral triangle
b. form a right angled triangle
c. are collinear
d. (x_2, y_2) in the middle point of line joining (x_1, x_2), (x_3, x_3)

75. If ${}^{n}P_{r} = 1320$, then r =

a. 5 b. 6

c. 4 d. 3

76. If $DP_5 = 2np_4$

a. 8 b. 9

c. 11 d. 10

78. n persons are seated round a table. They can occupy their seats in…..ways

a. n! b. (n-1)!

c. n(n!) d. (n-2)!

79. If ${}^{x}C_{3} = 220$, then x =

a. 10 b. 12

c. 15 d. 8

80. The number of diagonals in a polygon of n sides is

a. ${}^{n}C_{2}$ b. n(n-1)

c. $\frac{1}{2}n(n-3)$ d. $\frac{1}{2}n(n-2)$

81. There are p mangoes, q apples, r bananas and n types of one fruit each. One or more fruits can be selected in ……..ways

a. $\frac{(p+q+r+n)!}{p!q!r!n!}$ b. $(pqr)2^{n}$

c. $(p+1)(q+1)(r+1)2^{n}$ d. $(p+1)(q+1)(r+1)2^{n}$-1

82. If n is an odd integer, which of the following must be an even integer?

a. n/2 b. 4n + 3 c. 2n d. n^4 e. $\sqrt{n}$

83. Which one of the following is a solution to the equation $x^4 - 2x^2 = -1$?

a. 0 b. 1 c. 2 d. 3 e. 4

84. The third term of a G.P is 4. the product of first five terms is

a. 4^3 b. 4^5

c. 4^4 d. none of these

85. The sum of n terms of the series $\frac{1}{2}+\frac{3}{4}+\frac{7}{8}+\frac{15}{16}+.....$ equals to

a. $2^{n}-n-1$ b. $n+2^{-n}-1$

c. $1-2^{-n}$ d. $2^{n}-1$

86. A five digit number divisible by 3 or to be formed using the numericals 0,1,2,3,4,5 without repetition. The total number of ways this can be done is

a. 216 b. 240

c. 600 d. 3125

87. Let a,b, c be in A.P. then $\frac{a}{bc}, \frac{1}{c}, \frac{1}{b}$ are in

a. A.P b. G.P.

c. H.P. d. none of these

88. The equation $x + y = 2; 2x + 2y = 3$ have

a. a unique solution
b. finitely many solutions
c. no solution
d. none of these

89. If $a^{x} = b, b^{y} = c, c^{z} = a$, the value of xyz is

a. 0 b. 2
c. 1 d. 3

90. The square root of $49+20\sqrt{6}$ is
a. $2\pm\sqrt{3}$ b. $7\pm\sqrt{3}$
c. $\pm\left(5+2\sqrt{6}\right)$ d. $\pm\left(7-\sqrt{6}\right)$

91. If (N + N) / N2 = 1, then N =
a. 1/6 b. 1/3 c. 1 d. 2 e. 3

92. The equations of 3x+4y=7 an d 21x+28y=49 have
a. a unique solution b. finitely many solutions
c. no solution d. infinite set of solution

93. $\dfrac{15}{\sqrt{10}+\sqrt{20}+\sqrt{40}-\sqrt{5}-\sqrt{80}} =$
a. $\sqrt{5}\left(\sqrt{5}+\sqrt{2}\right)$ b. $\sqrt{5}\left(2+\sqrt{2}\right)$
c. $\sqrt{5}\left(1+\sqrt{2}\right)$ d. $\sqrt{5}\left(3+\sqrt{2}\right)$

94. If $\dfrac{1}{b-a}+\dfrac{1}{b-c}=\dfrac{1}{a}+\dfrac{1}{c}$, then a, b, c are in
a. A.P. b. H.P.
c. G.P. d. H.P. and G.P. both

95. If the total surface area of a cube S is 22, what is the volume of S?
a. 1/3 x $(11/3)^{1/2}$ b. √11 / 3 c. 11/3
d. 11/3 x $(11/3)^{1/2}$ e. 121/9

96. If an object travels at five feet per second, how many feet does it travel in one hour?
a. 30 b. 300 c. 720 d. 1800 e. 18000

97. Both the roots of $(x-a)(x-c)+(x-c)(x-a)+(x-a)(x-b)$ are always……..
a. positive b. negative
c. real — d. none of these

98. In a class of 78 students 41 are taking French, 22 are taking German and 9 students are taking both French and German. How many students are not enrolled in either course?
a. 6 b. 15 c. 24 d. 33 e. 54

99. If a,b,c are in A.P. and a^2, b^2, c^2 are in H.P.
a. a = b = c b. 2b = 3a+c
c. $b^2=\dfrac{\sqrt{ac}}{8}$ d. none of these

100. If A,G,H be the arithmetic, geometric and harmonic means of two numbers, then
a. G = A + H b. $G=\dfrac{A+H}{2}$
c. $G=\pm\sqrt{AH}$ d. $G=\dfrac{2AH}{A+H}$

101. Which of the following statement is true?
a. A null matrix is unique
b. A unit matrix is unique
c. the inverse of matrix (if it exists) is unique.
d. The unit matrix doesn't possesses an inverse.

102. Which of the following statement is true?
a. There exists an algebra of matrices similar to algebra of numbers
b. If A and B are both defined then A and B are square matrices of the same order
c. A diagonal matrices doesn't commutes with every other matrix of the same order.
d. The determinant of the sum of two matrices is equal to the sum of the determinants of the matrices

103. Which of the following statement is true?
a. $3\begin{vmatrix} a_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \end{vmatrix} = \begin{vmatrix} 3a_{11} & 3a_{12} & 3a_{13} \\ a_{21} & a_{22} & a_{23} \end{vmatrix}$

b. $3\begin{vmatrix} a_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \end{vmatrix} = \begin{vmatrix} 3a_{11} & a_{12} & a_{13} \\ 3a_{21} & a_{22} & a_{23} \end{vmatrix}$

c. $\begin{vmatrix} a_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \end{vmatrix} = \begin{vmatrix} 3a_{11} & 3a_{12} & 3a_{13} \\ 3a_{21} & 3a_{22} & 3a_{23} \end{vmatrix}$

d. none of these

104. Matrix multiplication of two n×n square matrices is
   a. closed i.e. the product is a $n \times n$ matrix
   b. doesn't follows associative law
   c. doesn't follows distributive law.
   d. always commutative

105. If $A^2 = I$ then always A = I
   a. true b. false

106. Which of the following statement is true?
   a. AO = O where O is a null matrix
   b. AI = I where I is identity matrix
   c. If A is a square matrix of order 3, then $|5A| = 5|A|$
   d. (AB)'= A'B'

107. $\begin{vmatrix} 1 & 5 \\ 3 & 7 \end{vmatrix}^2 = \begin{vmatrix} 1^2 & 5^2 \\ 3^2 & 7^2 \end{vmatrix}$
   a. true
   b. false

108. Which of the statement is false, A being a square matix?
   a. $|A^{-1}| = |A|$ b. $|A'| = |A|$
   c. $|A'| = \left|\frac{1}{A}\right|$ d. $|AB| = |A||B|$

109. If $A = \begin{bmatrix} a & b \\ c & d \end{bmatrix}$ and $ad \neq bc$, then $A^{-1} =$
   a. $\begin{bmatrix} \frac{1}{a} & \frac{1}{b} \\ \frac{1}{c} & \frac{1}{d} \end{bmatrix}$ b. $\frac{1}{ad-bc}\begin{bmatrix} \frac{1}{a} & \frac{1}{b} \\ \frac{1}{c} & \frac{1}{d} \end{bmatrix}$
   d. $\frac{1}{|A|}\begin{bmatrix} d & -b \\ -c & a \end{bmatrix}$ d. $\frac{1}{|A|}\begin{bmatrix} d & -c \\ -b & a \end{bmatrix}$

110. The value of k when the matrix $\begin{bmatrix} 2 & k \\ 3 & 5 \end{bmatrix}$ does not have an inverse is
   a. 2 b. 5
   c. 3/10 d. 10/3

111. If $A = \begin{bmatrix} ab & b^2 \\ -a^2 & -ab \end{bmatrix}$ then $A^2 =$
   a. diagonal matix b. null matrix
   c. unit matrix d. none of these

112. If $A = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \end{bmatrix}$ then $A^2 =$

a b -1

a. unit matrix b. null matrix
c. A d. – A

113. If f(x) = $\left|(x^2 - 50)\right|$, what is the value of f(-5) ?
a. 75 b. 25 c. 0 d. -25 e. -75

114. The systems of equations
$4x - 2y + 6z = 8, 2x - y + 3z = 5, 2x - y + 3z = 4$ is
a. consistent b. inconsistent

115. If A= $\begin{pmatrix} 0 & -1 & 1 \\ 2 & -2 & 1 \\ 2 & -1 & 1 \end{pmatrix}$, B = $\begin{pmatrix} 0 & -1 & 1 \\ 0 & 1 & -1 \\ 0 & 3 & -3 \end{pmatrix}$ then $\left|AB\right|$ =
a. 0 b. 1
c. 3 d. none of these

116. If (x, y) $\begin{bmatrix} 2 & 3 \\ 0 & 1 \end{bmatrix}$ = (6, 10) the values of x and y are
a. (3, 4) b. (3, 1)
c. (1, 3) d. none of these

117. If A = $\begin{pmatrix} 1 & 1 & 1 \\ 1 & 1 & 1 \\ 1 & 1 & 1 \end{pmatrix}$ then A^3 =
a. A b. 2A
c. 3A d. 9A

118. For a square matrix A, A adj A =
a. – I b. $\left|A\right|$
c. $\left|A\right|$ I d. none of these

119. If A is a square matrix of order n and k is any scalar, then $\left|kA\right|$ =
a. $\left|kA\right|$ b. nk$\left|A\right|$
c. $k^n\left|A\right|$ d. none of these

120. $\sqrt{5}$ percent of $5\sqrt{5}$ =
a. 0.05 b. 0.25 c. 0.5 d. 2.5 e. 25

121. If $\begin{pmatrix} x+1 & 4 \\ 2 & x+y \end{pmatrix} = \begin{pmatrix} 1 & 5 \\ 6 & 2 \end{pmatrix} - \begin{pmatrix} -1 & 1 \\ 4 & -4 \end{pmatrix}$ then
a. x = 1, y = 4 b. x = 1, y = 5
c. x = -1, y = 5 d. x = 1, y = -5

122. If $\begin{bmatrix} 2 & 4 & -6 \\ -3 & -5 & 7 \\ -1 & x & 3 \end{bmatrix}$ is a singular matrix then x =
a. 4 b. 3
c. -2 d. 5

123. If $\Delta = \begin{vmatrix} a_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \\ a_{31} & a_{32} & a_{33} \end{vmatrix}$ then which of the statement is true? If A_{ij} denotes the cofactor of a_{ij}
a. $a_{11}A_{11}+a_{12}A_{12}+a_{12}A_{13} = 0$
b. $a_{11}A_{11}+a_{12}A_{12}+a_{13}A_{13} = \Delta$
c. $a_{11}A_{31}+a_{12}A_{32}+a_{13}A_{33} = 0$
d. none

124. If A = 3×4 matrix, B = 3×4 matrix, C = 4×5 matrix and D = 5×5 matrix then
a. A+B exists b. A + C exists
c. B+C exists d. C+D exists

125. If $A = \begin{pmatrix} 3 & -4 \\ 1 & -1 \end{pmatrix}$ then $A^n =$

a. $\begin{pmatrix} 3n & -4n \\ n & -n \end{pmatrix}$ b. $\begin{pmatrix} 2+n & 5-n \\ n & -n \end{pmatrix}$

c. $\begin{pmatrix} 3^n & (-4)n \\ 1^n & (-1)n \end{pmatrix}$ d. none of these

126. If $\begin{pmatrix} 1 & 3 \\ 0 & 1 \end{pmatrix} X = \begin{pmatrix} 1 & -1 \\ 0 & 1 \end{pmatrix}$ then X =

a. $\begin{pmatrix} 1 & -2 \\ 0 & -1 \end{pmatrix}$ b. $\begin{pmatrix} 1 & -4 \\ 0 & 1 \end{pmatrix}$

c. $\begin{pmatrix} 2 & -2 \\ 0 & 1 \end{pmatrix}$ d. none of these

127. In a G. P., the fifth term is 9 times the third term and the second term is 6. Then the first term is

a. 2 b. 3
c. 1 d. 9

128. Which of the following are true?

a. $(ABC)^{-1} = A^{-1}B^{-1}C^{-1}$

b. $(AB)' = A'B'$

c. adj(ABC) = (adjC) adj(B)adj(B)

d. none

129. If a,b,c are different and

$$\begin{vmatrix} a & a^2 & a^3 - 1 \\ b & b^2 & b^3 - 1 \\ c & c^2 & c^3 - 1 \end{vmatrix} = 0 \text{ then}$$

a. a + b + c = 0 b. a + b + c = 1
c. ab + bc + ca = 0 d. abc = 1

130. If a, b, c are different and

$$\begin{vmatrix} 0 & x-a & x-b \\ x+1 & 0 & x-c \\ x+b & x+c & 0 \end{vmatrix} = 0 \text{ then the value of x is}$$

a. a b. b
c. c d. 0

131. -20 , -16 , -12 , -8 .... In the sequence above, each term after the first is 4 greater than the preceding term. Which of the following could not be a term in the sequence?

a. 0 b. 200 c. 440 d. 668 e. 762

132. The value of the angle 10π radian is

a. 1800o b. -1800o
c. $\frac{1^0}{1\delta}$ d. none of these

133. The value of the angle 60^0 is

a. -π/3 b. π/3
c. π/3 radius d. none of these

134. If $\sin\theta = \frac{\sqrt{3}}{2}$, θ is an obtuse angle, than $\tan\theta$ is equal to

a. $+\sqrt{3}$ b. $-\sqrt{3}$
c. $-\frac{1}{\sqrt{3}}$ d. $+\frac{1}{\sqrt{3}}$

135. If $a^2 = 12$, then a^4 =

a. 144 b. 72 c. 36 d. 24
e. 16

136. Sign of the expression SinA + cosA where A = -1125^0 is

a. + b. -
c. zero d. none of these

137. The value of $\sin 42^0 \cos 39^0 + \cos 30^0 \sin(33^0)$ is

a. 0 b. 0
c. -1 d. none of these

138. The value of $\cos 15^0 - \sin 15^0$ is

a. $\sqrt{2}$ b. ½
c. $1/\sqrt{2}$ d. none of these

139. The value of $\cos 15^0 + \sin 15^0$ is

a. $\frac{\sqrt{3}}{\sqrt{2}}$ b. $\frac{\sqrt{3}}{2}$
c. $-\frac{\sqrt{3}}{\sqrt{2}}$ d. $1/\sqrt{2}$

140. The value of $\cos 75^0 - \cos 15^0$ is

a. $\frac{\sqrt{3}}{\sqrt{2}}$ b. $\frac{\sqrt{3}}{2}$
c. $\left[\sqrt{5}+1\right]/4$ d. none of these

141. The value of $\cos 75^0 - \cos 15^0$ is

a. $\sqrt{2}$ b. $\frac{\sqrt{3}}{2}$
c. . $1/\sqrt{2}$ d. $\frac{\sqrt{3}}{2}$

142. $\cos^2\theta + \sec^2\theta$ is

a. less than 1 b. equal to 1
c. more than or equal to 2 d. greater than 1

143. $\sin^2\theta + \cos ec^2\theta$ is

a. <1 b. > 1
c. ≥ 2 d. 1

144. $\tan^2\theta + \cot^2\theta$ is for maxmium value

a. ≤ 1 b. ≤ 2
c. ≥ 2 d. >5

145. $\sin 75^0$ is equal to

a. $\frac{2-\sqrt{3}}{\sqrt{2}}$ b. $\frac{\sqrt{3}+1}{2\sqrt{2}}$
c. $\frac{\sqrt{(3-1)}}{2\sqrt{2}}$ d. none of these

146. The value of $\sin 15^0$ is

a. $\frac{\sqrt{3}+1}{2\sqrt{2}}$ b. $\frac{\sqrt{3}-1}{2\sqrt{2}}$
c. $2-\sqrt{3}$ d. $2+\sqrt{3}$

147. The $\tan\theta = -1/\sqrt{5}$ and θ lies in the fourth quadrant, then the value of cosθ is

a. $1/\sqrt{6}$ b. ½
c. $2/\sqrt{6}$ d. $\sqrt{5}/\sqrt{6}$

148. . The $\tan\theta = -1/\sqrt{5}$ and θ lies in the second quadrant, then the value of sinθ

a. $\sqrt{5}/\sqrt{6}$ b. $1/\sqrt{5}$
c. $-1/\sqrt{5}$ d. $1/\sqrt{6}$

149. What is the length of the line segment in the x-y plane with end points at (-2,-2) and (2,3)?

a. 3 b. √31 c. √41 d. 7
e. 9

150. If $\sin\alpha + \cos\alpha = 1$, the value of $\sin^2\alpha$ is

a. 0 b. 1/2

c. 1/3 d. none of these

151. The value of $\cot 7\frac{1}{2}^0$ is

a. $\sqrt{6}+\sqrt{3}+\sqrt{2}+2$

b. $\sqrt{6}-\sqrt{3}-\sqrt{2}+2$

c. $\sqrt{6}+\sqrt{3}-\sqrt{2}-2$

d. none of these

152. The value of $\cot(\pi/4+\theta)\cot(\pi/4-\theta)$ is

a. 0 b. -1

c. $\sqrt{(2)}$ d. none of these

153. The greatest value of sinxcosx is

a. 1 b. 2

c. $\sqrt{(2)}$ d. ½

154. The lowest value of sin x + cos x is

a. $\sqrt{(2)}$ b. $-\sqrt{(2)}$

c. 1/2 d. +1

155. If the product of 6 integers is negative, at most how many of the integers can be negative?

a. 2 b. 3 c. 4 d. 5 e. 6

156. A solid cube of side 6 is first painted pink and then cut into smaller cubes of side 2. How many of the smaller cubes have paint on exactly 2 sides?

a. 30 b. 24 c. 12 d. 8

e. 6

157. A triangle has a perimeter 13. The two shorter sides have integer lengths equal to x and x + 1. Which of the following could be the length of the other side?

a. 2 b. 4 c. 6 d. 8

e. 10

158. The value of $\tan\left(\frac{\pi}{4}+\theta\right)\tan\left(\frac{3\pi}{4}+\theta\right)$ is

a. -2 b. 2

c. -1 d. none of these

159. 12 litres of water a poured into an aquarium of dimensions 50cm length , 30cm breadth, and 40 cm height. How high (in cm) will the water rise?(1 litre = 1000cm³)

a. 6 b. 8 c. 10 d. 20 e. 40

160. If $\tan\alpha = 1/2, \tan\beta = 1/3$, then the value of $\alpha+\beta$ is

a. π/4 b. π/3

c. π/2 d. none of these

161. The value of $\sin\frac{\pi}{10}+\sin\frac{13\pi}{10}$ is

a. -1/2 b. 1/2

c. $\sqrt{(3)/2}$ d. none of these

162. Six years ago Anita was P times as old as Ben was. If Anita is now 17 years old, how old is Ben now in terms of P ?

a. 11/P + 6 b. P/11 +6 c. 17 - P/6

d. 17/P e. 11.5P

163. The value of $\tan\left(\frac{\pi}{4}+\alpha\right)+\tan\left(\frac{\pi}{4}-\alpha\right)$ is

a. $\sec 2\alpha$ b. $2\sec\alpha$

c. $2\sec 2\alpha$ d. none of these

164. The value of $\sin 10^0 \sin 50^0 \sin 70^0$ is

a. 1/4 b. 1/2

c. 3/4 d. 1/8

165. If $A+B = 225^0$, then the value of $\frac{\cot A}{1+\cot A}.\frac{\cot B}{1+\cot B}$ is

a. 1 b. -1/2
c. 1/2 d. none of these

166. The length of a minute pointer of a watch is 15 cm. The distance traveled by the pointer in 40 minutes is
a. 20πcm b. 4π/3 cm
c. 10 cm d. none of these

167. The value of $\cos 105^0 + \sin 105^0$ is
a. 1 b. $\sqrt{3}/2$
c. $1/\sqrt{2}$ d. 1/2

168. The value of x for maximum value of cosx + sinx is
a. 90^0 b. 60^0
c. 45^0 d. 30^0

169. The value of x for maximum value of $\sqrt{3}\sin x + \cos x$ is
a. 90^0 b. 60^0
c. 45^0 d. 30^0

170. If $A + B + C = n\pi$ then the value of tan (A+B+C) is
a. $n\pi$ b. 0
c. 1 d. ∞

171. If in a $\Delta ABC, a = 2, b = 3$ and $\angle B = 60^0$, then the value of $\angle A$ is
a. $\cos^{-1}\frac{\sqrt{2}}{3}$ b. $\cos^{-1}\frac{\sqrt{3}}{4}$
c. $\cos^{-1}\frac{1}{2}$ d. none of these

172. If the angles of a triangle are in the ratio of 1:2:7, then the ratio of biggest side of the smallest side is
a. $\sqrt{2}+1:\sqrt{2}-1$ b. $\sqrt{5}+1:\sqrt{5}-1$
c. $\sqrt{3}+1:\sqrt{3}-1$ d. none of these

173. If the angles of a triangle are in the ratio of 2:3:5, then the ratio of biggest side of the smallest side is
a. $4:\sqrt{\left(10-2\sqrt{5}\right)}$ b. $\sqrt{3}+1:\sqrt{3}-1$
c. $2+\sqrt{3}:2-\sqrt{3}$ d. none of these

174. In a triangle ABC, a=2, b=3, c=4, then the value of cos A is
a. 1/24 b. 11/16
c. 7/8 d. -1/4

175. The two sides of a triangle are $\sqrt{3}+1$ and $\sqrt{3}-1$ and the angle between the two is 60^0 then the third side is
a. 4 b. $\sqrt{6}$
c. $\sqrt{3}$ d. none of these

176. With the usual notations, if the area of a triangle is $4(s-b)(s-b)$ then cot A is
a. 16/15 b. $\sqrt{3/2}$
c. 15/8 d. none of these

177. If cosA+cosB+2cosC=2, then the sides of the triangle ABC are in
a. A.P. b. G.P.
c. H.P. d. none of these

178. If $\sin^2 A + \sin^2 B + \sin^2 C = 2$, then the triangle ABC is
a. right angled b. equilateral
c. isosceles d. none of these

179. Which of the following can be used to illustrate that not all prime numbers are odd?
a. 1 b. 2 c. 3 d. 4 e. 5

180. The angle of elevation of the sum when the length of the shadow of a pole is $\sqrt{3}$ times the height of the pole is
a. 30^0 b. 45^0
c. 60^0 d. none of these

181. The horizontal distance between two towers is 60 m and the angular depression of the top of the first as seen from the top of the second,

which is 150 m high is 30^0, the height of the first is

a. 120 m
b. $10\left(15+2\sqrt{3}\right)m$
c. $10\left(15-2\sqrt{3}\right)m$
d. none of these

182. If $\sin\theta = \sin\alpha$ the general value of θ is

a. $n\pi+(-1)^n\alpha$
b. $n\pi+(-1)^n\alpha$
c. $2n\pi\pm\alpha$
d. none of these

183. If cosθ = cosα, the general value of θ is

a 2nπ+α
b. 2nπ-α
c. 2nπ ± α
d. none of these

184. If tanθ = tan α, the general value of θ is

a. nπ+α
b. 2nπ+α
c. nπ- α
d. none of these

185. If $\sin^2\theta = 1$, the general value of θ is

a. $n\pi\pm\pi/2$
b. $n\pi\pm(-1)^n\pi/2$
c. $2n\pi\pm\pi/2$
d. none of these

186. If $\cos^2\theta = \frac{1}{4}$, the general value of θ is

a. $n\pi\pm\pi/3$
b. $2n\pi+\pi/3$
c. $n\pi\pm\pi/6$
d. none of these

187. If $\tan^2\theta = \frac{1}{3}$, the general value of θ is

a. $n\pi+\pi/6$
b. $n\pi\pm\pi/6$
c. $2n\pi\pm\pi/3$
d. none of these

188. If $\cos\theta = 1/\sqrt{2}$ and tanθ=1, the general value of θ is

a. $(2n+1)\pi+\pi/4$
b. 2nπ + π/4
c. $n\pi\pm n/4$
d. none of these

189. The most general value of θ that satisfies cotθ = $-\sqrt{3}$ and cosec $\theta = -2$ is

a. $2n\pi+\pi/6$
b. $2n\pi-\pi/6$
c. $2n\pi\pm\pi/6$
d. none of these

190. The general value of θ that satisfies $\tan 5\theta = \cot 2\theta$ is

a. $\frac{1}{2}\left(n\pi+\frac{\pi}{2}\right)$
b. $n\pi+\frac{\pi}{14}$
c. $2n\pi\pm\frac{\pi}{14}$
d. none of these

191. If $\sin 5\vartheta = 1/\sqrt{2}$ the general value of θ is

a. $\frac{n\pi}{5}+(-1)^n\frac{\pi}{20}$
b. $n\pi+(-1)^n\frac{\pi}{20}$
c. $2n\pi+\frac{\pi}{20}$
d. none of these

192. The most general value of θ which satisfies $\sin\theta = -1/2$ and $\tan\theta = 1/\sqrt{3}$ is

a. $2n\pi+\frac{7\pi}{6}$
b. $n\pi+(-1)^n\frac{7\pi}{6}$
c. $n\pi+\frac{7\pi}{6}$
d. none of these

193. If in a ΔABC, a = 15, b= 36, c = 39 then cosA is

a. 12/13
b. 9/13
c. -12/13
d. none of these

194. If in ΔABC, a = 13, b = 14, c = 15 then

(i). sin $\frac{A}{2}$ is

a. $\frac{1}{5}\sqrt{5}$
b. $-\frac{\sqrt{5}}{5}$
c. 3/5
d. none of these

195. Given $a=\sqrt{3}, b=\sqrt{2}$ and $c=\dfrac{\sqrt{6}+\sqrt{2}}{2}$ the angle are

a. $60^0, 45^0, 75^0$

b. $70^0, 60^0 \; and \; 50^0$

c. $45^0, 45^0 \; and \; 90^0$

d. none of these

196. If a = 18, b = 24, c = 30, the value of sinA is

a. 3/5 b. -3/5

c. 1 d. none of these

197. If a = 18, b = 24, c = 30, then the value of sin C is

a. 1 b. -1

c. 1/2 d. none of these

198. If a = 35, b = 84, c = 91, the value of tan A is

a. 5/12 b. 4/11

c. 1 d. none of these

199. If in a ΔABC, a =2, b = $1+\sqrt{3}$ and $\angle C = 60^0$ then $\angle A$ is

a. 60^0 b. 45^0

c. 75^0 d. none of these

200. If in a $\Delta ABC, a=2, b=\sqrt{3}+1$ and $\angle C = 60^0$ then the value of the side is

a. $\sqrt{3}$ b. $\sqrt{6}$

c. $\sqrt{2}$ d. none of these

201. In a triangle, $\angle A = 15^0, a=4, b=4\left(\sqrt{3}+1\right)$ the sides c is

a. $2\sqrt{6}\left(\sqrt{3}+1\right), 2\sqrt{2}\left(\sqrt{3}+1\right)$

b. $2\left(\sqrt{3}+1\right), \sqrt{6}\left(\sqrt{3}+1\right)$

c. $2\left(\sqrt{3}+1\right), \sqrt{6}\left(\sqrt{3}+1\right)$

d. none of these

202. If the area of triangle is 96 and the radii of the three escribed circles respectively 8,12 and 24 then the sides are

a. 12, 16, 20 b. 16, 20, 22

c. 16, 24, 26 d. none of these

203. The radius of the inscribed circle of the triangle with sides 18, 24, 30 cm is

a. 15 b. 6

c. 12 d. 18

204. If the sides of triangle are 13, 14 and 15cm, the value of R (radius of the circumference) is

a. 8.125 cm` b. 10 cm

c. 7.235 cm d. none of these

205. In a $\Delta ABC, a=13, b=14, c=15$, the value of r (radius of incircle) is

a. 5 cm b. 4 cm

c. $2\sqrt{2}$ cm d. none of these

206. $\sin^{-1}\left\{\sin\left(\dfrac{5\pi}{6}\right)\right\}$ is equal to

a. 30^0 b. $5\pi/6$

c. $13\pi/6$ d. none of these

207. $\sin^{-1}\left\{\sin\dfrac{2\pi}{3}\right\}$ is equal to

a. $2\pi/3$ b. $\pi/3$

c. 30^0 d. none of these

208. $\cos^{-1}\left\{\cos\left(-45^0\right)\right\}$ is equal to

a. -45^0 b. 45^0

c. 30^0 d. none of these

209. $\cos^{-1}\left\{\cos\left(\dfrac{5\pi}{4}\right)\right\}$ is equal to

a. $5\pi/4$ b. $3\pi/4$

c. 2π d. none of these

210. $\tan^{-1}\left\{\tan\left(4\pi/3\right)\right\}$ is equal to

a. $4\pi/3$ b. $\pi/3$

c. none of these

211. $\tan^{-1}\left\{\tan\left(\frac{3\pi}{4}\right)\right\}$ is equal to

a. $-\pi/4$ b. $3\pi/4$

c. 2π d. none of these

212. $\text{cosec}^{-1}\left\{\cos ec\left(\frac{5\pi}{4}\right)\right\}$ is equal to

a. $5\pi/4$ b. $2\pi/4$

c. $3\pi/4$ d. none of these

213. . $\text{cosec}^{-1}\left\{\cos ec\left(\frac{5\pi}{2}\right)\right\}$ is equal to

a. $\pi/2$ b. $5\pi/2$

c. π d. none of these

214. $\sec^{-1}\left\{\sec\left(-\frac{\pi}{4}\right)\right\}$ is equal to

a. $-\pi/4$ b. $\pi/4$

c. $5\pi/2$ d. none of these

215. $\cot^{-1}\left\{\cot\left(-45^0\right)\right\}$ is equal to

a. -45^0 b. $3\pi/4$

c. π d. none of these

216. The value of $\sin^{-1}x+\cos^{-1}x$ is

a. $\pi/2$ b. 0

c. 1 d. none of these

217. The value of $\tan^{-1}x+\cot^{-1}x$ is

a. π b. $\pi/2$

c. 0 d. none of these

218. The value of $\sec^{-1}x+\cos ec^{1}x$ is

a. $\pi/3$ b. $\pi/2$

c. 0 d. none of these

219. The value of x which satisfies $\tan^{-1}2x+\tan^{-1}3x=\pi/4$ is

a. 1/6 b. 1/2

c. 1/3 d. none of these

220. The principal value of argument of 1+ i is

a. $\pi/4$ b. 0

c. $\pi/2$ d. none of these

221. The principal value of the argument of i is

a. $\pi/2$ b. $-\pi/4$

c. 0 d. none of these

222. The principal value of the argument of 1-I, is

a. $\pi/4$ b. . $-\pi/4$

c. $7\pi/4$ d. none of these

223. The centroid of a triangle whose vertices are $z_1, z_2 and z_3$ is

a. $\frac{z_1+z_2+z_3}{3}$ b. $\frac{z_1-z_2+z_3}{3}$

c. $\frac{z_1+z_2-z_3}{3}$ d. none of these

224. The modulus of $\frac{1-i}{1+i}$ is

a. 1 b. -1

c. 2 d. none of these

225. $\frac{\cos 20^0-\sin 20^0}{\cos 20^0+\sin 20^0}$

a. $\tan 20^0$ b. $\tan 70^0$

c. $\tan 25^0$ d. none of these

226. $\tan^{-}\frac{1}{2}+\tan^{-1}\frac{1}{3}=$

a. $\tan^{-1}\frac{5}{6}$ b. $\tan^{-1}\frac{5}{12}$

c. $\tan^{-1}1$ d. none of these

227. The value of $\sin 50^0-\sin 70^0+\sin 10^0=$

a. ½ b. 0

c. $\sqrt{3}/2$ d. none of these

228. $\sin^{-1}\frac{3}{5}+\sin^{-1}\frac{5}{13}$ is

a. $\sin^{-1}\frac{64}{65}$ b. $\sin^{-1}\frac{56}{65}$

c. $\cos^{-1}\frac{64}{65}$ d. none of these

229. $\cos^{-1}\frac{3}{5}+\cos^{-1}\frac{5}{13}=$

a. $\cos^{-1}\frac{33}{65}$ b. $\cos^{-1}\left(-\frac{33}{65}\right)$

c. $\cos^{-1}\frac{64}{65}$ d. none of these

231. If in triangle ABC, tan A = 1, tan B = 2 then a:b:c =

a. 1:2:3 b. $\sqrt{5}:2\sqrt{2}:3$

c. $3:2\sqrt{2}:\sqrt{5}$ d. none of these

232. $\tan 90^0=$

a. ∞ b. $-\infty$

c. tends to ∞ d. none of these

233. The least positive integer value of $\cot^{-1}+\cot^{-1}\frac{1}{2}+\cot^{-1}\frac{1}{3}$ is

a. $\pi/2$ b. $\pi/2$

c. 0 d. none of these

234. If $\alpha+\beta=\pi/4$ then (1 +tan α)(1+tan β) =

a. 2 b. 1

c. 0 d. none of these

235. In a triangle $r_1+r_2+r_3-r=$

a. 0 b. R

c. 4R d. 2R

236. If in a triangle ABC, the sides a,b,c are in A.P. then cotA/2,cotB/2, cot C/2 are

a. G.P. b. A.P.

c. H.P. d. none of these

237. If $\tan\theta=-\frac{4}{3}$ then $\sin\theta$ is

a. $-\frac{4}{5}$ or $\frac{4}{5}$ b. $\frac{4}{5}$ or $\frac{4}{5}$

c. $\frac{4}{5}$ or $-\frac{4}{5}$ d. none of these

238. If $\alpha+\beta+\gamma=2\pi$, then

a. $\tan\alpha/2+\tan\beta/2+\tan\gamma/2=\tan\alpha/2+\tan\beta/2+\tan\gamma/2$

b. $\tan\alpha/2\tan\beta/2+\tan\beta/2\tan\gamma/2+\tan\gamma/2\tan\alpha/2=1$

c. $\tan\alpha/2+\tan\beta/2+\tan\gamma/2=-\tan\alpha/2\tan\beta/2+\tan\gamma/2$

d. none of these

239. Given $A=\sin^2\theta+\cos^4\theta$, then for real values of θ

a. $1\le A\le 2$ b. $\frac{3}{4}\le A\le 1$

c. $\frac{13}{16}\le A\le 1$ d. none of these

240. In a $\Delta ABC, \angle A=90^0$ and AD is an altitude. If $\frac{BD}{BA}=\frac{AB}{x}$,

then x =

a. AC b. AD

c. DC d. BC

241. The value of $\tan\left[\cos^{-1}\frac{4}{5}+\tan^{-1}\frac{2}{3}\right]$ is

a. 6/17 b. 7/16

c. 16/7 d. none of these

242. The number 0.127 is how much greater than 1/8 ?

a. ½ b. 2/10 c. 1/50 d. 1/500

e. 2/500

243. If tanA = $(1-\cos B)/\sin B$, then tan2A=tanB

a. true b. false

244. The number of degrees that the hour hand of a clock moves through between noon and 2.30 in the afternoon of the same day is

a. 720 b. 180 c. 75 d.65 e.60

245. There exists a value of θ between 0 and 2π which satisfies the equation

$\sin^4\theta-2\sin^2\theta-1=0$, is

a. true b. false

246. The numerical value of $\tan\left(2\tan^{-1}\frac{1}{5}-\pi/4\right)$ is…….

a. $-2\pi/3$ a. $\pi/2$

c. $2\pi/3$ d. none of the above

247. The principal value of $\sin^{-1}(\sin 2\pi/3)$ is

a. $-2\pi/3$ b. $2\pi/3$

c. $4\pi/3$ d. none of these

248. The value of the expression $\sqrt{3}$ cosec20^0-sec20^0 is equal to

a. 2 b. $2\sin 20^0/\sin 40^0$

c. 4 d. $4\sin 20^0/\sin 40^0$

249. $\cos^{-1}\frac{1}{2}+2\sin^{-1}\frac{1}{2}=$

a. $\pi/4$ b. $\pi/6$

c. $\pi/3$ d. none of these

251. A set is

a. collection of objects

b. a non-empty collection o f objects

c. a well defined collection of objects

d. a collection of well defined objects

252. An empty set is

a. a set having no subset

b. a set having no super set

c. a set having no elements

d. a set having only the element zero

253. A universal set is
   a. the superset of every set under consideration
   b. the subset of every set under consideration
   c. the set of all real numbers
   d. the set of all complex numbers

254. Which of the following is null set
   a. $\{0\}$ b. $\{\phi\}$
   c. $\{1\}$ d. ϕ

255. Which of the following sets is empty
   a. $\{x : x = x\}$ b. $\{x : x \neq x\}$
   c. $\{x : x = x^2\}$ d. none of these

256. The price of a cycle is reduced by 25 per cent. The new price is reduced by a further 20 per cent. The two reductions together are equal to a single reduction of
   a. 45% b. 40% c. 35% d. 32.5% e. 30%

257. Which of the following sets is non-empty
   a. {x:x: divides 0, x is an interger}
   b. {x:x divides 1, x is an integer}
   c. { x:x divides $\sqrt{2}$, x is an integer}
   d. {x:x divides $\sqrt{(-1)}$, x is real

258. If ϕ is the null set, then
   a. $\phi \subset \{\phi\}$ b. $\phi \notin \{\phi\}$
   c. $\{\phi\} \subset \phi$ d. none of these

259. If A = ϕ, B= $\{0\}$, C=$\{\phi\}$, then
   a. A = B b. A = C
   c. B = C d. none of these

260. If A = { 1,2,3}, B = { 2,3,1}, C = { 1,1,2,4,2,3} then,
   a. A = B b. A = C
   c. B = C d. none of these

261. Given:
   A = { x:x is a letter of the word reap}
   B = { x:x is a letter of the word paper}
   C = { x:x is a letter of the word prepared} then
   a. A = B b. A = C
   c. B = C d. none of these

262. If A = { 1,2}, then the power set A is
   a. {1}, {2}
   b. {1},{2},{1,2}
   c. {1}, {2}, {1,2}, ϕ }
   d. none of these

263. If A = {x,y}, then the power set A is
   a. {x}, {y} b. { ϕ }
   b. { ϕ ,{x},{y}} d. none of these

264. If A = {x,y,z}, then the proper subsets of A are
   a. {x}, {y}, {z}
   c. ϕ , {x,y,z}
   d. none of these

265. If A = {x,y,z}, then the proper subsets of A are
   a. {x}, {y}, {z} b.{x,y}, {x,z}, {y,z}
   c. ϕ , {x,y,z} d. none of these

266. The number of subsets of a set of order three is
   a. 3 b. 6
   c. 8 d. 9

267. If A= { 1,2,3} and B = { 3,4,5} then A $\cup B$ is
   a. { 1,2,4,5} b. {1,2,3,4,5}
   c. {3} d. none of these

268. If A = { 1,2,3} and B = { 3,4,5}, then $A \cap B$ is
   a. { 1,2,4,5} b. {1,2,3,4,5}
   c. {3} d. none of these

269. If A = {1,2,3,4} and B= {3,4,5,6} then A $\cup B$ is
   a. {3,4} b. {1,2}
   c. {5,6} d. none of these

270. If A = {1,2,3,4} and B= {3,4,5,6}, then;
   a. a. {3,4} b. {1,2}

c. {5,6} d. none of these

271. If A = {1,2,3,4} and B= {3,4,5,6}, then;
   a. $A \cup B = \{3,4\}$
   b. $A \cap B = \{1,2,3,4,5,6\}$
   c. $A \cap B = \{3,4\}$
   d. none of these

272. If A = {1,2,3,4} and B= {3,4,5,6}, then;
   a. $A \cup B = \{3,4\}$
   b. $A \cap B = \{1,2,5,6\}$
   c. A-B= { 1, 2}
   d. B –A = { 5,6}

273. If A is set and ϕ is the null set, then
   a. $A \cup A = \phi$ b. $A \cap A = \phi$
   c. $A \cup \phi = \phi$ d. $A \cap \phi = \phi$

274. . If A is set and ϕ is the null set, then
   a. $A \cup A = A$ b. $A \cap A = B$
   c. $A \cup \phi = \Phi$ d. none

275. If A is set and ϕ is the null set, then
   a. $A \cup \phi = \phi$ b. $A \cap \phi = \phi$
   c. $A \cup \phi = B$ d. $A \cap A = \phi$

276. If A = { a,b,c} and U = { a,b,c,d,e,f} then the complement is
   a. { d,e,f} b. {a,b,c}
   c. {a,b,c,d,e,f} d. none of these

277. If A is the set of natural numbers N and B is the set of integers Z, then A – B is
   a. the set of odd integers
   b. the set of even integers
   c. the set of negative integers
   d. none of these

278. If A is the set of natural numbers N and B is the set of integers Z, then A – B is
   a. N b. Z
   c. ϕ d. none of these

279. If A is the set of natural numbers N and B is the set of integers Z, then B-A is
   a. a. N b. Z
   c. ϕ d. none of these

280. If A is the set of natural numbers N and B is the set of integers Z, then B-A is
   a. { -1, -2, -3…..}
   b. {0,-1,-2,-3……}
   c. {0,1,2,3……}
   d. none of these

281. If A is the set of real numbers N and B is the set of positive integers Z, then
   a. $A \cup B = A$ b. $A \cup B = B$
   c. $A \cap B = A$ d. $A - B = B$

282. The symmetric difference of sets A and B is
   a. $(A - B) \cup (B - A)$ b. $(A \cup B) \cup (A \cap B)$
   c. $(A - B) \cap (B - A)$ d. $(A \cap B) - (A \cup B)$

283. The symmetric difference of A = { 1,2,3,4} and B = { 3,4,5,6} is
   a. { 3, 4} b. { 1, 2}
   c. { 5, 6} d. { 1, 2, 5, 6}

284. If A = { a,b,c,d} and B= { b,c,d,e} then
   a. A-B = { a}
   b. B-A= {a,e}
   c. A-B = { b ,c, d}
   d. B-A = { b, c, d}

285. If A = { a, b, c, d} and B= { b, c, d, e} then
   a. . A-B = { a, e} b. . B-A= {a, e}
   c. $A \Delta B = \{a, e\}$ d. none of these

286. If A = { a, b, c, d} and B = { c, d, e, f} then
   a. A-B = { a, b} b. A-B = { c, d}
   c. A-B = { e, f} d. none of these

287. If A = { 1,2,3,4} and B = { 3,4,5,6}, then

a. A-B = { 1, 2} b. B-A= {4,5, 6}
c. $A \cap B = \{3,4,5\}$ d. none of these

288. If A = { 1,2,3} and B = { 3, 4, 5} and U = { 1,2,3,4,5,6}, then
a. $A' = \{3,4,5,6\}$ b. $B' = \{1,2,6\}$
c. $(A-B)' = \{3,4,5,\}$ d. $(B-A)' = \{1,2,3,4\}$

289. If A = { x,y,t}, B = { y,z u}and C = { x, z, u}, then
a. A – B = { y,u} b. B – C = { z, u}
c.C – A = { x} d. none of these

290. If A = { x,y,t}, B = { y, z,u} and C = { x, z, y}, then
a. A – B = { x, t} b. B – C = { y, t}
c. C – A = { x} d. none of these

291. If A = { x,y,u}, B = { y, z, u}, C = { z, x, u}, then
a. . A – B = {z} b. . B – C = {y}
c. C-A = { x} d. none of these

292. If A is a set and U is the universal set, then
a. $A \cup B = U$ b. $A \cup U = U$
c. $A \cap B = U$ d. $A \cap U = U$

293. If A is any set and U is the universal set , then
a. $A \cup U = A$ b. $A \cup \phi = A$
c. $A \cap U = U$ d. $A \cap \phi = A$

294. If A is any set and A' is its complement , then
a. $A \cup A' = \phi$ b. $A \cup A' = U$
c. $A \cap A' = U$ d. none of these

295. If A= { 1,2,3} and B= { 3,4,5} and C = { 5, 6, 7} then
a. $A \cap B = \phi$ b. $B \cap C = \phi$
c. $A \cap C = \phi$ d. none of these

296. If A= { 1,2,3} and B= { 3,4,5} and Z = { 5, 6, 7} then,
a. $A \cap (B \cup C) = \phi$ b. $A \cap (C \cup A) = \phi$
c. $C \cap (A \cup B) = \phi$ d. none of these

297. If X = { 1,2,3}, Y = { 2,3,4} and Z = { 3,4,5} then,
a. $(X-Y) \cap Z = \phi$ b. $(Y-Z) \cap X = \phi$
c. $(Z-X) \cap Y = \phi$ d. none of these

298. If A and B are sets and $A \cup B = A \cap B$, then
a. A = ϕ b. B = ϕ
c. A = B d. none of these

299. If A and B are sets, then
a. $A \cap B = A \Rightarrow B \subset A$ b. $A \cap B = B \Rightarrow B \subset A$
c. $A \cap B = A \Rightarrow A \subset B$ d. $A \cap B = B \Rightarrow A \subset B$

300. . If A and B are sets, then
a. $A \cup B = U \Rightarrow A' = B$ b. $A \cup B = U \Rightarrow A = B'$
c. $A \cap B = U \Rightarrow A' = B$ d. $A \cap B = U \Rightarrow A = B'$

301. If A and B are sets, then
a. $A \cup B = \phi \Rightarrow A' = B$ b. $A \cup B = \phi \Rightarrow A = B'$
c. $A \cap B = \phi \Rightarrow A' = B$ d. $A \cap B = \phi \Rightarrow A = B'$

302. . If A and B are sets, then
a. $A \cup B = U \Rightarrow A' = B$ b. $A \cup B = \phi \Rightarrow A = B'$
c. $A \cap B = U \Rightarrow A = B'$ d. $A \cap B = \phi \Rightarrow A = B'$

303. If A and B are sets, then
a. $A \cap B = \phi \Rightarrow A = B'$ b. $A \cap B = U \Rightarrow A = B'$
c. $A \cap B = \phi \Rightarrow A = B'$ d. $A \cap B = U \Rightarrow A' = B$

304. If A is the set of natural numbers and B is the set of non-negative integers , then
a. A = B b. $A \subset B$
c. $B \subset A$ d. none of these

305. If A is the set of natural numbers and B is the set of odd integers, then A – B is
a. the set of even numbers
b. the set of odd numbers
c. the set of positive even integers
d. the set of positive odd intergers

306. If A is the set of odd positive integers and B is the set of even integers, then $A \cup B$ is
a. the set of all integers

b. the set of all positive integers
c. the set of al odd integers
d. none of these

307. If A is the set of natural numbers and B is the set of integers, then
a. $A - B = \phi$ b. B-A=ϕ
c. $A \cup B$ = A d. none of these

308. If A and B are sets such that $A \subset B$ and $B \subset A$, then
a. $A \cup B$ = A b. $A \cup B$ = B
c. A - B = A c. A – B = B

309. If A and B are sets such that $A \subset B$ and $B \subset A$, then
a. $A \cap B = \phi$ b. $A \cap B = A$
c. $A \cap B = B$ d. none of these

310. If A and B are sets such that $A \subset B$ and $B \subset A$, then
a. $A \cup B$ = U b. $A \cap B$ = U
c. . A – B =ϕ d. A = B

311. If A, B and C are sets such that $A \subset B$, $B \subset A$ and $C \subset A$, then
a. $A \subset (B \cup C)$ b. $A \subset (B \cap C)$
c. $A \subset C$ d. none of these

312. If A, B and C are sets such that $A \subset B$, $B \subset A$ and $C \subset A$, then
a. A = B = C b. A = B $\neq C$
c. $A \neq B \neq C$ d. none of these

313. If A is a set of natural numbers, B is the set of real numbers and C is the set of complex numbers, then
a. $A \cup B = C, B \cup C = C$
b. $A \cup B = B, B \cup C = B$
c. $A \cup B = A, B \cup C = A$
d. none of these

314. For any three sets A,B and C
a. $A \cup (B \cap C) = (A \cup B) \cap (A \cup C)$
b. $A \cup (B \cap C) = (A \cap B) \cup (A \cap C)$
c. $A \bigcap (B \cup C) = (A \cup B) \cap (A \cup C)$
d. $A \cup (B \cup C) = (A \cap B) \cup (A \cap C)$

315. For any three sets, A, B and C
a. c. $A \cap (B \cup C) = (A \cup B) \cap C$
b. $A \cap (B \cap C) = (A \cap B) \cap C$
c. $A - (B - C) = (A - B) - C$
d. none of these

316. If A,B and C are sets such that $A \subset B$ and $B \subset A$, then
a. $A \cup C = A$ b. $A \cup C = C$
c. $A \cap C = C$ d. none of these

317. If A, B and C are sets such that A $\subset$B and B$\subset$C, then
a. A$\cup$C = C b. A$\cup$C = A
c. A $\cap$C = C d. A$\cap$C = A

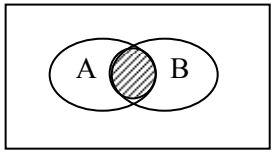
318. If A, B and C are sets such that A $\subset$B and B$\subset$C, then
a. A-C = C b. A-C = A
c. A - C = C d. none of these

319. For any sets A, B, C
a. A – (B$\cup$C) = (A-B) $\cup$C
b. A – (B$\cap$C) = (A-B) $\cap$C
c. A $\cap$ (B-C) = (A$\cap$B) -C
d. A $\cup$ (B-C) = (A$\cup$B) -C

320. If X, Y and Z are sets such that X$\subset$Y and Y$\subset$Z, then
a. X $\cup$Y = X b. X$\cap$Y = X
c. X $\cap$Y$\cap$ Z= X d. none of these

321. For any sets A and B,
a. (A$\cup$B)′ = A′$\cup$B′ b. (A$\cup$B)′ = A′$\cap$B′
c. (A$\cap$B)′ = A′$\cap$B′ d. (A$\cap$B)′ = A′$\cup$B′

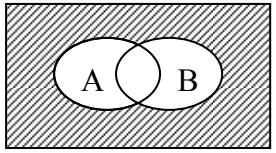
322. The shaded area in the Venn diagram is



a. A$\cup$B b. A$\cap$B

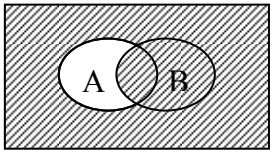
c. A - B d. B -A

323. The shaded area in the Venn diagram is



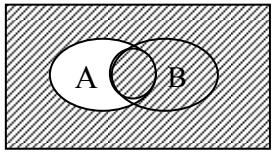
a. $(A \cup B)'$ b. $A \cup B'$
c. $A' \cup B'$ d. $A' \cap B'$

324. The shaded area in the Venn diagram is



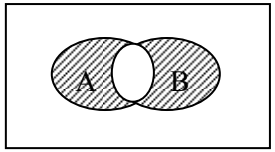
a. B - A′ b. (A-B) ′
c. $A' \cup B$ d. $A \cup B'$

325. The shaded area in the Venn diagram is



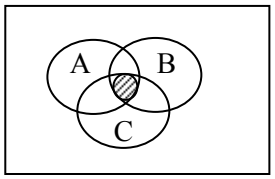
a. $(A \cup B)' \cup (A \cap B)$ b. $(A' \cap B') \cup (A \cap B)$
c. $(A \cap B)' \cup (A \cap B)$ d. none of these

326. The shaded area in the Venn diagram is



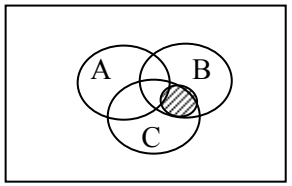
a. $(A \cup B) - (A \cup B)'$ b. $(A \cup B) - (A \cap B)'$
c. (A-B) ∪ (B-A) d. (A-B) ∪ (B-A)′

327. The shaded area in the Venn diagram is



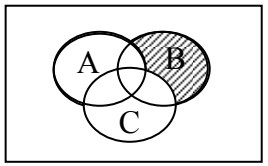
a. $A \cup B \cap C$ b. $A \cap B \cup C$
c. $A \cup B \cup C$ d. none of the above

328. The shaded area in the Venn diagram is



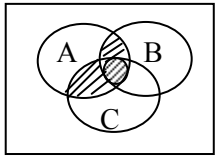
a. $A \cap B \cap C'$ b. $A \cap B' \cap C$
c. $A' \cap B \cap C$ d. $A' \cap B' \cup C'$

329. The shaded area in the Venn diagram is



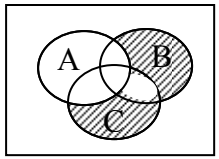
a. $A \cap B' \cap C'$ b. $A' \cap B \cap C'$
c. $A' \cap B' \cap C$ d. $A' \cap B' \cup C'$

330. The shaded area in the Venn diagram is



a. $A \cap (B \cup C)$ b. $B \cap (A \cup C)$
c. $C \cap (A \cup B)$ d. none of the above

331. The shaded area in the Venn diagram is



a. $A' \cap B \cap C$ b. $A' \cap B' \cap C$
c. $A' \cup B' \cup C'$ d. none of the above

332. If A = {1, 2}and B = {3, 4}, then $A \times B$ is
a. {(1, 2), (3, 4)} b. {(1, 3), (2, 4)}
c. {(1, 4), (2, 3)} d. none of the above

333. If A = {1, 3}and B = {2, 4}, then $A \times B$ is
a. {(1, 2), (1, 4), (3, 2), (3, 4)}
b. {(1, 3), (2, 4), (2, 1), (4, 3)}
c. {(2, 3), (4, 1), (1, 4), (2, 4)}
d. none of the above

334. If $A \times B$ = {(1, 2), (1, 4), (3, 2), (3, 4)}, then A is
a. {2, 4} b. {5, 6}
c. {1, 3} d. {2, 4}

335. If $A \times B$ = {(2, 5), (2, 6), (4, 5), (4, 6)}, then B is
a. {2, 4} b. {5, 6}
c. {2, 5} d. {4, 6}

336. For any sets A, B, and C
a. $A \times (B \cup C) = (A \times B) \cup (A \times C)$
b. $A \times (B \cup C) = (A \times B) \cap (A \times C)$
c. $A \times (B \cap C) = (A \times B) \cup (A \times C)$
d. $A \times (B \cap C) = (A \times B) \cap (A \times C)$

337. For any sets A, B, and C
a. $A \times (B - C) = (A \times B) - (A \times C)$
b. $A \times (B - C) = (A \times B) \cap (A \times C)$
c. $A \times (B - C) = (A \times B) \cup (A \times C)$
d. none of the above

338. If $A \times B = C \times D$, then
a. A = D, B=C
b. A= C, B = D
c. $A = C = \phi$, $B - D = \phi$
d. $A \cup B = C \cup D$, $A \cap B = C \cap D$

339. If A= {1, 2}, B= {2, 3},C= {3, 4}, then $(A \times B) \cap (A \times C)$ is
a. {(1, 2), (2, 3)} b. {(1, 2), (2, 3)}

340. If A and B are sets with 0 (A) = 8, 0 (B) = 5, 0 $(A \cap B)$ = 3, then 0 $(A \cup B)$ is
a. 13 b. 11 c. 10 d. 8

341. If A = {1, 2, 3, 4}, B = {2, 3, 4, 5), C = {1, 3, 5, 7}, then $A \cup (B \cap C)$ is
a. {1, 2, 3, 4} b. {1, 2, 3, 5}
c. {1, 3, 5, 7} d. {1, 2, 3, 4, 5}

342. Sets A and B have 3 and 6 elements each. What can be the minimum number of elements in $A \cup B$?
a. 3 b. 6
c. 9 d. 18

343. Given the sets A = {1, 2, 3}, B = {3, 4}, C = {4, 5, 6}, then $A \cup B \cap C$ =
a. {3} b. {1, 2, 3, 4}
c. {1, 2, 5} d. {1, 2, 3, 4, 5, 6}

344. If X and Y are two sets, then $X \cap (Y \cap X)^c$ equals
a. X b. Y
c. ϕ d. none of these

345. A relation between two sets is a statement concerning their elements, which is
a. either true or false
b. necessarily true
c. may be true
d. holds between any two elements of the sets

346. A relation R between two sets A and B is written as
a. $R: A \to B$ b. $\{(a, b) : aRb, a \in A, b \in B\}$
c. $R = A \times B$ d. $R \subset A \times B$

347. A line has the equation of 4x-3y+18=0. what is its slope?

a. 3/4 b. -34/
c. 4/3 d. -4/3

348. A line has the equation $\frac{x}{y}-\frac{y}{7}=1$, what is its slope?
a. 7/5 b. 5/7
c. -5/7 d. -7/5

349. A line passes through (3, 2) and (-5, 7) ; what is its slope?
a. 5/8 b. -5/8
c. 8/5 d. -8/5

350. A line passes through (3, 20 and (5, a). if its slope is 2; what is the value of a?
a. 3 b. 4
c. 5 d. 6

351. 3x+2y-7=0 and 2x-3y+8=0 are the equations of the two lines. Then the lines are
a. parallel b. perpendicular
c. neither d. none of the above

352. 5x-2y+4=0 and 10x-4y+12=0 are the equations of two lines. Are the lines
a. parallel b. perpendicular
c. neither d. none of the above

353. A line has its equation 7x-2y+4=0. What is the slope of the line perpendicular to this line
a. 7/2 b. -7/2
c. 2/7 d. -2/7

354. Lines 3x-2y+7=0 and 6x+ay-18=0 are perpendicular. What is the value of a?
a. 1/9 b. 9
c. -9 d. -1/9

355. A line passes through (3,5) and (7, 3) and its perpendicular to the line passing through (5, 4) and (8, b) what is the value of b?
a. 8 b. 9
c. 10 d. -10

356. For what value of a are the lines through (3,5), (6, 7) and (4, 8) , (a, 7) are parallel?
a. 5/2 c. -5/2
c. 2/5 d. -2/5

357. A line is inclined at an angle of 30^0 in the positive direction with x- axis. What is its slope?
a. $\sqrt{3}$ b. $\frac{1}{\sqrt{3}}$
c. $-\frac{1}{\sqrt{3}}$ d. $-\sqrt{3}$

358. Two lines are inclined at angles of 30^o and 120^o in the positive direction with x – axis. If they intersect at A, find the size of angle between the two lines.
a. 30^o b. 60^o
c. 120^o d. 90^o

359. Find the acute angle between the two lines whose equations are: x-2y+5=0, 3x+4y-15=0
a. $\tan^{-1}\left(\frac{1}{2}\right)$ b. $\tan^{-1}(2)$
c. $\tan^{-1}\left(\frac{4}{5}\right)$ d. $\tan^{-1}(-2)$

360. Two acute angle of rt. Angled triangle are
a. complementary b. supplementary
c. equal d. none

361. The function $f: R \to R$ is defined by $f(x) = e^x$, $x \in R$. Then
a. dom f = R b. ran f = R
c. ran f $\subset$ R d. ran f = {x : x > 0}

362. The function $f: R \to R$ is defined by f (x) = log x, $x \in R$. Then
a. dom f = R b. ran f = R

a. dom f $\subset$ R b. ran f R

363. The function $f: R \to R$ is defined by f (x) = [x], where [x] denotes the integral part of x. Then
   a. dom f = R b. ran f = R
   a. dom f $\subset$ R b. ran f = {x : x is an integer}
364. The mapping $f: A \to B$ is onto, if
   a. f (A) is equal to B
   b. f (A) is a proper subset of B
   c. f (a) = f (b) implies a = b where a, b $\in$ A
   d. f (a) = f (b) does not imply a = b, where a, b $\in$ A
365. The mapping $f: A \to B$ is into, if
   a. f (A) is equal to B
   b. f (A) is a proper subset of B
   c. f (a) = f (b) implies a = b where a, b $\in$ A
   d. f (a) = f (b) does not imply a = b, where a, b $\in$ A
366. The mapping $f: A \to B$ is one to one, if
   a. f (A) is equal to B
   b. f (A) is a proper subset of B
   c. f (a) = f (b) implies a = b where a, b $\in$ A
   d. f (a) = f (b) does not imply a = b, where a, b $\in$ A
367. The mapping $f: A \to B$ is many one, if
   a. f (A) is equal to B
   b. f (A) is a proper subset of B
   c. f (a) = f (b) implies a = b where a, b $\in$ A
   d. f (a) = f (b) does not imply a = b, where a, b $\in$ A
368. The mapping f : $A \to B$ defined by $f(x) = x^2, x \in R$ is
   a. one – one onto b. one –one into
   c. many- one into d. many – one onto
369. The mapping f : $R \to R$ defined by $f(x) = x^3, x \in R$ is
   a. one – one onto b. one –one into
   c. many- one into d. many – one onto
370. The mapping f : $R_0 \to R_0$, where R_0 is the set of non-zero real numbers, defined by f (x) = $\frac{1}{x}$, x $\in$ R_0, is
   a. one – one onto b. one –one into
   c. many- one into d. many – one onto
371. The relation R: A $\to$ B, where A = {1, 2, 3, 4, 5} and B = {a, b, c, d, e} defined as follows in a function
   a. f = {(1, a), (2, b), (3, b), (3, c), (5, d)}
   b. f = {(1, d), (2, c), (3, c), (4, c), (4, e)}
   c. f = {(1, c), (1, d), (2, d), (3, a), (5, b)}
   d. f = {(1, c), (2, d), (3, e), (4, a), (5, b)}
372. The function $f: R \to R$ is defined by $f(x) = x^2 + 1$. Then the range of f is
   a. the set of all real numbers in [-1, 1]
   b. the set of all real numbers in [0, 2]
   c. the set of all real numbers in [-2, 2]
   d. the set of all non- zero real numbers
373. The function f : $R \to R$ is defined by f (x) = 1 + sin x. Then the range of f is
   a. the set of all real numbers in [-1, 1]
   b. the set of all real numbers in [0, 2]
   c. the set of all real numbers in [-2, 2]
   d. the set of all real numbers in [-2, 0]
374. The set of all functions f : A $\to B$, where A = {a, b, c} and B = {x, y} is
   a. {(a, x), (b, x), (c, x)}, {(a, y),(b, y), (c, y)}
   b. {(a, x), (b, y), (c, y)}, {(a, y),(b, x), (c, y)} {(a, y), (b, y), c, x)}
   c. {(a, x), (b, y), (c, y)}, {(a, x),(b, y), (c, x)} {(a, y), (b, x), c, x)}
   d. none of the above
375. If f : A $\to$ B is a one-one onto mapping, then the inverse map of f in f^{-1} : B $\to$ A, given by
   a. $f^{-1}(b) = \frac{1}{a}$, where f (a) = b, a $\in$ A, b $\in$ B
   b. $f^{-1}(b) = -a$, where f (a) = b, a $\in$ A, b $\in$ B
   c. $f^{-1}(b) = a$, where f (a) = b, a $\in$ A, b $\in$ B
   d. none of these
376. If f : A $\to$ B is a one-one onto mapping, then

the inverse map of f in $f^{-1}: B \to A$, is

a. one – one onto b. one –one into

c. many- one into d. many – one onto

377. Let $f: R_0 \to R_0$, where R_0 is the set of non-zero real numbers, be defined by $f(x) = \frac{1}{x}$, $x \in R_0$. Then

a. f is one- one onto

b. f^{-1} is defined by $f^{-1}(x) = \frac{1}{x}$, $x \in R_0$

c. f^{-1} is defined by $f^{-1}(x) = x$, $x \in R_0$

d. none of these

378. The composition of the mappings $f: A \to B$, and $g: B \to C$ is defined as $g \circ f: A \to C$ where

a. $(g \circ f)(x) = g[f(x)]$, $x \in A$

b. $(g \circ f)(x) = f(x) + g(x)$, $x \in A$

c. $(g \circ f)(x) = f(x)\ g[f(x)],$, $x \in A$

d. none of these

379. Let the mappings $f: R \to R$ and $g: R \to R$ be defined by $f(x) = x + 2$, $g(x) = x^2$, $x \in R$ then

a. g of $: R \to R$ is given by $(g \circ f)(x) = x^2 + (x + 2)$, $x \in R$

b. $g \circ f: R \to R$ is given by $(g \circ f)(x) = x^2\ (x + 2)$, $x \in R$

c. $f \circ f: R \to R$ is given by $(f \circ g)(x) = g(x + 2) = (x + 2)^2$

d. $f \circ g: R \to R$ is given by $(f \circ g)(x) = f(x)^2 = (x)^2 + 2$

380. Let the mappings $f: R \to R$ and $g: R \to R$ be defined by $f(x) = x + 2$, and $g(x) = 2x$, $x \in R$.. Then

a. $g \circ f: R \to R$ is given by $(g$ of$)(x) = 2(x + 2)$

b. $f \circ g: R \to R$ is given by $(f \circ g)(x) = 2x + 2$

c. $g \circ f = f \circ g$

d. $g \circ f \neq f \circ g$

381. If the mappings f and g are defined on the set A = {1, 2, 3, 4} by f = {(1, 2), (2, 3), (3, 4), (4, 1)} and g = {(1, 3), (2, 4), (3, 1), (4, 2)}. Then

a. $f \circ g$ = {(1, 4), (2, 1), (3, 2), (4, 3)}

b. $g \circ f$ = {(1, 4), (2, 1), (3, 2), (4, 3)}

c. $f \circ g = g \circ f$

d. none of the above

382. Let the mappings f and g be defined on the set R, by $f(x) = 2x$ and $g(x) = x^2 + 2$, $x \in R$.. Then

a. $(f \circ g)(2) = 12$ b. $(g \circ f)(2) = 18$

c. $(g \circ g)(1) = 11$ d. $(f \circ f)(1) = 5$

383. Let the mappings $f: R \to R$ be defined by $f(x) = |x|$, $x \in R$. Then

a. f is one – one onto b. f is many – one into

c. $f \circ f$ is one – one into d. $f \circ f = f$

384. Let the mappings $f: A \to B$ and $g: B \to C$ be given. Then

a. f, g are onto $\Rightarrow g \circ f$ is one – one into

b. f, g are onto $\Rightarrow g \circ f$ is onto

c. f, g are one – one $\Rightarrow g \circ f$ is one – one

d. none of the above

385. Let the mappings $f: A \to B$ and $g: B \to C$ be given. Then

a. $g \circ f$ is one – one $\Rightarrow f$ is one – one

b. $g \circ f$ is onto $\Rightarrow g$ is onto

c. $g \circ f$ is one – one $\Rightarrow g$ is one – one

d. $g \circ f$ is onto $\Rightarrow f$ is onto

386. The function $f: R \to R$ is defined by $f(x) = x^2 + 1$, $x \in R$. Then, $f^{-1}(0)$ is

a. ϕ b. (1, 1)

c. (-1, -1) d. none of these

387. If a function f is defined on a finite set A, then the range and the domain of f are equal if

a. f is a constant function

b. f is one –to-one

c. f is onto

d. none of these

388. The function $f: R \to R$ is defined by $f(x) = \frac{x}{1-2x}$, $x \neq \frac{1}{2}$. Then f^{-1} is given by

a. $f^{-1}(x) = \dfrac{1-2x}{x}$, $x \neq 0$

b. $f^{-1}(x) = \dfrac{1+2x}{x}$, $x \neq 0$

c. $f^{-1}(x) = \dfrac{x}{1-2x}$, $x \neq \dfrac{1}{2}$

d. $f^{-1}(x) = \dfrac{x}{1+2x}$, $x \neq -\dfrac{1}{2}$

389. If $f: R \to R$ is defined by $f(x) = x^2 + 1$, $x \in R$. Then
   a. $f^{-1}(17) = \{4, 5\}$
   b. $f^{-1}(17) = \{4, -4\}$
   c. $f^{-1}(-3) = \phi$
   d. $f^{-1}(0) = \phi$

390. The mappings f and g are defined on R, by $f(x) = 2x+1$ and $g(x) = x^2 + 1$. Then
   a. $(f \circ g)(x) = 2(x^2 + 1) + 1$
   b. $(g \circ f)(x) = (2x + 1)^2 + 1$
   c. $f \circ g = g \circ f$
   d. $g \circ f \neq f \circ g$

391. If $f: A \to B$ and $g: B \to C$ are one – one onto mapping. Then
   a. $(f \circ g)^{-1} = f^{-1} \circ g^{-1}$ b. $(f \circ g)^{-1} = g^{-1} \circ f^{-1}$
   c. $(g \circ f)^{-1} = f^{-1} \circ g^{-1}$ d. $(g \circ f)^{-1} = g^{-1} \circ f^{-1}$

392. The function $f: R \to R$ is defined by $f(x) = x^2$, is
   a. one – one b. onto
   c. many –one d. into

393. The function $f: R \to R$ is defined by $f(x) = x^3$, is
   a. one – one b. onto
   c. many –one d. into

394. The function $f: R \to R$ is defined by $f(x) = \sin x$, is
   a. one – one b. onto
   c. many –one d. into

395. The function $f: R \to R$ is defined by $f(x) = \tan x$, is
   a. one – one b. onto
   c. many –one d. into

396. The function $f: R \to R$ is defined by $f(x) = \sec x$, is
   a. one – one b. onto
   c. many –one d. into

397. The function $f: R \to R$ is defined by $f(x) = \sin^2 x$, is
   a. one – one b. onto
   c. many –one d. into

398. The function $f: R \to R$ is defined by $f(x) = e^x$, is
   a. one – one b. onto
   c. many –one d. into

399. The function $f: R^+ \to R$ is defined by $f(x) = \log x$, where R^+ is the set of positive real numbers is
   a. one – one b. onto
   c. many –one d. into

400. The function $f: R \to R$ is defined by $f(x) = |x|$, is
   a. one – one b. onto
   c. many –one d. into

401. The function $f: R \to R$ is defined by $f(x) = [x]$, where [x] denotes the integral part of x, is
   a. one – one b. onto
   c. many –one d. into

402. The function $f: R \to R$ is defined by $f(x) = \sin 2x$ is periodic, with period
   a. 2π b. π
   c. $\pi/2$ d. none of these

403. The function $f: R \to R$ is defined by $f(x) = \cos^2 x$ is periodic, with period
   a. 2π b. π
   c. $\pi/2$ d. none of these

404. The domain of the function $y = \sqrt{(x-1)}$ is
   a. $x > 1$ b. $x > 2$
   c. $x < 1$ d. $x < 2$

405. The domain of the function y = $\sqrt{(1-x)}$ is

a. $0 \le x \le 1$ b. $-1 \le x \le 0$

c. $-1 \le x \le 1$ d. none of these

406. The domain of the function y = $\sqrt{\{(x-1)(x-2x)\}}$ is

a. $x < 1$ b. $x > 2$

c. $1 < x < 2$ d. $x < 1, x > 2$

407. The domain of the function y = $\sin^{-1}(1-x)$ is

a. $x \le 1$ b. $x \ge 1$

c. $0 \le x \le 1$ d. $0 \le x \le 2$

408. The range of the function y = $\frac{1}{x}$ is

a. $x > 0$ b. $x < 0$

c. $-1 < x < 1$ d. $x > 0, x < 0$

409. The range of the function y = $\sin^{-1}(2-x)$ is

a. $[0, 2\pi]$ b. $[0, \pi]$

c. $[-\pi, \pi]$ d. $\left[-\frac{\pi}{2}, \frac{\pi}{2}\right]$

410. The range of the function y = $|x-1|$ is

a. $x \ge 0$ b. $x \ge 1$

c. $0 \le 1 \le 1$ d. none of these

411. The differential coefficient of sin x + cos x is

a. cos x – sin x b. cos x + sin x

c. $\sqrt{2}\cos\left(x+\frac{\pi}{4}\right)$ d. $\sqrt{2}\cos\left(x-\frac{\pi}{4}\right)$

412. The differential coefficient of cosec x is

a. cosec x cot x b. – cosec x cot x

c. $\frac{\cos x}{\sin^2 x}$ d. $\frac{\sin x}{\cos^2 x}$

413. The differential coefficient of $\sqrt{(\sin x)}$ is

a. $\frac{1}{2}\cos x \sin^{-1/2} x$ b. $\frac{1}{2}\sin x \cos^{-3/2} x$

c. $\frac{1}{2}\cot x \sqrt{(\sin x)}$ d. $\frac{1}{2}\tan x \sqrt{(\cos x)}$

414. The equation of the tangent to the curve $y = x^3 + 1$ at the point (1, 2) is

a. $3x - y + 1 = 0$ b. $3x + y + 1 = 0$

c. $3x + y = 1$ c. $3x - y = 1$

415. The tangent to the curve $x^2 + y^2 - 2x - 3 = 0$ is parallel to the x-axis at the point

a. (1, 2) b. (1, -2)

c. (3, 0) d. $(2, \sqrt{3})$

416. The tangent to the curve y = f (x) is parallel to the x-axis at the point (x, y) if $\frac{dy}{dx}$ has the value

a. 0 b. 1

c. -1 d. ∞

417. The tangent to the curve y = f (x) is perpendicular to the x-axis at the point (x, y) if $\frac{dy}{dx}$ has the value

a. 0 b. 1

c. -1 d. ∞

418. The equation of the tangent to the curve $y = x^2 + 1$ at the point (1, 2) is

a. $2x - y + 4 = 0$ b. $2y - y = 0$

c. $2x + y = 4$ d. none of these

419. The equation of normal to the curve $xy = a^2$ at the point (h, k) is

a. $hx - ky = a^2$ b. $hx + ky = a^2$

c. $hx + ky = h^2 + k^2$ d. $hx - ky = h^2 - k^2$

420. The tangent to the curve $y = x^2 - 2x + 1$ is parallel to the line y = 2x + 5, at the

a. (1, 0) b. (0, 1)

c. (2, 1) d. none of these

421. The equation of the tangent to the curve $x^2 = 9y$, whose slope is $\frac{2}{3}$, is

a. $2x - 3y = 0$ b. $2x - 3y = 1$
c. $2x - 3y = 2$ d. $2x - 3y = 3$

422. The equation of the normal to the curve $x^2 - y^2 = 1$, at the point (1, 0) is

a. $x = 0$ b. $y = 0$
c. $x + y = 0$ d. $x - y = 0$

423. The tangent of the curve $y = x^2 + 3x$ will pass through the point (0, -9) if it is drawn at the point

a. (0, 0) b. (1, 4)
c. (-4, 4) d. (-3, 0)

424. The tangent to the curve $y = e^{2x}$ at the point (0, 1) meets the x – axis at the point

a. (0, 0) b. (1, 0)
c. $\left(\frac{1}{2},0\right)$ d. $\left(-\frac{1}{2},0\right)$

425. The line $\frac{x}{a}+\frac{y}{b} = 1$ touches the curve $y = be^{-x/a}$ at the point

a. (a, b/e) b. (-a, be)
c. (0, b) d. none of these

426. The curves $y = x^2$ and $4y = 5 - x^2$ intersect at the point (1, 1) at the angle

a. $\frac{\pi}{4}$ b. $\frac{\pi}{3}$
c. $\frac{\pi}{2}$ d. none of these

427. The curves $y = x^2$ and $y = 4 - x^2$ intersect at the point ($\sqrt{2}$, 2) at the angle

a. $\frac{\pi}{4}$ b. $\frac{\pi}{3}$
c. $\frac{\pi}{2}$ d. none of these

428. The angle of intersection of the curves $y^2 = 32x$ and $2y^2 = x^3$ at the origin is

a. $\frac{\pi}{2}$ b. $\frac{\pi}{4}$
c. $\tan^{-1/2}$ d. $\tan^{-1\frac{1}{2}}$

429. The angle of intersection of the curves $y^2 = 32x$ and $2y^2 = x^3$ at the point (8, 16) is

a. $\frac{\pi}{2}$ b. $\frac{\pi}{4}$
c. $\tan^{-1/2}$ d. $\tan^{-1\frac{1}{2}}$

430. The angle between the curves $y = 2x + x^2$ and $y = x - x^3$ at the origin is

a. 0 b. $\frac{\pi}{4}$
c. $\tan^{-1/3}$ d. $\tan^{-1\frac{1}{3}}$

431. The normal to the curve given by the equation $x = a(\sin\theta - \cos\theta)$ at the point θ is

a. $(x + y)\cos\theta + (x - y)\sin\theta = 0$
b. $(x + y)\cos\theta + (x - y)\sin\theta = a$
c. $(x + y)\cos\theta - (x - y)\sin\theta = 0$
d. $(x + y)\cos\theta - (x - y)\sin\theta = a$

432. Let $y = f(x)$ be an increasing function of x. Then

a. $\frac{dy}{dx} \le 0$ b. $\frac{dy}{dx} = 0$
c. $\frac{dy}{dx} > 0$ d. none of these

433. The maximum value of $\sin x \cos x$ is

a. 2 b. 1

c. $\frac{1}{2}$ d. none of these

434. The maximum value of sin x cos x is

a. 2 b. $\frac{3}{2}$

c. $\sqrt{2}$ d. none of these

435. The sum of two positive numbers is 20. If the product of the square of the first and cube of the second is maximum; then the numbers are

a. 10, 10 b. 8, 12

c. 6, 14 d. 4, 16

436. The number which exceeds its square by a greatest possible amount is

a. $\frac{1}{4}$ b. $\frac{1}{2}$

c. $\frac{3}{4}$ d. none of these

437. The maximum value of sin x (1 + cos x) occurs when

a. x = $\frac{\pi}{2}$ b. x = $\frac{\pi}{3}$

c. $\frac{\pi}{4}$ d. x = $\frac{\pi}{6}$

438. The maximum value of $\frac{\log x}{x}$ *is*

a. e b. 2

c. 1 d. $\frac{1}{e}$

439. The maximum value of $x^{1/x}$ is

a. $e^{1/e}$ b. $2^{1/2}$

c. 1 d. $\left(\frac{1}{e}\right)^{e}$

440. Let y = $|x|$, then at x = 0

a. $\frac{dy}{dx} = 0$ b. $\frac{dy}{dx} = -1$

c. $\frac{dy}{dx}$ does not exist d. none of these

441. Let $f(x) = \int_0^x$ t sin t dt, then $f'(x)$ =

a. (0, 0) b. (2, 0)

c. $\left(-\frac{1}{2}, 0\right)$ d. none of these

442. The maximum value of sin x + cos x =

a. 1 b. 2

c. $\sqrt{2}$ d. $1/\sqrt{2}$

443. The point (0, 5) is closest to $x^2 = 2y$ at

a. $(2\sqrt{2}, 4)$ b. (0, 0)

c. (2, 2) d. non of these

444. The maximum value of $\frac{\log x}{x}$ is

a. 1 b. $\frac{2}{e}$

c. e d. $1/e$

445. The normal to the curve x = a (cos θ + sinθ), y = a(sinθ - cos θ) at any point cos θ such that

a. it makes a constant angle with the x -axis

b. it passes through the origin

c. it is at constant distance from the origin

d. none of these

446. $y = \sin^{-1}\left(\frac{1-x^2}{1+x^2}\right)$, then $\frac{dy}{dx}$ =

a. $-\frac{2}{1+x^2}$ b. $\frac{2}{1+x^2}$

c. $\frac{2}{2+x^2}$ d. $\frac{2}{2-x^2}$

447. If $F(x)$ is a differential function and $\frac{d}{dx} F(x) = f(x)$ then

a. $f(x)$ is an integral of $F(x)$
b. $F(x)$ is an integral of $f(x)$
c. $f(x)$ + is an integral of $F(x)$
d. $F(x) + c$ is an integral of $f(x)$

448. $\int$ 2x dx is equal to

a. x^2 b. $x^2 + 1$

c. $x^2 + C$ d. $x^2 + x$

449. $\int \sin^{-1} x\, dx + \int \cos^{-1} x\, dx$ is equal to

a. 0 b. $\frac{\pi}{2}$

c. $\frac{\pi x}{2}$ d. $\frac{\pi x}{2+c}$

450. $\int x^{-3/2}\, dx$ is equal to

a. $-\frac{3}{2}x^{-5/2}+C$ b. $-\frac{2}{3}x^{-1/2}+C$

c. $-2x^{-1/2}+C$ d. $-\frac{1}{2}x^{-1/2}+C$

451. $\int a^x\, dx$ is equal to

a. $\frac{a^{x+1}}{x+1}$ b. xa^{x-1}

c. $(\log a)a^x$ d. $\frac{a^x}{\log a}$

452. $\int \sin x\, dx$ is equal to

a. cos x b. – cos x

c. sin $(x + \pi/2)$ d. sin $(x - \pi/2)$

453. $\int \sec^2 x\, dx$ is equal to

a. tan x b. sec x

c. cot $\left(\frac{x}{2} - x\right)$ d. tan $(x + \pi)$

454. $\int$ sec x tan x dx is equal to

a. $\sec^2 x$ b. $\tan^2 x$

c. sec x d. cosec x

455. $\int \cosh x dx$ is equal to

a. sinh x b. – sinh x

c. – cosh x d. cosh x

456. $\int (2\sin 2x + 1/x)\, dx$ is equal to

a. cos 2x + log x b. sin2x + log x

c. – cos 2x – log x d. – cos 2x + log x

457. $\int x \cos x^2\, dx$ is equal to

a. $x \sin x^2$ b. $\frac{1}{2}x^2 \sin x^2$

c. $\frac{1}{2}\sin x^2$ d. $\frac{1}{2}\cos x^2$

458. $\int 3\sin^2 x \cos x\, dx$ *is equal to*

a. $\sin^3 x$ b. $-\sin^3 x$

c. $\frac{3}{4}\sin x - \frac{1}{4}\sin 3x$ d. $-\frac{3}{4}\sin x + \frac{1}{4}\sin 3x$

459. $\int \tan x\, dx$ is equal to

a. log cos x b. log sec x
c. – log cos x d. – log sec x

460. $\int x \sin x\, dx$ is equal to

a. sin x – x cos x b. sin x + x cos x
c. x sin x + cos x d. x sin x - cos x

461. $\int x \cos x\, dx$ is equal to

a. sin x – x cos x b. sin x + x cos x
c. x sin x + cos x d. x sin x - cos x

462. $\int \log x\, dx$ is equal to

a. x log x + x b. x log x – x
c. x log (*ex*) d. x log (x/e)

463. $\int$ cosec x *dx* is equal to

a. log tan *x* b. $\frac{1}{2}$ log tan *x*
c. log tan $\frac{1}{2}x$ d. 2 log tan $\frac{1}{2}x$

464. $\int$ sec x *dx* is equal to

a. log (sec *x* + tan *x*) b. log (sec *x* - tan *x*)
c. log tan $\left(\frac{x}{2}+\frac{\pi}{4}\right)$ d. log tan $\left(\frac{x}{2}-\frac{\pi}{4}\right)$

465. $\int_0^{\pi/2}$ sin x *dx* is equal to

a. $\int_0^{\pi/2}$ cos *x dx* b. $\frac{1}{2}\int_0^{\pi/2}$ sin *x dx*
c. $\frac{1}{2}\int_0^{\pi/2}$ cos *x dx* d. $\frac{\pi}{2}$

466. $\int_0^{\pi/2}$ $\sin^2$ x *dx* is equal to

a. $\int_0^{\pi/2}$ $\cos^2 x\, dx$ b. $\frac{1}{2}\int_0^{\pi}$ $\sin^2 x\, dx$
c. $\frac{1}{2}\int_0^{\pi}$ $\cos^2 x\, dx$ d. $\frac{\pi}{2}$

467. $\int_0^{\pi/2}$ $\sin^2$ x *dx* is equal to

a. $\frac{\pi}{2}$ b. $\frac{\pi}{4}$
c. $\frac{\pi}{6}$ d. $\frac{\pi}{8}$

468. $\int_0^{\pi/2}$ $\sin^4$ x *dx* is equal to

a. $\frac{\pi}{4}$ b. $\frac{\pi}{8}$
c. $\frac{\pi}{16}$ d. $\frac{3\pi}{16}$

469. $\int_0^{\pi/2}$ log sin x *dx* is equal to

a. π log 2 b. $\frac{1}{2}\pi \log 2$
c. 2π log 2 d. $\frac{1}{2}\pi \log \frac{1}{2}$

470. $\int_0^{\pi/2}$ log tan x *dx* is equal to

a. 0 b. log 2

c. π log 2 d. $\frac{1}{2}\pi \log 2$

471. $\int_0^{\pi/4}$ log (1 + tan x) dx is equal to

a. π log 2 b. - π log 2

c. $\frac{1}{2}\pi \log 2$ d. $-\frac{1}{2}\pi \log 2$

472. $\int_0^{\pi/2}$ x cot x dx is equal to

a. π log 2 b. $\frac{1}{2}\pi \log 2$

c. 2 π log 2 d. $\frac{1}{2}\pi \log \frac{1}{2}$

473. The area enclosed by the curves y = sin x, y = cos x and the ordinate $x = \pi/2$, is

a. $\frac{1}{\sqrt{2}}$ b. $\sqrt{2}$

c. $\sqrt{2}$ - 1 d. 2 - $\sqrt{2}$

474. Mark the wrong statement in the following

a. P (A$\cup$B) = 1 $\Rightarrow$ A and B are exhaustive events

b. P (A$\cap$B) = 0 $\Rightarrow$ A and B mutually exclusive

c. P (A$\cup$B) $\geq$ P(A) + P(B)

d. mutually exclusive events are always independent

475. Two coins are tossed. The propiliti of one head and one tail is

a. 1

b. ¼

c. ½

d. ¾

476. The odds against A solving a problem are 3 and 5 and the odds in favour of B solving the problem is solved is

a. 47/56

b.20/56

c. 37/56

d. 9/56

477. A die is tossed three times. The probability of getting an even number all the three times is

a. ½

b. 1/8

c. 1/6

d. none

478. A candidate for a job can either be selected or rejected. The probability to this selection is

a. ½ b. 1/4

c. either 0 or 1 d. none

479. The probability of A solving a problem is 1/4 and B solving the same is 3/4. The probability that the problem is solved is

a. 1

b. 1/2

c. 3/16

d. 13/16

480. The probability of passing of an examination is 1/10. from a school 100 student appear in the examination. The number of student who will pass the examination is

a. 50

b. 10

c. any number near 10

d. any number near 0 to 100

481. If a cubical die is thrown 5 times, the probability of getting 1 three times is

a. $(1/6)^3$

b. ${}^5C_3\ (5/3)^3\ (1/6)^2$

c. ${}^5C_3\ (5/6)^2\ (1/6)^3$

d. none

482. For two events A and B if P (A$\cap$B) = P(A) P(B) then A and B are

a. mutually excusive
b. statically independent
c. one of them is impossible
d. either P(A) + P(B) is I

483. In a cricket test series of five tests, the caption on Indian team decided to call heads at even toss. The probability of his winning the toss in all the4 tests is
a. 2/5
b. 1/2
c. 0
d. 1/32

484. For two events A and B if
$P(A \cup B) = P(A) + P(B)$, then A and B are
a. mutually exclusives
b. independent
c. exhaustive
d. mutually dependent

485. A cards is drawn from pack 52. cards. The probability that it is a card of hearts or a queen is
a. 17/52
b. 14/52
c. 16/52
d. 13/52 * ¼

486. P(A/B) =
a. P (A)/P (B)
b. 1.- $P(A \cap B)$
c. $P(A \cap B)/P(B)$
d. $P(A \cap B)/P(A)$

487. $P(A \cap B) = 0 \Rightarrow$ A and B are
a. independent
b. exclusive
c. both impossible
d. at lest one one impossible

488. In the loss of two dice, the probability of getting a sum of 5 or 7 is
a. 1/9 x 1/6
b. 1/9 + 1/6
c. 1/6
d. ¼

489. A appears at three examination. The probability of his passing the examination are 1/5,1/7,1/8 respectively. The probability of his passing at least one examination is
a. 1/5 + 1/7 +1/8
b. 1/5 * 1/7 * 1/8
c. 1-(1/5 * 1/7 * 1/8)
d. 1-(4/5 * 6/7 * 7/8)

490. The probability of male and female children being born are equal. A person has four children Hence he has
a. two boys and two girls
b. at least one boy
c. at least one girl
d. none

491. Two cards are drawn from am ordinary pack without being replaced. The probability that the first is a king and second a queen is
a. 1/429
b. 2/429
c. 13/204
d. none

492. A number of five digit is formed with digits 1,2,3,4,5, without repetition. The probability that it is an number divisible by 4 is
a. 1/5
b. 2/5
c. 3/5
d. 4/5

493. From a set of 17 cards numbered 1,2,3,…….17 one is drawn at random. The probability that its number is a multiple of 3 or 4 is
a. ½

b. 9/17
c. 8/17
d. none

495. Mutually exclusive events are always independent. The statement is
a. False
b. True
c. none

496. 10 persons are seated around a table. The probability that the president and secretary sit together is
a. 2/9
b. 1/9
c. 1/5
d. 1/10

497. Words are formed by taking all the letters of the words 'ROORKEE". The probability that the similar letters are never separated is
a. ¼
d. 4!/7!
b. ¾
c. 4/105

498. A and B thrown with one die for a prize of Rs. 44. Which is to be won by the player who throws 6 first . if A has first thrown his expectation is rupees.
a. 22
b. 20
c.24
d. 44

499. The expectation of the sum of numbers on an ordinary dice is
a. 3
b. 4
c. 3.5
d. 1

500. In a certain year there were 100 railway accident and 20 air crashes. Hence air travel is safer then railways travel
a. true
b. false
c. none

501. Thirteen cards are given to each of four players in a game of bridge. The probability that one player gets all cards of the same suit is
a. ¼
b. $^{52}C_{13} / {}^{52}C_{19}$
c. $4/ {}^{52}C_{13}$
d. ½

502. Two events A and B have probabilities 0.25 and 0.50 respectively. The probabilities that both A and B occur simultaneously is 0.14. The probability that neither A and B happens is
a. 0.39
b. 0.25
c. 0.11
d. none

503. The probability that an events A happens in one trial of an experiment is 0.There independent trials of the experiment are performed. The probability that the event A happens at least once is .
a. 0.936
b. 0.784
c. 0.904
d. none

504. Fifteen coupons are numbered 1, 2,…….15 respectively. Seven coupons are selected at random at a time with replacement. The probability that the largest number appearing on a selected coupons is 9 is……
a. $(9/16)^6$
b. $(8/15)^7$
c. $(3/5)^7$
d. none

505. If the letters of the words ASSASSIN are written at random in

row, the probability that no S's occur together is 1/35

a. True
b. false
c. none

506. Three identical dice are rolled. The probability that the same number will appear on each of them is

a. 1/6
b. 1/36
c. 1/13
d. 3/25

508. A student appears for test I, II. and III.. The student is successful if he passes either in tests I and II or tests I and III. T the probability of the students passing in tests, I II and III. Are p, q and ½ respectively. If the probability that the student is successful is ½ then,

a. p = q = 1
b. p= q = ½
c. p = 1, q = 0
d. p = 1 q = ½
e. none

509. One hundred identical coins each with probability p of showing up heads are tossed once . if 0 < p < 1 and the probability of heads showing on 50 coins is equal to that of heads showing on 51 coins then value of

a. ½
b. 49/101
c. 50/101
d. 51/101

510. If the probability of A to fail an examination is 0.2 and that for B is 0.3, then the probability for either A and B to fail is 0.5

a. true
b. false
c. none

511. Three letters are addressed to different persons and addresses on three envelopes are also written. Without looking at the address, the probability that the letters go into the right envelopes is

a. 1/27
b. 1/6
c. 1/9
d. none

512. The probability that at least one tail in 4 throws with a coin is

a. 15/16
b. 1/16
c. ¼
d. 1

514. 8 coins are tossed at a time, the probability of getting at leas 6 heads up is

a. 57\64
b. 229/256
c. 7/64
d. 37/256

515. In a box containing 100 bulbs, 10 are defective, what is the probability that out of a sample of 5 bulbs none is defective

a. 10^{-5}
b. $(1/2)^5$
c. $(9/10)^5$
d. 9/10

516. A single letter is selected at random from the word 'PROBABILITY'. The probability that it is a vowel is

a. 3/11
b. 4/11
c. 2/11
d. 0

517. The probability of three mutually exclusive events A, B, C are P(A)=2/3, P(B)=1/4, P(C)=1/6 is the statement

a. true
b. false
c. could be either
d. do not know

518. A die is thrown two times. The probability of coming up a number more then 4 in each throws is

a. 1/19
b. 1/3
c. 1/12
d. 2/3

519. Two cards are drawn from a well shuffled pack with replacement. The probability of drawing two aces is
a. 1/13 * 1/13
b. 1/13 * 1/17
c. 1/13 * 1/51
d. 1/13 * 4/51

520. Two fair dice are tossed. Let x be the event that the first die shows an even number and y be the event that the second die shows as odd number. The two events x and y are
a. mutually exclusive
b. independent and mutually exclusive
c. dependent
d. none

521. A fair die is thrown 100 times. The probability that 'one' comes 40 times is
a. 40/100
b. $^{100}C_{40}$
c. $^{100}C_{40}(1/6)^{60}(5/6)^{40}$
d. $^{100}C_{40}(1/6)^{40}(5/6)^{60}$

522. Binomial theorem in probability is applicable when the trails are
a. independent
b. dependent
c. mutually
d. in all case

523. A box consists of 12 good pencils, 6 with minor defects and 2 with major defects. A pencil, a pencil is chosen at random. The probability that the pencil is not defective is
a. 3/5
b. 3/10
c. 2/5
d. ½

524. If the mean of a binominal distribution is 25, then its standards deviation is in the interval given below
a. (0, 5)
b. (0, 5)
c. (0, 25)
d. (0, 25)

525. A box contain 10 mangoes out of which 4 are rotten. Two mangoes are taken out together. If one of them is found to be good, the probability that the other is also good is
a. 1/3
b. 8\15
c. 5/13
d. 2/3

526. A number is chosen at random from among the first 30 natural. The probability of the number chosen being prime is
a. 1/3 d. 11/30

527. Solve the quadratic equation $x^2-2x=0$
a. 0,1 b. 1,2
c. 0,2 d. -2,0

528. The area of the triangle formed by the points (5, 2), (-9, -3), (-3, -5) is
a. 10 b. 29
c. 17/2 d. -9

529. The points (1, 4), (3, -2), (-3, 16) form
a. a straight line b. an isosceles triangle
c. an equilateral triangle d. none of these

530. The points (12, 8), (-2, 6), (6, 0) form
a. a straight line b. an equilateral triangle
c. a right angled triangle d. an oblique triangle

531. If $3x - 4y = 8$, $2ax + 3by + 12 = 0$ represent the same straight lines. Then the values of a and b are
a. $a = \frac{3}{2}, b = -\frac{4}{3}$ b. $a = -\frac{9}{4}, b = 2$

c. a = 3, b = - 4 d. a = $-\frac{3}{2}$, b = $\frac{4}{3}$

532. The polar coordinates of the point $x = -\sqrt{3}$, y = 1 are
a. r = 1, $\theta = 30^0$ b. r = 2, $\theta = 30^0$
c. r = -1, $\theta = 150^0$ d. r = 2, $\theta = 150^0$

533. The equation of first degree in two dimensional coordinate geometry represents
a. a point
b. a straight line
c. can represent a conic section
d. none of these

534. The equation $x = 0$ represents
a. the origin b. a line parallel to x-axis
c. x-axis d. y-axis

535. The gradient of a line parallel to y-axis is
a. 1 b. 0
c. ∞ d. none of these

536. The intercept of the line y = $\sqrt{3x}$ - 4 on y-axis is
a. 4 b. $\sqrt{3}$
c. - 4 d. 0

537. The equation of the line passing through (-3, 4) and making equal angles with the axis is
a. $\frac{x}{3}+\frac{y}{4}=1$ b. $-\frac{x}{3}+\frac{y}{4}=1$
c. $x+y=7$ d. $y-x-7=0$

538. The gradient of the line 3y + 2x = 5 is
a. 5 b. 3/2
c. -2/3 d. 2/3

539. The gradient of the line joining (x_1, y_1) and (x_2, y_2) is
a. $\frac{x_2-x_1}{y_2-y_1}$ b. $\frac{y_2-y_1}{x_2-x_1}$
c. $\frac{y_2+y_1}{x_2+x_1}$ d. $\frac{y_2-y_1}{x_2+x_1}$

540. The equation of line cutting off an intercept -3 from y-axis and inclined at 120^0 to x-axis is
a. y = x$\sqrt{3}$ - 3 b. y + x$\sqrt{3}$ + 3 = 0
c. y + 3x + $\sqrt{3}$ = 3 d. y + 3x - $\sqrt{3}$ = 0

541. The line *AB* cuts the *x* and *y* axes in *A* and *B* and the point (-5, 4) divides *AB* in the ratio 1 : 2. The equation of *AB*
a. 5y + 8x + 20 = 0 b. 5y – 8x = 60
c. – 10x + 8y = 50 d. 4y – 5x = 41

542. The equation of the line cutting off intercepts -5 and 6 from x and y axis is
a. 5x + 6y = 1 b. $\frac{x}{5}-\frac{y}{6}+1=0$
c. 5x - 6y = 1 d. $\frac{x}{y}-\frac{y}{6}=1$

543. The centroid of the triangle formed by (1, 2), (5,-6), (-6, 4) is
a. (4, 4) b. (0, 0)
c. (-4, -4) d. none of these

544. The gradients of the line making angles 45^o with y = 3x + 5 are
a. 1, -1 b. 3, - $\frac{1}{3}$
c. - $\frac{1}{2}$, 2 d. -2, $\frac{1}{2}$

545. The coordinates of the orthocenter of the triangle formed by (2, 0), (3, 4), (0, 3) are
a. $\left(\frac{15}{11},\frac{20}{11}\right)$ b. $\left(\frac{20}{11},\frac{15}{11}\right)$
c. $\left(\frac{5}{3},\frac{7}{3}\right)$ d. (5, 7)

546. The slope of the line x cos α + y sin α = p is

a. α b. $\frac{\pi}{2}-\alpha$

c. $\frac{\pi}{2}+\alpha$ d. $\pi-\alpha$

547. The length of the perpendicular on the line x + y $\sqrt{3}$ + 7 = 0 from (0, 0) is

a. 7 b. $\frac{7}{\sqrt{3}}$

c. $\frac{7}{2}$ d. – 7

548. The equation of the line joining (0, -a) and (b, 0) is

a. y = (b + a)x b. y – b = x + a

c. ax – by = ab d. bx – ay = ab

549. The equation of the line passing through (x′, y′) and perpendicular to yy′ = 2a(x + x′) is

a. 4x – 3y + 8 = 0 b. 3x + 4y + 8 = 0

c. 3x - 4y + 9 = 0 d. 4x + 3y + 1 = 0

550. The equation of the line passing through (x′, y′) and perpendicular to yy′ = 2a(x + x′) is

a. 2a(x - x′) + y - y′ = 0 b. 2a(y - y′) + y′(x - x′) = 0

c. y - y′ = 2a (x - x′) d. yy′ + 2ax + 2ax′ = 0

551. The two lines ax + by = c and a′x + b′y = c′ are perpendicular if

a. aa′ + bb′ = 0 b. ab′ = ba′

c. ab + a′b′ = 0 d. ab′ + ba′ = 0

552. The angle between the lines y = 3x + 7 and 3y – x = 8 is

a. 90^o b. 0

c. $\tan^{-1}4/3$ d. $\tan^{-1}3/4$

553. The lines y = mx + d are in opposite sides of the origin iff

a. c = -d

b. c and d are of same signs

c. c and d are of opposite signs

d. c = d

554. The lines $a_1x + b_1y + c_1 = 0$,

$a_2x + b_2y + c_2 = 0$,

$a_2x + b_2y + c_3 = 0$, are concurrent if

a. $\begin{vmatrix} a_1 & b_1 & c_1 \\ a_2 & b_2 & c_2 \\ a_3 & b_3 & c_3 \end{vmatrix} = 0$

b. $\begin{vmatrix} a_1 & b_2 & c_3 \\ a_2 & b_3 & c_1 \\ a_3 & b_1 & c_2 \end{vmatrix} = 0$

c. $a_1 = a_2 = a_3, b_1 = b_2 = b_3, c_1 = c_2 = c_3$

d. none of the above

555. One of the bisectors of the angles between 3x – 4y + 17 = 0 and 12x – 5y – 8 = 0 is

a. 21x + 27y – 131 = 0

b. 99x + 77y + 51 = 0

c. 21x – 27y + 133 = 0

d. 77x – 99y +51 = 0

556. The two bisectors of the angles between y = 3x + 5, y = 7x – 3 are inclined to each other at an angle

a. $\tan^{-1}\frac{4}{21}$ b. $\tan^{-1}\left(-\frac{21}{4}\right)$

c. 90^o d. none of these

557. The equation $ax^2 + 2hxy + by^2 = 0$ represents

a. a circle b. parabola

c. pair of straight lines d. can be anyone of them

558. The centre of the circle $3x^2 + 3y^2 + 5x – 6y + 9 = 0$ is

a. $\left(\frac{5}{3},2\right)$ b. (5, -6)

c. $\left(-\frac{5}{6},1\right)$ d. $\left(-\frac{5}{2},3\right)$

559. The line y = mx + c does not intersect $x^2 + y^2 = a^2$ if
a. $a^2 > c^2 (1 + m^2)$ b. $c^2 > a^2 (1 + m^2)$
c. $c^2 = a^2 (1 + m^2)$ d. $c^2 > a^2$

560. The vertices of triangles are (0, 0), (3, 0), (0, 5). The coordinates of its circumcentre are
a. $\left(\frac{3}{2},\frac{5}{2}\right)$ b. $\left(\frac{5}{2},\frac{3}{2}\right)$
c. (3, 5) d. none of these

561. The centre of the circle (x – 3) (x – 5) + (y – 5) (y – 7) = 0 is
a. (8, 8) b. (4, 4)
c. (4, 6) d. (7, 4)

562. The radical axes of three of three circles
a. form a right angled triangle
b. pass through one point
c. form an equilateral triangle
d. none of these

563. The circle $x^2 + y^2 = 25$, $x^2 + y^2 – 26y + 25 = 0$
a. touch each other
b. have the same radii
c. cut orthogonally
d. none of the above

564. The locus of the points of intersection of mutually perpendicular tangents is
a. a straight line b. the polar
c. the radical axis d. a circle

565. The locus of the middle points of parallel chords of a circle is
a. polar b. a concentric circle
c. diameter d. chord of contact

566. The locus of a point such that its distance from a fixed point is equal to its distance from a fixed line is
a. a circle b. parabola
c. ellipse d. hyperbola

567. In a conic section if e = 0, the curve is
a. parabola b. circle
c. ellipse d. hyperbola

568. y = mx + c is a tangent to $y^2 = 4ax$ if
a. c = am b. $c = a\sqrt{(1+m^2)}$
c. $c = \frac{a}{m^2}$ d. $c = \frac{a}{m}$

569. y =mx + c is a normal to the parabola $y^2 = 4ax$ if c =
a. $\frac{a}{m}$ b. $a\sqrt{(1+m^2)}$
c. $- 2am – am^3$ d. $2am + am^2$

570 Two vectors are equal if they
a. are parallel to each other
b. are parallel and have same direction
c. have equal magnitude and have same direction
d. pass through the same point

571 Mark the wrong statement if any . Two vectors can be
a. added b. subtracted
c. multiplied d. divided

572. If a and b are two vectors . Then **a-b** = **b-a** if
a. not possible b. $|\mathbf{a}| = |\mathbf{b}|$
c. **a** = **b** d. **a** and **b** are parallel

573. All the vectors which are parallel to a given line are called
a. equal vectors b. localized vector
c. collinear vectors d. co-initial vectors

574. A vector whose magnitude is 1 is called
a. zero vector b. constant vector
c. unit vector d. Both (a) and (c)

575. If **a** and **b** are unit vectors , then $|\mathbf{a} + \mathbf{b}|$
a. always greater than two
b. never greater than unity
c. lies between 1 and 3

d. may be greater than unity but never greater than two

576. The vector m(a + b) where m is a scalar is of magnitude

a. m b. $|m|$

c. $|\mathbf{a}+\mathbf{b}|$ d. none of these

577. If **a** and **b** are non – collinear vectors and x**a** + y**b** = 0 where x and y are scalars , then

a. $x = -\dfrac{y\mathbf{b}}{\mathbf{a}}$

b. $y = -\dfrac{x\mathbf{a}}{\mathbf{b}}$

c. both a and y must be 0

d. x and y can have more than one value

578. If a ,b, c are non – coplanar vectors and x**a** + y**b** + z**c** = 0 where x, y and z are scalars , then

a. $x = -\dfrac{y\mathbf{b}+z\mathbf{c}}{\mathbf{a}}$ b. $y = -\dfrac{x\mathbf{a}}{\mathbf{b}}$

c. x = y = z = 0 d. x = y + z

579. The vectors $3i + 4j – 6k$ and $-6i – 18j + 12k$ are

a. equal b. have the same magnitude

c. parallel d. mutually perpendicular

580. If A, B, C are the vertices of a triangle, then $\vec{AB}+\vec{BC}+\vec{CA}$ is equal to

a. 3 b. area of the triangle,

c. 1 d. 0

581. The position vectors of points A and B are **a** and **b** respectively . AB is produced to C, so that mAC = nBC then the position vector of C is

a. $\dfrac{n\mathbf{a}+m\mathbf{b}}{m+n}$ b. $\dfrac{n\mathbf{b}-m\mathbf{a}}{m-n}$

c. $\dfrac{n\mathbf{a}-m\mathbf{b}}{m-n}$ d. none of these

582. The sum of vectors $\vec{AD}, \vec{BE}, \vec{CF}$ where D, E,F are the middle points of the sides BC, CA and AB respectively of the triangle ABC is

a. 0

b. area of the triangle

c. half area of the triangle

d. of modulus equal to perimeter of the triangle

583. If G be the centroid of the triangle ABC then $\vec{GA}+\vec{GB}+\vec{GC}$ =

a. area of the triangle b. 0

c. depends upon the origin d. 1

584. The vector relation p**a** + q**b** + r**c** + ……. = 0 is independent of the origin of vectors where p, q,r…… are scalars iff

a. p + q + r +…….= 0 b. **a + b + c** ……**.**= 0

c. p = q = r …..= 0 d. $p = \dfrac{q\mathbf{b}+r\mathbf{c}+}{\mathbf{a}}$

585. The modulus of the vectors xi + yj + zk is

a. x + y + z b. $x^2 + y^2 + z^2$

c. xyz d. none of these

586. The scalar product of two vectors **a** and **b** inclined at an angle θ is zero only if

a. **a** = 0 b. **b** = 0

c. θ = 90^o d. a = 0 or b = 0 or θ = 90^o

587. If a and b are unit vectors and . Ø is the angle between them then sin ½ θ =

a. $\dfrac{1}{2}\mathbf{a}\times\mathbf{b}$ b. 1- $\dfrac{1}{2}\mathbf{a}\,.\,\mathbf{b}$

c. $\dfrac{1}{2}|\mathbf{a}-\mathbf{b}|$ d. $\dfrac{1}{2}|\mathbf{a}+\mathbf{b}|$

588. The angle between the vectors 2i -3j +5k and – 2i + 2j +2k is

a. 90^o b. 120^o

c. 0 d. $\tan^{-1}\dfrac{3}{4}$

589. The vectors product a x b = 0 iff

a. $\mathbf{a} = 0$
b. $\mathbf{b} = 0$
c. vectors **a** and **b** are parallel
d. either $\mathbf{a} = 0$ or $\mathbf{b} = 0$ or **a** and **b** are parallel

590. $\mathbf{a} \times \mathbf{b} = \mathbf{a} \times \mathbf{c} \Rightarrow$
a. $\mathbf{b} = \mathbf{c}$
b. **a** and **b** are parallel
c. **a** , **b** , **c** are mutually perpendicular
d. none of these

591. The value of i . (j x k) + j (k x I) + k. (I x j) is
a. 0 b. 1
c. 3 d. -1

592. The cross product of I + j + k and I + j – k is
a. 0 b. $2(-i + j + k)$
c. 1 d. $-2(i - j)$

593. The four points where position vectors are given by 7i – 4j +7k , -i-3j +4k are the vertices of a
a. rhombus b. parallelogram
c. rectangle d. square

594. The unit vector perpendicular to both $3i + j\ 2k,\ 2i - 2j + 4k$ is
a. i – j - k b. $\frac{i - j - k}{\sqrt{3}}$
c. $\frac{i + j + k}{3}$ d. $\frac{i - j + k}{\sqrt{3}}$

595. The area of the parallelogram having diagonals $3i + j - 2k$ and $i - 3j + 4k$ is
a. 8 b. $\frac{8}{\sqrt{14}\sqrt{26}}$
c. $5\sqrt{3}$ d. $\frac{5}{\sqrt{13}}$

596. If **a, b, c** are the position vectors of the vertices of a triangle, the area of the triangle is
a. $\frac{1}{2}$ [**a b c**] b. $\frac{1}{2}\left|b \times c + c \times a + a \times b\right|$
c. $\frac{1}{2}$ a × (b × c) d. $\frac{1}{2}$ **a. (b – c)**

597. $(\mathbf{a} - \mathbf{b}) \times (\mathbf{a} + \mathbf{b}) =$
a. $\mathbf{a}^2 - \mathbf{b}^2$ b. 0
c. 2 **b** × **a** d. 2 **a** × **b**

598. If **a, b, c** are non-coplanar vectors then
a. **[a b c] = 0**
b. **[a b c] = [b c a]**
c. **[a b c] = [a c b]**
d. $\frac{1}{2}$ **[a× b×c]** = area of triangle formed by **a , b, c**

599. Vector product obeys
a. commutative law b. associative law
c. cancellation law d. none of these

600. The vectors **a , b, c** are coplanar if
a. **[a b c]** = 0 b. **[a b c]** = 1
c. **a** × **(b** × **c)** = 0 d. **a + b + c** = 0

601. **[a + b, b + c, c + a]** =
a. **[a b c]** b. 2 **[a b c]**
c. 0 d. 2**a** × **(b** × **c)**

602. The position vector of the centroid of the triangle with vertices having position vectors **a , b, c** is
a. **a + b + c** b. $\frac{1}{2}$ **(a + b + c)**
c. $\frac{1}{3}$ **(a + b + c)** d. $\frac{1}{4}$ **(a + b + c)**

603. $(\mathbf{a} \times \mathbf{b})^2 =$
a. a^2b^2 b. 0
c. a^2b^2 - **(a . b)**^{2} d. none of these

604. **a** is a vector collinear with **b** = {3, 6, 6}, **a . b** = 27, then **a** =
a. {9, 0, 0} b. {3, 3, 0}

c. {1, 2, 2} d. $\left\{3, \frac{3}{2}, \frac{3}{2}\right\}$

605. $\mathbf{a} \times (\mathbf{b} \times \mathbf{c})$ =
a. a b c b. $\mathbf{a} \cdot (\mathbf{b} - \mathbf{c})$
c. $(\mathbf{a} \cdot \mathbf{b})\,\mathbf{c} - (\mathbf{a} \cdot \mathbf{c})\,\mathbf{b}$ d. $(\mathbf{a} \cdot \mathbf{c})\,\mathbf{b} - (\mathbf{a} \cdot \mathbf{b})\,\mathbf{c}$

606. Let a and b be unit vectors and let α be the angle between them. Then $\mathbf{a} + \mathbf{b}$ is a unit vector if
a. $\alpha = \frac{\pi}{2}$ b. $\alpha = \frac{2\pi}{3}$
c. $\alpha = \frac{\pi}{3}$ d. $\alpha = \frac{\pi}{4}$

607. The position vectors of points *O, A, B* and *C* are 0, **a, b** and **a + b** respectively. The points *O, A, B, C* are
a. collinear b. vertices of a square
c. vertices of a rectangle d. vertices of a parallelogram

608. The position vectors of points *O, A, B* and *C* are **0, a, b** and $\mathbf{a} + t\,\mathbf{b}$ respectively where t is any scalar. The points form
a. trapezium b. a parallelogram
c. a rectangle b. any quadrilateral

609. The scalar $\vec{A}.\left(\vec{B}+\vec{C}\right)\times\left(\vec{A}+\vec{B}+\vec{C}\right)$ equals
a. 0 b. $[\vec{A}\vec{B}\vec{C}] + [\vec{B}\vec{C}\vec{A}]$
c. $[\vec{A}\vec{B}\vec{C}]$ d. none of these

610. Let **u, v, w** be coplanar, then $\mathbf{u} \cdot (\mathbf{v} \times \mathbf{w})$ is
a. 0 b. **0**
c. a unit vector d. none of these

611. If $\left|\vec{\alpha}+\vec{\beta}\right| = \left|\vec{\alpha}-\vec{\beta}\right|$, then
a. $\left|\vec{\alpha}\right| = \left|\vec{\beta}\right|$ b. $\left|\vec{\alpha}\right|$ and $\left|\vec{\beta}\right|$ are perpendicular
c. $\left|\vec{\alpha}\right|$ is parallel to $\left|\vec{\beta}\right|$ d. none of these

612. If **a** and **b** are vectors such that $\mathbf{a}.\mathbf{b} = 0$ and $\mathbf{a} \times \mathbf{b} = 0$, then
a. **a** and **b** are parallel
b. **a** and **b** are perpendicular
c. either **a** or **b** is zero
d. none of these

613. The resultant of two forces *P* and *Q* inclined at angle α between them acting at a point is
a. $R = \sqrt{\left(P^2 + Q^2 + 2PQ\sin\alpha\right)}$
b. $R = \sqrt{\left(P^2 + Q^2 - 2PQ\sin\alpha\right)}$
c. $R = \sqrt{\left(P^2 + Q^2 + 2PQ\cos\alpha\right)}$
d. $R = \sqrt{\left(P^2 + Q^2 - 2PQ\cos\alpha\right)}$

614. The resultant of two forces each equal to *P* is also *P.* The angle between the force is
a. 120^0 b. 60^0
c. 90^0 b. 30^0

615. Force is an entity which has
a. only magnitude
b. only direction
c. direction and magnitude
d. both direction and magnitude with a point of application

616. Forces 5, 9 act an angle 120^0, then their resultant is
a. 60 b. $\sqrt{61}$
c. $\sqrt{60}$ d. 61.5

617. If three forces acting on a rigid body are in equilibrium, they must
a. act in the same line
b. one bisects the angle between the other two
c. are coplanar
d. the sum of the forces is zero

618. If three forces are represented by the sides of a triangle taken in order, they are equivalent to
   a. a couple
   b. a force of zero magnitude
   c. force of non-zero magnitude
   d. equal to a force and a couple

619. A free rigid body acted on by two forces can be in equilibrium if and only if
   a. the two forces are equal in magnitude
   b. the two forces are collinear and act in opposite directions
   c. the two forces are collinear and are equal in magnitude
   d. the two forces are equal in magnitude, are collinear and act in opposite directions

620. Forces act along the sides $\vec{AB}, \vec{BC}, \vec{CD}, \vec{DE}$ of a pentagon $ABCDE$ in proportion to the respective sides. The resultant is given by]
   a. $5\vec{AE}$ b. $5\vec{EA}$
   c. $\vec{AE}$ d. $\vec{EA}$

621. A man has a rope of length l. He wants to pull down a tree. He must tie the rope at a height …..from the ground to the tree to exert the greatest force
   a. $\frac{1}{\sqrt{2}}$ b. $\frac{1}{2}$
   c. $\frac{1}{3}$ d. $\frac{2l}{3}$

622. 1 N =
   a. 1 kg. s^{-2} b. 1 kg. ms^{-2}
   c. 1 kg. ms^{-1} d. 1 Mg

623. 1 J =
   a. 1 kg. ms^{-1} b. 1 kg. ms^{-2}
   c. 1 kg. m^2s^{-2} d. 1 kg. m^2s^{-1}

624. 1 W =
   a. 1 kg. m^1s^{-1} b. 1 kg. m^2s^{-2}
   c. 1 kg. ms^{-2} d. 1 kg. m^2s^{-1}

625. The unit of energy is
   a. Joule b. Watt
   c. Newton d. Megawatt

626. A particle has
   a. no mass but has dimensions
   b. has mass and dimensions both
   c. has mass but no dimensions
   d. depends upon the conditions

627. A particle has uniform velocity implies that
   a. its speeds is constant along a curve
   b. it move s in a circle
   c. it moves with constant speed in a straight line
   d. any one of the three above

628. A particle has equal velocities v in two directions. Their resultant is also v. The angle between the two velocities is
   a. 60^0 b. 90^0
   c. 120^0 d. 45^0

629. A point has equal velocities in two given directions. If one of these velocities is halved, the angle which the resultant makes with the other is halved. The angle between the velocities is
   a. 120^0 b. 90^0
   c. 60^0 d. 45^0

630. Two points move along the circumference of a circle with velocities v and 2v in opposite directions. Their relative velocity has least value
   a. v b. 2v
   c. 3v d. 0

631. A body falls freely from the top of a tower and during the last second of the flight falls $16/25^{th}$ of the whole distance. The time of flight is
   a. 3 sec. b. 5 sec.
   c. 4 sec. d. 10 sec.

632. A person traveling in a railway compartment tosses a coin vertically upwards. It falls upon a person sitting near him towards the side of the engine. The train at that time is
   a. accelerating b. retarding

c. has constant speed d. standing still

633. A stone *A* is dropped from the top of a tower and another stone *B* is projected horizontally from the same place at the same time. They reach the ground
a. *A* before *B*
b. *B* before *A*
c. at the same time
d. depends upon the initial velocity of *B*

634. The solution of the differential equation $\frac{dy}{dx} = kx$ given y = 2 when x = 3 is
a. $y = e^{k(x-3)}$ b. $y = 2e^{-k(x-3)}$
c. $y = 2e^{k(x-3)}$ d. none of these

635. The solution of $(x + 2y^3)\ \frac{dy}{dx} = y$ is
a. $x^2 = cy^2 + y$ b. $x^2 = cy^2 + 3y$
c. $x = y^3 + cy$ d. none of these

636. The solution of $\frac{dy}{dx} = xy + x + y + 1$ is
a. $c(y+1) = e^x$ b. $c(y+1) = e^{(x^2+2x)/2}$
c. $cy = e^{(x^2+2x)/2}$ d. none of these

637. Mark the correct statements in the following:
a. The set of integers form a group w.r.t. multiplication
b. A group can have more than one identity
c. An element of a group can have more than one inverse
d. none of these

638. If every element of a group G is its own inverse, then G is
a. finite b. infinite
c. cycle d. abelian

639. Which of the following form a group 8 where $z_5 = \{0, 1, 2, 3, 4\}$?
a. $\{z_5, + \pmod 5\}$ b. $\{z_5, \times \pmod 5\}$
c. $\{1, 2, 3, 4; \times \pmod 5\}$ d. none of these

640. Vector $\frac{1}{\vec{a}}$ and $\vec{a}$ are
a. parallel b. perpendicular
c. reciprocal d. none of these

641. A prime number has
a. no divisor b. one divisor
c. two divisors d. infinite number of divisors

642. If *m* is a positive integer, the number of positive integral solutions of x + y + z = *m* is given by
a. ${}^{m-1}C_2$ b. ${}^{m}C_2$
c. ${}^{m-1}C_1$ d. ${}^{m}C_1$

643. The value of π equals
a. $\frac{22}{7}$ b. 3.1429
c. 3.141729 d. none of these

644. The square root of 8*i* is
a. $2 - 2i$ b. $2\sqrt{2}(1+i)$
c. $2(1+i)$ d. none of these

645. $|z-3| + |z-4i| = 10$ represents a
a. straight line b. circle
b. ellipse d. parabola

646. The number of diagonals in a ten sided polygon is
a. 45 b. 35
c. 10 d. none of these

647. A garland is to be formed with 20 flowers of different colours. The number of ways of the arrangements is
a. 20! b. 19!
c. $\frac{19!}{2}$ d. $\frac{20!}{2}$

648. There are 3 books on Physics, 4 on Mathematics and 5 on Chemistry.

The number of ways collection can be made so that there is at least one book in each subject is

a. 60 b. 2^{12}

c. 3255 d. 3200

649. If $\tan(\pi\cos\theta) = \cot \pi\sin\theta$ then $\cos\left(\theta - \frac{\pi}{4}\right)$ is

a. 0 b. $\frac{1}{\sqrt{2}}$

c. $\frac{1}{2\sqrt{2}}$ d. none of these

650. $\tan 9^0 - \tan 63^0 + \tan 81^0 - \tan 27^0 =$

a. 0 b. 4

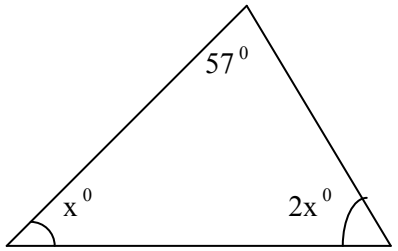
c. 3 d. none of these

651. What is the solution set of the inequality? $17 \le 7x + 3$, XEN

a. {0, 1, 2,……} b. { 2, 3, 4……}

c. { 1,2,3…….} d. None

652. In the given diagram, find the unknown angles



a. 41 and 73 b. 47 and 28

c. 41 and 82 d. none of these

653. The angles of a triangle are in the ratio 4:5:3. Find the angles of the triangle?

a. 40,30,72 b. 50,41,33

c. 60,75,45 d. None

654. What is the greatest side in the triangle if Angle A = 46^0 and B = 60^0

a. AB b. BC

c. CA d. None

655. In $\Delta ABC, AB = AC$ and Angle BAC = 70^0 Find the angle of ACB

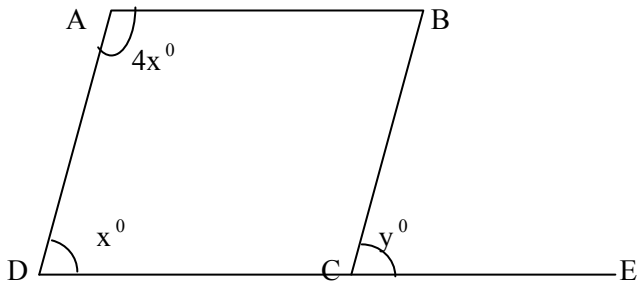
a. 120^0

b. 122^0

c. 125^0

d. None

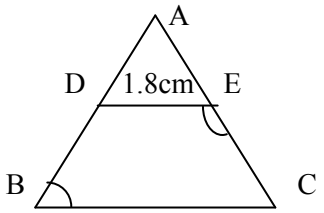
656. Find the value of x and y from the following figure. ABCD is a parallelogram.



a. 36^0 and 35^0 b. 40^o and 42^o

c. 36^o and 36^o d. None of these

657. In a ΔABC, D is the midpoint of AB and DE II BC. Find BC if DE = 1.8 cm



a. 3.5 cm b. 3.6cm
c. 4.2 cm d. None

658. The mean of 21 numbers is 15. If each number is multiplied by 2, what will be the new mean?
a. 51 b. 61
c. 71 d. None

659. The marks of 10 students of a classes are 46, 51, 62, 70, 35, 36, x, 83, 65, 52.If the average is 55, Find x.
a. 60 b. 50
c. 55 d. 52

660. If the cost of dozen of pencils be Rs. 30. How many pencils can be purchased for Rs. 17.50?
a. 7 b. 8
c. 9 d. 10

661. If 5/3 of a rod measures 5m. What is the length of 3/4 of the rod?
a. 48/3 b. 47/2
c. 9/4 d. 32/5

662. Express 500 gram as a percentage of a quintal
a. 10% b. 15%
c. 20% d. 0.5%

663. What is ½% of Rs. 1000?
a. Rs. 10 b. Rs.3
c. Rs.4 d. Rs5

664. A student has to get at least 40% marks to pass a test. Rabi obtains 25 marks and fails by 7 marks. Find the total marks.
a. 70 b. 75
c. 80 d. 85

665. Find the H.C.F of
$12(a-b)^2(b-c), 30(a-b)(b-c)^2 \; and \; 24(a-b)^3(b-c)$
a. $6(a-b)^2(b-c)$ b. $6(a-b)^2(b-c)^3$
c. $6(a-b)(b-c)$ d. None

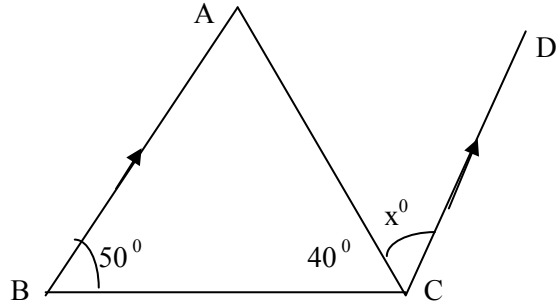
666. Simplify: $\frac{a^2}{a-1} - \frac{2a-1}{a-1}$
a. a – 1 b. $(a+1)^2$
c. $(a-1)^2$ d. None

667. Simplify: $\frac{x^3+y^3}{x^2-y^2} \times \frac{x^2y-xy^2}{x^2-xy+y^2}$
a. xy^2 b. x^2y^2
c. xy d. None

668. If 10, k and 40 are in continued proportion. Find the positive value of K + 2.
a. 20 b. 21
c. 26 d. None

669. Divide 54 students into two sections. A1 and A2 in the ratio 5:4 and hence. Find the number of students in section A2.
a. 30 b. 24
c. 26 d. 32

670. In the given figure, find the value of x. AB is parallel to CD



a. 50^o b. 40^o
c. 90^o d. None

671. If the angle of a triangle are in the ratio 1:2:3. Is the triangle right angled triangle.
a. No b. Yes

c. None d. can not be determined

672. In ΔABC, Angle A = 40^o, Angle B = 45^o, Arrange its sides in descending order of their lengths.
a. AB>BC>AC b. AB>AC>BC
c. AC>AB>BC d. None

673. If angle A + Angle B = 65^o angle B + Angle C = 140^o. Calculate Angle A and Angle B.
a. 40 and 30 b. 42 and 43
c. 40 and 25 d. None

674. If A = { 1,2,3,4}, B = { 2,3,5,7}. Find $A \cap B$
a. { 1,2,3} b. { 2,4,5}
c. {2,3,5} d. None

675. What is the difference between the least number of five digits and the greatest number of three digits?
a. 8001 b. 7001
c. 9001 d. None

676. What is the value of $\left(32a^{15} \times b^{20} \times c^{25}\right)^{1/5}$?
a. 3abc b. 4abc
c. $2a^3b^4c^5$ d. None

677. A man buys 160m of cloth at Rs.2.65 per meter and sells at Rs.3 per meter. What does he gain?
a. Rs.40 b. Rs.70
c. Rs.73 d. None

678. A and B begin to play each with Rs. 15. If they play till B's money is four eleventh of A's. What does he gain?
a. Rs. 7 b. Rs.10
c. Rs.15 d. None

679. What number multiplying by 304 will produce 3344?
a. 11 b. 12
c. 13 d. 14

680. By how much does (b+c) exceeds (b - c) ?
a. 3c b. 2c
c. c d. none

681. Find the number whose square is equal to the difference between the squares of 6467 and 4683?
a. 4470 b. 4460
c. 4471 d. None

682. A gentleman's monthly income amounts to Rs.250 and his monthly expenses amount to Rs.175. How much will he be able to save at the end of two years?
a. Rs. 3000 b. Rs.1800
c. Rs.15000 d. Rs.2000

683. If 25x= 9y, Find the sub-duplicate ratio of x to y.
a. 125/27 b. 125/81
c. 625/81 d. None

684. The hypotenuse of a right angled triangle is 74 cm and one side is 24 cm. Find its area.
a. $980cm^2$ b. $870cm^2$
c. $840cm^2$ d. None

685. If I had Rs. 300 more, I could have paid a debt of Rs. 750 and have 25 rupees over. How much do I have?
a. Rs. 375 b. Rs. 775
c. Rs.475 d. None

686. Which is greater $\sqrt{2}$ or $3\sqrt{3}$?
a. $\sqrt{2}$ b. $3\sqrt{3}$
c. None

687. Sound travels 1125ft in a second. If a gun is fired at a distance of 1875 yards, what time must elapse between the seeing and the hearing of the report?
a. 5 sec b. 10 sec
c. 1257 sec d. None

688. If 5 cc of a particular medicine costs Rs. 3.10. Find the price of 1 liter medicine?
a. Rs. 1000 b. Rs.780
c. Rs.620 d. None

689. The two parallel side of trapezium are 12cm and 17 cm and one oblique is 13cm, if the the remaining side is perpendicular to the parallel side, Find the the area of the trapezium

a. $174cm^2$ b. $173cm^2$

c. $175cm^2$ d. None

690. After paying an income tax of 5 paisa in a rupee a man has Rs.3757.50 left. Find his gross income?

a. Rs.375000 b. Rs. 3,85,000

c. Rs.40000 d. None

691. What will be the result when $-3x+2x^2-11x+5$ is subtracted from zero?

a. $3x^3-2x^2+11x-5$ b. $3x^3+2x^2+11x+5$

c. None

692. I sell an article for Rs. 20 whose cost is Rs. 16. What is my gain?

a. 15% b. 20%

c. 25% d. 30%

693. How many times is x contained in $y = 2x^2$?

a. 3/7 times b. 2y times

c. 2x times d. None

694. What fraction of 4 liters is 2 liters 850ml?

a. 80/56 b. 56/80

c. 80/57 d. 57/80

695. Write down the value of $\left(x^4y^{12}\right)^{1/4}$ is

a. xy^3 b. x^2y^3

c. x^4y^{12} d. None

696. If $x - 1/x = 3$, Find the value of x^3-1/x^3

a. 36 b.18

c. 27 d. None

697. Find the 25^{th} term of arithmetic series 1+3+5+7+……..

a. 49 b. 48

c. 79 d. 50

698. If A = { l,m,n,o,p,q}, B = { o,p,q,r,s}, then find A – B

a. { l,m,n,o} b. { m, n, q, r}

c. { l, m, n} d. None

699.Factroise: x^4+3x^2+1

a. $\left(x^2-x-1\right)\left(x^2+x-1\right)$ b. $\left(x^2-x+1\right)\left(x^2+x-1\right)$

c. $(x-1)(x+1)$ d. None

700. Solve $2\times8^3=2^{x-4}$

a. 12 b. 13

c. 14 d.15

701. Simplify: $\sqrt[3]{4x^5y^7}\times\sqrt[3]{2x^4y^2}$

a. $2x^2$ b. $2y^2$

c. 2xy d. None

702. After increasing 12.5% a person gets Rs. 2700. Find his previous income

a. Rs.2000

b. Rs.2500

c. Rs. 2400

d. Rs. None

703. The electricity charge upto 20 units is Rs.80 and per unit Rs. 7.30 from 21 to 200 units. How much should be paid for 179 units of electricity?

a. Rs. 1100

b. Rs. 1250

c. Rs. 710.7

d. None

704. If the area of a square is $121m^2$, find the perimeter of the square?

a. 44m

b. 45m

c. 33m

d. None

705. Find the height of a cone whose radius is 14cm and curved surface are is $22cm^2$

a. 10cm

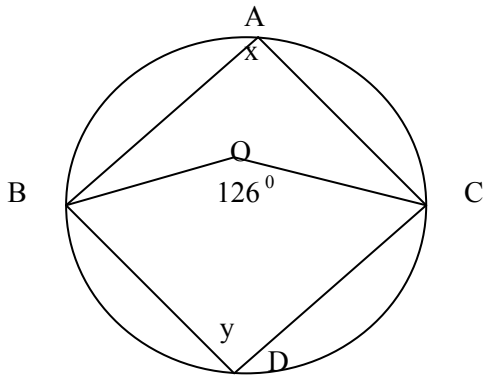
b. 15cm

c. 20cm
d. None

706. The mean height of 5 boys is 57 inches. If a boy with height 63 inches entered the group. What will be their mean height?
a. 58 inch
b. 62 inch
c. 67 inch
d. 60 inch

707. The bases of a trapezium are 9 cm and 12 cm and distance between parallel lines is 6cm. Find its area
a. 73cm^2 b. 83cm^2
c. 63cm^2 d. None

708. In figure O is the centre and Angle BOC = 126^0. Find the value of x



a. 63^o and 117^o b. 53^o and 126^o
c. 53^o and 117^o d. 63^o and 110^o

709. If U = { 5,6,7……15}, A = { 6,8,12,13} and B = { 5,6,7,8,13,15}Find $A \cap B$
a. {6, 8} b. {5, 6, 7, 8, 12, 13, 15}
c. {6, 8, 13} d. None

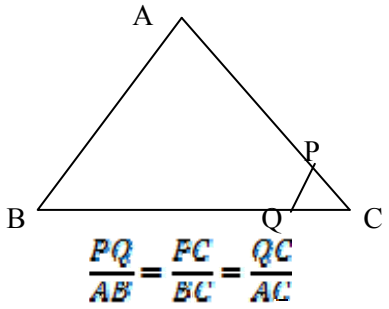
710. Factories: $4a^2 - b^2 - 4a + 1$
a. $(2a-1-b)(2a-1+b)$
b. $(2a+1+b)(2a-1-b)$
c. None

711. Simplify: $\frac{b^2}{a(a+b)} + \frac{a^2}{b(a+b)} - \frac{a^2+ab+b^2}{ab}$
a. -1 b. -2
c. 0 d. None

712. Solve : $2^{x-1} + 2^x = 3$
a. 1 b. 7
c. 3 d. 2

713. Simplify: $\sqrt[3]{8a^3b^9} \div \sqrt[4]{16a^4b^{12}}$
a. 1 c. 2ab
c. $2a^2b^2$ d. None

714. In the given figure, $\angle$ BAC = $\angle$ PQC & if QC/AC = 2, Find PQ/AB



a. 1 b. 2
c. 3 d. none

715. Find the median of the given data 51,53,49,51,53,50,54,56
a. 51 b. 52
c. 53 d. 54

716. A cylindrical water tank contains 3,85,000 litre of water. If its height is 10m. Find its diameter (π = 22/7)

a. 7 b. 8
c. 9 d. 10

717. What is the simple interest on Rs. 8000 for 2 years at the rate of 6% per annum

a. 987
b. 898
c. 960
d. 889.80

718. Solve $a^{x} = \left(\sqrt{a^{3x}}\right)^{x}$

a. 0 and ½ b. 0 and 3/2
c. 0 and 2/3 d. None

719. A cone has slant height 25 cm and height 24 cm, Find its volume ($\pi = 22/7$)

a. $183.79cm^2$ b. $173.33cm^2$
c. $1232\ cm^2$ d. None

720. Factorize: $a^8 + a^4 + 1$

a. $(a^4+a^2+1)\ (a^2+a+1)\ (a^2+a+1)$
b. $(a^4- a^2+1)\ (a^2 - a+1)\ (a^2+a+1)$
c. $(a^4+a^2+1)\ (a^2+a+1)$
d. None

721. A card is drawn at random from the set of cards numbered 1 to 20. Find the probability that the card may be a prime numbered?

a. 3/5 b. 1/5
c. 2/5 d. 1/7

722. Find x when $\sqrt{x-2} = 1$

a. 2 b. 3
c. 4 d. 5

723. If A = { factors of 6} and B = { factors of 8}. Find $A \cap B$

a. { 1,2} b. { 4,5}
c. { 6,8} d. None

724. 8 kg of sugar costs of Rs. 240. What is the cost of 15kg of sugar?

a. Rs.550 b.Rs.450
c. Rs. 350 d. Rs. 750

725. Find the total surface area of cylinder whose radius is 28 cm and height is 72 cm

a. $17600cm^2$ b. $14400cm^2$
c. $13300cm^2$ d. None

726. How much is 662/3% of Rs. 300?

a. Rs. 400 b. Rs. 700
c. Rs. 300 d. None

727. If the price of an item costing Rs. 200 is depreciated at 5% . How much money is depreciated.

a. Rs. 20 b. Rs. 10
c. Rs. 15 d. Rs. 30

728. What percent is 30 paisa of Rs. 60?

a. 0.7% b. 0.57%
c. 0.5% d. None

729. What percentage is Rs. 25 of Rs. 125?

a. 20% b. 25%
c. 30% d. 35%

730. What number is that if 10% of its is 1000?

a. 1,00,000 b. 10,000
c. 20,000 d. None

731. Evaluate $(625)^{3/4}$

a. 250 b. 125
c. 400 d. 200

732. What percentage is 7.5cm of 4 m.

a. 1.2% b. 1.88%
c. 1.52% d. None

733. Simplify = $\sqrt{a^{-2}}$

a. a^2 b. a^3
c. $1/a$ d. 1/5

734. Find the value of $\left(\sqrt{1096}\right)^{-2/3}$

a. 1/250 b. 1/16
c.1/276 d. 2/41

735. If 25 liter of milk and water contains 10 liter of water, then find the ratio of milk to water in the mixture?

a. 3:4 b. 1:4
c. 2:3 d. 3:2

736. What percentage is 600 gm of 3 kg?

a. 166.67% b. 147.52%
c. 173.73% d. None

737. Express the fraction 3/20 in percentage

a. 10% b. 25%
c. 11% d. 15%

738. Express 221/2% as a fraction in its lowest from

a. 9/20 b. 9/60
c. 9/50 d. 9/40

739. What percentage of 3 hours is 18 minutes?

a. 25% b. 30%
c. 15% d. 10%

740. What will be the percentage increase when 10 is made to 14?

a. 40% b. 30%
c. 43% d. 17%

741. Simplify: $\sqrt{81a^6b^{-4}}$

a. $9a^2b^{-4}$ b. $9a^3b^{-2}$
c. $9a^2/b$ d. None

742. $\sqrt{21}\times\sqrt{84}$

a. 42 b. 43
c. 51 d. 52

743. Find the value of 'x' when $2^x = 1/8$

a. -2 b. 2
c. 3 d. -3

744. What percentage of 141 in 47?

a. 33.39% b. 30%
c. 33.33% d. None

745. Factorize: $a^3 + 64$

a. $(a+4)(a^2-4a+16)$ b. $(a-4)(a+4)$
c. $(a-4)$ d. $(a-4)(a^2+4a+16)$

746. If 25 pens costs Rs. 246, how many pens can be bought by 984?

a. 300 b. 200
c. 100 d. 500

747. Out of 60 students of a class, 40% were girls, how many students were boys?

a. 42 b. 24
c. 36 d. 50

748. Solve: $\sqrt[3]{(64)^{-1}}$

a. 1/3 b. ¼
c. ½ d. 2/3

749. The cost of 10 kg rice is Rs. 160, what is the cost 45kg rice?

a. Rs.120 b. Rs. 720
c. Rs. 540 d. None

750. Evaluate: $6\sqrt{(1/64)^{-1}}$

a. 48 b. 24
c. 16 d. 32

751. Factorize: $a^2 - 4b^2 + c^2 - 2ac$

a. $(a-c+2b)(a-c-2b)$
b. $(a+c-2b)(a+c+2b)$
c. None

752. A card is drawn from a pack of a cards at random. Find the probability of getting a red faced card.

a. 1/3 b. 13/14
c. 1/2 d. 1/4

753. Find the H.C.F. of $(a+b)^2$ and (a^3+b^3)

a. (a – b) b. $(a+b)^2$

c. a^3+b^3 d. None

754. Solve $2^x+2^{x-2}=5$

a. 3 b. 4

c. 2 d. 5

755. Simplify: $4\sqrt{a^6}\div\sqrt{4a^2}$

a. $2a^2$ b. $4a^3$

c. 2a d. None

756. The probability of passing an examination of a student is 2/3 then find the probability of failing

a. 1/3 b. 2/3

c. 3/5 d. 7/8

757. Find the L.C.M of x^2-9 and 3x +9

a. $(x-9)(x+9)$ b. $3(x-3)(x+3)$

c. $3(x^2-9)(3x+9)$ d. None

758. Factorize: $a^2+b^2-c^2+2ab$

a. $(a+b+c)(a+b-c)$ b. $(a-b-c)(a-b+c)$

c. $(a+b+c)(a+b+c)$ d. None

759. What will be the probability of getting 5 when a dice is rolled once?

a. 5/7 b. 2/5

c. 3/5 d. 1/6

760. What will be the probability of getting 0 or 5 when dice is marked 1 to 6 is rolled once.

a. 1/7 b. 2/5

c. 3/5 d. None

761. A marble is drawn from a box containing 15 black, 5 green, 10 red and 10 yellow marbles. Find the probability the marble of black

a. 2/7 b. 1/8

c. 3/8 d. 5/8

762. A basket contains 3 red, 4 black and 5white balls,. A ball is drawn randomly from the basket, find the probability of not getting a black ball

a. 1/3 b. 1/7

c. 1/8 d. 2/3

763. If A and B are independent events, P(A) = 1/2, P(B) = 1/3, what will be the value of P(A and B)?

a.1/5 b. 1/4

c. 1/6 d. None

764. Simplify: $\dfrac{\sqrt[3]{56x^7y^{11}}}{\sqrt[3]{7x^4y^5}}$

a. $2xy^2$ b. $2x^2y$

c. $3xy^2$ d. None

765. What are the probabilities of impossible event and certain event?

a. 1 and 1 b. 1 and 0

c. 0 and 1 d. None

766. A bag contains 7 different colour marbles. A Ball is drawn randomly from the bag. Find the probability of getting a red marble.

a. 1/6 b. 1/5

c. 2/7 d. None

767. Find the H.C.F and x^2-9 and 3x+9

a. x + 3 b. x – 3

c. (x + 3)(x – 3) d. None

768. Find the H.C.F. of a^2-b^2 and $a^2+2ab+b^2$

a. $(a+b)(a-b)$ b. $(a+b)^2$

c. $(a+b)$ d. None

769. If A and B are two mutually events exclusive events, write the formula to find P(A or B)

a. $P(AorB)=P(A)+P(B)$

b $P(AorB)=P(A)-P(B)$

c. $P(AorB)+P(A)-P(B)$

d. None

770. Simplify: $\frac{3^{3a+2}-3^{3a+1}}{6\times 27^{a}}$

a. 10 b. 15

c. 1 d. 5

771. Find the value of x: $4^{2x-1}=16^{x/2}$

a. 1 b. 1/2

c. 7/2 d. 2/3

772. Solve $(\frac{1}{2})^{-3x}=8$

a. 1 b. 2

c. 3 d. 4

773. Simplify: $\frac{5.2^{k}-5.2^{k-2}}{2^{k+2}}$

a. 2^{k+1} b. 4

c. 15/16 d. 17/18

774. Find the value of x : $3^{x-16}=27$

a. 18 b. 19

c. 20 d. 21

775. If 25 pens cost Rs. 246. How many pens can be bought by Rs. 984?

a. 200 b. 300

c. 100 d. None

776. In a school, out of 200 student 24% were girls. How many boys were there?

a. 912 b. 288

c. 432 d. 152

777. Evaluate: $\sqrt{\sqrt[3]{729}}$

a. 2 b. 3

c. 4 d. 5

778. What is factor of: $ab^2-b(a-c)-c$

a. $(b-1)(ab+c)$ b. $(b+1)(b-1)$

c. $(ab+c)(ab-c)$ d. None

779. Find H.C.F of $(x+2)(x+3)$ and x^2+2x

a. x – 2 b. x + 3

c. x + 1 d. None

780. In a class out of 60 students 21 passed, Fin the pass percentage?

a. 32% b. 31%

c. 45% d. 35%

781. Factorize: $a^2-b^2-2a-2b$

a. $(a+b)(a-b)$ b. $(a-b)(a-b)$

c. $(a+b)(a-b-2)$ d. None

782. The cost of 10 kg of rice is Rs. 160, what is the cost of 4 kg rice?

a. Rs. 61 b. Rs. 62

c. Rs. 64 d. Rs. 63

783.What are the roots of the quadratic equation $ax^2-bx=0$

a. 165 and a/b b. 170 and 5

c. 0 and b/a d. None

784. What is the simplified form of $2\sqrt{20}\times 3\sqrt{45}$

a. 165 b. 170

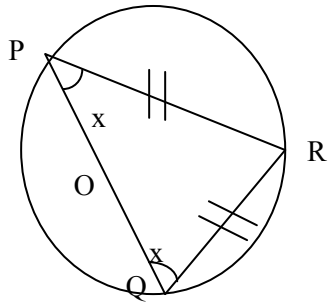
c. -45 d. 180

785. Solve $9/x^2-4=0$

a. 3/2 b. -3/2

c. 0 d. $\pm 3/2$

786. In the given figure , O is the centre of circle if PR = QR, calculate angle PQR



a. 30^o b. 60^o
c. 45^o d. 70^o

787. A watch which was bought for Rs. 100 was sold at Rs. 120. What will be the gain in percent?
a. 15% b. 20%
c. 25% d. 35%

788. What value of x satisfies the equation x – 1 = 1 – x?
a. 2 b. 1
c. 0 d. -1

789. If an integer y is subtracted from an integer x and the result is greater than x, then y must be
a. Equal to x b. less than 0
c. less than x d. greater than 0

790. A circle with radius 2 is intersected by a line at point R and T. The maximum possible distance between R and T is
a. 1 b. 2
c. -6 d. none

791. If x= 2 and y-3 =0, which of the following must be true?
a. x=2 and y=3
b. x=2 and y ≠ 3
c. x= -2 and y=3
d. x=-2and y≠3

792. If n is the average of the three numbers 6,9 and k what is the value of k in terms of n?
a. n-5
b. n-15
c. 3n-5
d. 3n-15

793. If x is the odd negative integer and y is a even positive integer, then xy must be which of the following /
a. odd and positive
b. odd and negative
c. even and positive
d. Even and negative

794. How many positive integer less then 20 are equal to the sum of a positive multiple of 3 and a positive multiple of 4?
a. nine
b. five
c. Seven
d. ten

795. If a circular region has redius r and area k, then k/r is equal to
a. д
b. д/r
c 2.
d. r д

796. 3x-2=7, then 4x=
a. 3
b. 5
c. 20/3
d. 12

797. The greatest number of diagonals that can be drawn from one vertex of a regular 6-side polygon is
a. 2
b. 3
c. 4
d. 5

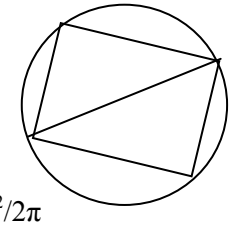
798. An additional observation 15 is including in a series of 11 observation and its mean remain unaffected. The means of the series was
a. 11

b. 15
c. 13
d. 165

799. The difference between two positive two positive number is 16. if the smaller of these numbers is 3/5 of the larger. What is the value of the smaller numbers?
a. 18
b. 24
c. 30
d. 33

800. (1-x)(x-1)=
a. $-(x-1)^2$
b. $(x-1)^2$
c. 0
d. x^2-1

801. If a square is inscribed in a circle of radius r as shown above, then the area of the square region is



a. $\pi r^2/2\pi$
b. πr^2
c. r^2
d. $2r^2$

802. If n = 3, what is the value of $2^{2n} + 1$?
a. 13
b. 17
c. 33
d. 65

803. If x and y are integers and x>y>0, how many integers are there between, but not including, x and y?
a. x-y
b. x+y
c. x-y-1
d. x-y2

804. The equation of the line through (5, -6) parallel to y axis is
a. x = - 6
b. y = - 1
c. x = 5
d. y = - 5

805. When a certain number is divided by 7, the remainder is 0 . if the remainder is not 0, when the number is divided by 14, then the remainder must be
a. 2
b. 4
c. 6
d. 7

806. If the radius of a circle is decreased by 30 percent by what percent will the area of the circular region be decreased?
a. 15%
b. 49%
c. 51%
d. 60%

807. If one angle of a triangle is equal to the sum of the other two, then the triangle is
a. isosceles
b. equilateral
c. right –angled
d. equiangular

808.The sum of two numbers is 14 and their different is 2, what is the product of the two numbers?
a. 28

b. 40
c. 45
d. 48

809. If y=a/a+b and x =a/b, what is y in term of x?
a. 1+x
b. 1+1/x
c. 1/1+x
d. x/1+x

810. What is the area of a rectangle whose length is twice its width and whose perimeter is equal to that of a square whose area is 1?
a. 1
b. 6
c. 2/3
d. 4/3
e. 8/9

811. If the sum of 12, 15 and x is 45, then the product of 5 and (x +2) is
a. 100
b. 92
c. 80
d. 41

812. If 2x=7 and 3y=2, then 9xy=
a. 14
b. 18
c. 21
d. 28

813. How many times 2 is used in between 0 and 300?
a. 60
b.90
c. 160
d. 200

814. What number should be added on 5 to get sum 5 ?
a. 5
b. -5
c. 0
d. 1/5

815. What number should be added on 8 to get sum 0?
a. 0
b. -8
c. 1/8
d. -5

816. One of the factors of $2x^2$-x-1, what is the other?
a. x +1
b. 2x + 1
c. 2x – 1
d. 2x + 2

817. If a = 3 cm, b=2.4 cm, c =3.5 cm, you will construct
a. isosceles triangle
b. scalene triangle
c. right angle triangle
d. none

818. After paying an income tax of 5% a man has Rs. 7600left, What is his income?
a. Rs. 800
b. Rs. 8000
c. Rs. 4000
d. Rs. 16000

819. Each exterior angle of an equilateral triangle is
a. 60^o
b. 90^o
c. 120^o
d. 90^o

820. The value of sec 150^o is
a. $\sqrt{3}$ -1
b. $-2/\sqrt{3}$
c. $2/\sqrt{3}$
d. none

821. A number multiplied by two third of itself makes the product

10584 the number is
a. 123
b. 124
c. 125
d. 126

822. The area of square is 900 cm^2. The length of its diagonal is,
a. $20\sqrt{2}$
b. $20\sqrt{3}$
c. $30\sqrt{2}$
d. $30\sqrt{3}$

823. If the radius of the right circular cylinder is r, and the height is r/3 then the curve surface area is
a. $1/3л^2$
b. $лr^2$
c. nr^3
d. $2лr^2/3$

824. The total surface area of cuboids with dimension 1, b and h is
a. 2(1b,+bh+1h)
b. (1b+bh+1h)
c. ½ (1b+bh+1h)
d. 1bh

825. The median of the following observation, arrange in ascending order is 24, find x.
11, 12, 14, 18, x+2, x+4, 30, 32, 35, 41
a. 21
b. 11
c. 20
d. 41

826. Find the area of the triangle whose sides are 3 cm, 4 cm and 5 cm
a. 25 cm
b. 6 cm
c. 8 cm
d. 10 cm

827. The total surface area of a hemisphere is of radius ‘r’ is
a. $1/4лr^2$
b. $3лr^2$
c. $1/2л^2$
d. $2лr^2$

828. If the radius of a sphere is double, its volume become…the original volume
a. 16. times
b. 4. times
c. 8 times
d. double

829. Robin can see upto 14 km far . the area of the land he can see around is,
a. 612. sq km
b. 614 sq km
c. 651 sq km
d. 616 sq km

830. A metallic sphere is melted into a solid right circular cylinder whose height is twice the radius of its base. If the radius of the sphere and the cylinder are ‘r’ and ‘R’ respectively, then R is……..
a. $3\sqrt{2}\sqrt{3}r$
b. $3\sqrt{3}\sqrt{2}r$
c. $\sqrt{r}$
d. $(\sqrt[3]{2}/3)$ r

831. In how many years will a sum of money double at 10%
a. 5
b. 6
c. 7
d. 10

832. The roots of the quadratic equation $x^2.6x +7 = 0$ are
a. $\sqrt{3}, \sqrt{2}$
b. $3+\sqrt{2}, 3-\sqrt{2}$
c. 3,2
d. $\sqrt{3}$, 2

833. Which number is terminating rational number?

a. 5/6
b. 6/5
c. 5/7
d. 2/3

834. Which number is non- terminating and repeating of the following?
a. 7/4
b. 3/7
c. 2/5
d. 9/2

835. If the radius of a circle is increased by 10%, the area of the circle is increased by
a. 10 %
b. 15 %
c. 21 %
d. 100 %

836. What is the difference in area between a square with side = 9 and the surface area of a cube with edge = 3 ?
a. 72
b. 54
c. 27
d. 18

837. If area of a triangle of base 7 is equal to a circle of radius 7, what is the altitude of the triangle?
a. 14 π
b. 14 π
c. 10 π
d. 8 π

838. If the sum of the length of the edges of a cube is 48 cm, the volume of the cube in cm^2 is
a. 200
b. 64
c. 96
d. None

839. If $y = x^2$, z=x3, and w = xy then $y^2 + z^2 + w^2 =$
a. $x^4+x^6+x^{10}$
b. x^4+2x^6
c. x^4+2x^5
d. $2x^9$

840. A line can not interest a circle more then
a. one point
b. two point
c. three point
d. all

841. Ina two digit number, the unit's digit twice the ten's digit. If the digits are reversed, the number is 27 more then the original number. Find the number
a. 63
b. 36
c. 18
d. 72

842. If 2/5 of a pole is 3.60m, what will be the length of 5/9 of it?
a. 5
b. 6
c. 7
d. 8

843. A garrison of 960 men has food enough to last for 65 days. How many men should be sent away so that the provision may last for 120 days
a. 440
b. 220
c. 520
d. 630

844. The equation of the line through (5,-6) parallel to y-axis is
a. x = 6
b. y = 1
c. x = 5
d y = -5

845. Divide Rs. 81. among A, B and C so that B may get Rs. 7 more

then A and C gets Rs. 6 less then twice A's share
a. 20, 40, 20
b. 30, 10, 40
c. 50, 10, 20
d. 20,27,34

846. A metallic cylindrical pipe has inside radius r and outside radius R and the length 1. Find the volume of the metal
a. R^2-r^2
b. $\pi(r^2-R^2)$
c. $\pi(R^2- r^2)L$
d. $2\pi RL$

847. If SinA + CosecA= 2, then $\sin^3A + Cosec^3A$ is
a. 8
b. 6
c. 4
d.2

848. The numerator of a fraction is 4 less then its denominator. If the numerator is decreased by 2 and the denominator is increased by 1, then the denominator is eight times numerator. Find the fraction
a. 7/3
b. 3/7
c. 1/8
d. 5/3

849. Find the area of a square that can be inscribed in a circle of radius 5 cm
a. 25 cm^2
b. 12.5 cm^2
c. 16 cm^2
d. None

850. A boy is 3 year older then his sister. Two years ago the sum of their ages 19. How old is the boy now?
a. 13 years
b. 12 years
c. 11 years
d. None

851. The L.C.M and H...C. F of the two numbers are 840 and 14 respectively and if one of the number is 42 then the other number is
a. 84
b.280
c.868
d. None

852. A man bought an article for Rs. 1 and sold for Rs. 1.20 what is the gain %
a. 12%
b. 20%
c. 1.2%
d. 10%

853. If a-b= 10, $a^2-b^2 = 20$ what is the value of b?
a. -6
b. -4
c. 4
d. 6

854. The simplified form of $(27)^{4/3}$ is
a. 9
b.999
c.88
d.81

855. If $a^3 = 1/8$, the value of $a^2 – b^2 = 20$, what is the value of b?
a. 2
b. ½
c. 4
d. None

856. If one angle of a triangle is equal the sum of the other two, then the triangle is
a. isosceles
b. equilateral
c. right angled
d. equiangularg

857. A storeowner received a shipment of books. On Tuesday he sold half of the books on Wednesday after two more were sold. He had 2/5 of the books left. How many books were in the shipment?
a. 10
b. 20
c. 30
d. 35
e. 40

858. What is the area of a rectangle whose length is twice its width and whose perimeter is equal to that of a square whose area is 1?
a. 1
b. 6
c. 2/3
d.. 4/3
e. 8\9

859. Ram drove 8m. west , 6m north , 3m. east , and 6 more meter north How many meters was he from her staring place
a. 13 b. 17
c. 19 d. 21 e. 23

860. If and p and q are primes greater than two which of following is true ?
a. p + q= even b. pq is odd
c. $p^2 - q^2$ is even d. all of them

861. How many times 2 is used in between 0 and 300 ?
a. 60 b. 90
c. 160 d. 200

862. In 7 years Rita will be twice as old as she was 8 years ago . How old is Rita now ?
a. 20 b. 23
c. 32 d. 25

863. Which is incorrect ?
a. 1kg = 2.2 lbs b. 1 liter = 100cc
c. 1 km = 0.625miles d. 1 mile = 1.6km

864. What is the additive inverse of (1/9)
a. 1/9 b. 9/1
c. -1/9 d. -9/1

865. What is the multiplicative inverse of (-9/1)
a. -9 b. 1/9
c. 9/1 d. -1/9

866. What number should be added on 5 to get sum 5 ?
a. 5 b. -5
c. 0 d. 1/5

867. What number should be multiple on (1/9) to get the product 1/9 ?
a. 0 b. 9
c. -9 d. 1

868. What number should be added on 8 to get sum 0?
a. 0 b. 1/8
c. -8 d. -5

869. What number should be multiply on 3 get the product 1 ?
a. 0 b. -3
c. 1/3 d. -5

870. How many rational number can you write between 0 and 1 ?
a. only one b. only two
c. only three d. more than three

871. Each exterior angle of an equilateral triangle is
a. 60 b. 90
c. 120 d. 90

872. The value of sec 150 is ,
a. $\sqrt{3}-1$ b. $1-\sqrt{3}$
c. $\sqrt{3}+1$ d. none

873. A number multiplied by two third of itself makes the product 10584, the number is
a. 123 b. 124
c. 125 d. 126

874. The area of square is 900 cm^2 . The length of its diagonal is ,
a. $20\sqrt{2}$ b. $20.\sqrt{3}$
c. $30\sqrt{2}$ d. $30\sqrt{3}$

875. Roshan can see unto 14km far . The area of land that he can see around is

a. 612sq km b. 614sq km
c. 651sqkm d. 616sq km

876. In how many years will a sum of money double at 10%
a. 5 b. 6
c. 7 d. 10

877. How many rational number can you write between 4 and 6 ?
a. only one b. only two
c. only three d. Infinite

878. Which number lies in between two rational numbers ½ and 1/3 ?
a..2/5 b. 6/5
c. 1/4 d. 0.6

879. Which number is terminating rational number?
a. 5/6 b. 6/5
c. 5/7 d. 2/3

880. Which number is non – terminating and repeating of the following?
a. 7/4 b. 3/7
c. 2/5 d. 9/2

881. What is the exact value of $\sqrt{3}$?
a. 1.73 b. 1.37
c. 1.73205 d. none of these

882. Which property of $(\sqrt{3}+1)(\sqrt{3}-1)$ = real number ?
a. commutative b. Associative
c. closure d. None of these

883. Which property belongs to $(-\sqrt{5}) + (\sqrt{5}) = 0$?
a. commutative b. identity
c. Inverse d. Closer

884. Which property of real number is given by $(\sqrt{3}/\sqrt{2}) \times (\sqrt{2}/\sqrt{3}) = 1$
a. Commutative b. identity
c. Inverse d. Closer

885. Which one is the rationalizing factor of $(\sqrt{2}+1)$?
a. $\sqrt{2}-1$ b. $\sqrt{2}$
c. $\sqrt{2}+1$ d. $\sqrt{3}$

886. The irrational number $\sqrt{2}$ lies in between the two number ?
a. 1 and 2 b. 2 and 3
c. 0 and 1 d. 0.5 and 1.3

887. Which is the property used for $x + (5/7) = (5/7) + x$?
a. commutative b. identity
c. Inverse d. Associative

888. Which is true x (when x) $\times (5/9) = 1$?
a. x=0 b. x=1
c. x= - (5/9) d. x=9/5

889. Which is true for x $\times (5/9) = 0$
a. x=0 b. x=-(9/5)
c. x=-(5/9) d. x=9/5

890. Which is true for x $\times (5/9 = 5/9$?
a. x=0 b. x=1
c. x=-3/5 d. x=9/5

891. Which is true for $x + 5/9 = 6/9$?
a. x=0 b. x=1
c. x=1/9 d. none of these

892. Which is true for $x + (1/x) = 2$?
a. x=4 b. x= 2
c. x=1 d. all

893. Which property relates for $3(4+5) = 3.4+3.5$?
a. commutative b. associative
c. distributive d. closer

894 Additive property is closure for
a. Natural number b. Integer
c. Rational number d. all of these

895. In the set {-10-0.33…,…2/3,$\sqrt{48}$ }- Which number s irrational
a. – 0.33 …,….. 2/3 ,$\sqrt{48}$ b.$\sqrt{48}$ only
c. – 0.33…….. only d. none

897. 3 $\sqrt{5}$ is a type of
a. rational number b. irrational number
c. integer d. none of these

898. A line can intersect a circle more then
a. one point b. two point
c. three point d. all

899. The n^{th} term of two AP's -19,-12,-5, +2 … 1 + 6 + 11 +….are equal the Value of n is,

a. 9
b. 10
c. 11
d. 12

900. If 2/5 of a pole is 3.60 m, what will be the length of 5/9 of it ?
a. 5
b. 6
c. 7
d. 8

901. A garrison of 960 men has food enough to last for 65 days. How many men should be sent away so that the provision may last for 120 days.
a. 440
b. 520
c. 220
d. 630

902. If a and b are integers and ab = 5 then the value of (a + b)2 is
a. 13
b. 25
c. 36
d. 49

903. The roots of a quadratic equation x^2-x-30 = 0 are
a. 10, 3
b. 5, 6
c. -5, 6
d. -6, 5

904. After paying an income tax of 5%, a man has Rs. 76000 left. What is his income?
a. Rs. 800.
b. Rs. 80000
c. Rs. 4000
d. Rs. 16000.

905. If a^3 = +(1/8), the value of the a^2 is …….
a. -8
b. 1/6
c. 1/3
b. 1/4

906.The product of roots of the quadratic equation x^2-√3 x – 6 = 0 is ..…
a. -16
b. 6
c. -6
d. 16

907. Ina two digit number, the unit's digit is twice the ten's digit. If the digit is reversed, the new number is 27 more then the original number. Find the number.
a. 63
b. 18
c. 36
d. 72

908. Divide Rs. 81 among A, B , C so that B may get 7 more then A and C gets Rs. 6 less then twice A's share
a. 20, 40, 20
b. 30, 10, 40
c. 50,10, 20
d. 20, 27, 34

909. A metallic cylindrical pipe has an inside radius r and outside radius R and the length. Find the volume of the metal
a. $(R^2 – r^2)$
b. $(r^2- R^2)$
c. $\pi(R^2 – r^2)$
d. RI

910. The simplified from of $(27)^{4/3}$ is……..
a. 9
b. 999
c. 88
d. 81

911. If sin A + Cosec A = 2, then $\sin^3$ A +Cosec^3 A is
a. 8
b. 6

c. 4
d. 2

912. A boy is 3 years older then his sister. Two years ago the sum of their ages was 19. how old is the boy now ?
a. 13 years
b. 12 years
c. 11 years
d. 10 years

913. The triangle formed by joining the points (a, -a), (-a,a) and (a√3, -a√3) is
a. scalene
b. right angled
c. isosceles
d. equilateral
e. none

914. If the equation of a straight line is 2x-3y +5 = 0, then the slop of the line is
a. -3/2
b. -2/3
c. 2/3
d. 1/3

915. If cosA= 3/5 and A lies in the fourth quadrant, then tanA is
a. 4/3
b. -4/3
c. 4/5
d. -4/2

916. If a-b = 10, $a^2 - b^2 = 20$, what is the value of a+b?
a. -6
b. -4
c. 2
d. 6

917. If one angle of a triangle is the sum of the other two, then the triangle is
a. isosceles
b. equilateral
c. right angled
d. equiangular

918. At a speed of 48 miles per hour, how many minutes will be required to drive 32 miles..
a. 40
b. 50
c. 45
d. 2400
e. 100

919. A store owner received a shipment of book. On Tuesday he sold half of the books on Wednesday after two more were sold. He had 2/5 of the books left. How many books were there in the shipment?
a. 10
b. 20
c. 30
d. 35
e. 40

920. If a-b = 1; b-c=2;c-a=d, find the value of d
a. -3
b. -1
c. 1
d. 3
e. it can't be determine

921. 4/7 of the 350 students of a institute are girls, 7/8 of the girls got admission in Xavier International College. How many girls did not get admission in Xavier International College?
a. 25
b. 50
c. 45
d. 200
e. none

922. The expression $ax^2 + bx + c = 0$ has the same sign as of x if
a. $b^2 + -4ac > 0$
b. $b^2 - 4ac = 0$
c. $b^2 - 4ac \leq 0$
d. None of the above

923. The equation of normal to the curve $xy = a^2$ at the point (h, k) is

a. $hx - ky = a^2$ b. $hx + ky = a^2$

c. $hx + ky = h^2 + k^2$ d. $hx - ky = h^2 - k^2$

924. The polar coordinates of the point $x = -\sqrt{3}$, y = 1 are

a. $r = 1, \theta = 30^0$ b. $r = 2, \theta = 30^0$

c. $r = -1, \theta = 150^0$ d. $r = 2, \theta = 150^0$

925. A cube has an edge of four cm long. If the edge is increase by 25% then how much the volume will be increased approximately ?

a. 25%
b. 48%
c.73%
d. 95%
e. 122%

926. A bag contain 2 red marble, 3 green marble, and 4 orange marbles If a marble is picked t random, what is the probability of the marble not having orange?

a. 9/5
b. 5/9
c. 1/9
d. 2/3
e. 3/9

927. The price of an imported car is Rs. 825000 which includes a Vat of 10% of the original cost. Find the cost of the car before VAT

a. 825000
b. 750000
c. 725000
d. 800000
e. 875000

928. What is the simple interest on Rs. 8000 for 2 years at the rate of 6% per annum

a. 987
b. 898
c. 988.88
d. 889.80
e. 900

929. If the difference and product of two natural numbers are 7f and 78 respectively, find the two numbers.

a. – 13, -16
b. – 6, 13
c. 6, -13
d. -6, 5
e. 6, -13

930. In a triangle ABC if a = 3, b = 5, c = 4; then Cos C is

a. 10/3
b. 9
c. 10
d. 3/5
e. 4/5

931. In a triangle ABC if a =5, b = 12. c= 13; then CosA is

a. 13/2
b. 12/13
c. 5/12
d. 13/5
e. 12/5

932. A rod of 6 cm length when held vertically on the ground costs a shadow of $2\sqrt{3}$ length in the mid-day sun. Find the altitude of the sun.

a. 30^0
b. 60^0
c. 45^0
d. 75^0
e. 120^0

933. Salary was first increase by 10% and then decreased by 10%. What is the total % change in salary?

a. 2.2%
b.1.5%
c. 1%
d. 3%
e. 3.3%

934.When the rate of income tax is increased from 10% to 15%, have to

pay Rs. 835 more . Find income.

a. Rs. 16,700
b. Rs. 16,600
c. Rs. 16,900
d. Rs. 15,500
e. None

935. If A= { a, h, c, d }; B{e, f, g, h } find $A \cap B$
a. {h}
b. {a, h, c, d, e, f, g} c. {e, f}
c. {a, h}
d. it can't be determined

936. If A ={a. b, c} = {1, 2, 3, 4} find n $(A \cap B)$
a. 2
b. 3
c. 0
d. None

937. Find the quadratic equation whose roots are -3 + 5i, -3-5i
a. x^2-9x + 34x +1 =0
b. x^2 + 17x -9 = 0
c. x^2 + 6x +34 =0
d. $9x^2$ + 34x + 1 = 0
e. x^2- 6x + 34 = 0

938. In what ratio is the line joining the points (-3,4) and (2,6) is divided by the point (-1, 0)?
a. 3:4
b. 1:2
c. 2:5
d. 1:1
e. 2:3

939. Two vertices of a triangle are at (5,9) and (2,-6). Find the third vertices if the medians meets at (1,1)
a. (7,2)
b.(2,-2)
c. (1,7)
d. (4-2)
e. (1,3)

940. If the two sides of a right – angle are 5 12 then find the length of the remaining sides.
a. 13
b.6
c.2.5
d. 6.5
e. 17

941. If the three verities of a triangle are (2,0),(4,4) and (6,2). Find the centroid of the triangle
a. (4,1)
b.(1,5)
c.(4,2)
d. (-2,3)
e. (-5,-3)

942. If (2,6),(3,8) and (-1,y) lie on a straight line the value of y
a.10
b. -5
c.2
d. 3
e. 0

943. Find the angle between the lines 2x-3y+2=0 and 2x-3y-7=0
a. 30^0
b. 45^0
c. 90^0
d. 0^0
e. 60^0

944. Find the angle between the lines 3x-y+2= 0 and x + 3y+4= 0 is
a. 30^0
b. 45^0
c. 60^0
d. 90^0
e. 0^0

945. The value of Sin750 is
a. $(\sqrt{3}+1)/(2\sqrt{2})$

b. 1.5
c. -1
d. 0.5

946. The two straight line AI x + BI y +cI = 0 and A2x + B2y+c2= 0 will be perpendicular if
a. AIA2+BIB2=0
b. AI/BI=A2B2
c. AI/BI=B2/A2
d. AIA2-BIB2=0

947. The equation Ax +By +c = 0 always represent a
a. straight line
b. cicle
c. parabola
d. square

948. The internal bisectors of a triangle meet at a point, the point is called
a. circum – center
b. in- center
c. centriod
d. orthocentrc

949. The roots of a quadratic equation $ax^2+bx+c = 0$ will be unequal and real if
a. $b^2-4ac>0$
b. $b^2-4ac>0$
c. $b^2-4ac = 0$
d. none of the above

950. The equation $ax^2+2hxy + by^2 = 0$ always represent two straight lines
a. passing through origin
b. not passing through origin
c. does not represent straight lines
d. represent straight lines

951. The formula for finding the amount of simple depreciation on the original cost is
a. 9/10p
b. 1/2p
c. PTR/100
d. A/100

952. An equilateral triangle of side 3 cm is cut into smaller equilateral triangle of side one cm each. What is the minimum number of such triangle that can be formed?
a. 3
b. 9
c. -6
d. 13
e. 15

953. A pool is filled to ¾ of its capacity. 1/9 of the water get evaporated. If the capacity of the pool is 2400 gallons when it is full. How many gallon of water is to be added to fill the poll?
a. 800
b.1600
c.1800
d. 1200
e. 600

954. A bag contain 2R, 3G, 4B marbles. If a marble is picked at random. What is the probability of that marble is not green
a. (5/9)
b. 2/3
c. 7/9
d. 5/8

955. Factories $a^4 – 11a^2b^2 + b^4$
a. $(a^2 – b^2)(a – b)$
b. $(a^2+3ab-b^2)\ (a^2-3ab-b^2)$
c. $[(a^2 – 3ab + b^2)\ (a^2 + 3ab + b^2)]$
d. None

956. If sum and product of 2 roots are 7 and -78 respectively. Find the roots
a. (13, -6)
b. 70, 8
c. -8, 70
d. 80, -2

957. Find the area of regular hexagon inscribed in a circle of radius 6 cm

a. ($54\sqrt{3}cm^2$)
b. 36 cm^2
c. 64 cm^2
d. 24 cm^2

958. In ABC, a = 3, b=5, c=4 then Cos C = ? Tan A = ?
a. 3/5, ¾
b. 2/5, 4/5
c. 3/5, 4/3
d. 3/4, 4/3

959. Find the quadratic equation whose roots are -3 +5i, -3-5i
a. $3x^2 + 6x + 30 = 0$
b. $x^3 + 6x + 34= 0$
c. $x^2 + 6x = 30$
d. $x^2 + 6x + 34 = 0$

960. If one angle of triangle is equal to the 20^0 more then the sum of other two equal angle angles. Then the triangle is:
a. isosceles triangle
b. equilateral triangle
c. right angle triangle
d. none

961. The supplement of the complement of angle 31^0 is
a. 121
b. 59
c. 80
d. 95

962. For what of k will k-5, k-1, k+5 a geometric series
a. 13
b. 5
c. 15
d. 12

963. Price of commodity is decreased by 20%. How much price of commodity must be increased to keep the price fix
a. 20%
b. 25%
c. 30%
d. 35%

964. Three seventh of a no. is 12 more then 40% of the no. what will be 60% of that no.
a. 152
b. 250
c. 252
d. 350

965. If A <2-4B which of the following is true
a. (2-A)/4>B
b. (2-A)/4>B
c. 4A + 2>B
d. 4A + 2>B

966. If length of string is 44100. This string is changed in the form of square, rectangle and circle. Which gives the maximum and minimum a circle
a. circle, rectangle
b. rectangle, circle
c. square, circle
d. rectangle, square

967. What is the 9^{th} term of series 32 + 16 + 8 + ……
a. -1/8
b. 1/8
c. 2/80
d. 2/16

968. The value of sin (n.360 + q) will be (n is +ve integer)
a. Sinq
b. –Sinq
c. Cosq
d. Secq

969. The solution of the inequality 2x +1>x+3 will be
a. x>2
b. x>2
c. x = 2
d. Zero

970. Which of the following is rational number

a. 0.333
b. 1.4142
c. 5
d. √3

971. Which of the following is irrational number
a. 22/7
b. √2
c. √9
d. 70.666

972. A square and an equilateral triangle each have side of length 5. what is the ratio of area of the square to the area of the triangle ?
a. 4/3 b. 16/9
c.1.732/4 d. 1/4.732

973. What is the area of the rectangle whose length is twice it's width and whose perimeter is equal to that of the square whose area is 1?
a. 1 b. 6
c. 2/3 d. 8/9

974. If 7x + 3y = 17 am d3x+7y = 19, what is the average (arithmetic mean)of the x and y?
a. 31/30 b. 41/20
c. 1.8 d. 3.6

975. Judy is now twice old than Adam, Adam but 6 years ago, she was 5 times old as he was how old is Judy now?
a. 10 b. 16
c. 20 d. 24

976. If it is 250 miles from New York to Boston and 120 miles from New York to Hartford, what percentage of the distance from New York to Boston is the distance from New York to Hartford?
a. 12 b. 24
c. 36 d. 48

977. If N pencils costs R rupees, How many pencils can be bought for P paisa?
a. 20NP/R b. NP/100R
c. NR/P d. NP/R

978. If X man can do the job in H days, how long would Y men take to do the same piece of the work?
a. X/H b. XH/Y
c. HY/X d. XY/H

979. A circle is inscribed in the given square and another circle is circumscribed about the same square. What is the ratio of the area of the inscribed to the area of the circumscribed circle?
a. 1:4 b. 4:9
c. 1:2 d. 2:3

980. Solve for x: root of $x^2+6x + 9 = 0$
a. No values b. 1/3
c. -3 d. 3

981. If x, y and z are chosen numbers from the three numbers -3,1/2 and 2, what is the largest possible value of the expression $[x/y]z^2$?
a. -3/8 b. 16
c. 24 d. 36

982. If 6 students, representing 15% of the class, failed altogether, how many students passed the courses?
a. 48 b. 36
c. 42 d. 34

983. Ram,Hari and Shyam agree to divide the profit of Rs. 1800 according to the ratio 9:10:11, find the share of the Shyam on the profit?
a. Rs.560 b. Rs. 360
c. Rs. 760 d. Rs. 660

984. A whole number"n" is increased by 8, if the cube root of the result equal -.5.What is the value of "n"?
a. -15.625 b. -8.794
c. -8.125 d. -7.875
e. 421.875

985. If the line 1 is the perpendicular bisector of the line segment with the end point (2,0) and (0,2). What is the slope of the line segment?
a. 2 b. 1
c. 0 d. -1 e. -2

986. In the certain community , 70% of the families reported household incomes equal or greater than $25000, per year. What is the following must be greater than or equal to $25000?

I. The mean income
II. The mode of the incomes
III. The median of the incomes

a. I only b. II only
c. III only d. I & III only
e. II and III only

987. The front size of the bottom of the face of a rectangular solid have area of 24 square centimeters ,8 square centimeters and 3 square centimeters respectively, what is the volume of the solid?
a. 24 b.96
c. 192 d. 288 e. 576

988. What is the measures of the one of the larger angle of a parallelogram in the xy plan that has vertices with the coordinates (2,1), (5,1), (3,5)and (6,5)?
a. 93.4 b. 96.8
c. 104.0 d. 108.3 e. 119

989. The diameters and height of the right circular cylinder are equal. If the volume of cylinder is 2, what is the height of the cylinder?
a. 1.37 b. 1.08
c. 0.86 d. 0.08 e. 0.68

990. If sinA = 0.57, then Sin (-A)=
a. -0.57 b. -0.43
c. 0 d. 0.43 e. 0.57

991. In the group of the ten people,60% have brown eyes. Two people are to be selected at random from the group.What is the probability of the person selected will be brown eyes?
a. 0.13 b. 0.16
c. 0.25 d. 0.33 e. 0.64

992. A line has parametric equations X=5+t&Y=7+t, where t is the parameter, the slope of the line is
a. 5/7 b.1
c.7+t/5+t d. 7/5 e. 7

993. If $X^2-Y^2=15$ and X+Y=3, then X-Y is
a. 0 b. 3
c. 5 d. 9

994. If a bus can travel 15 miles on a gallon of gases,how many gallons of gas will it use to travel 200 miles?
a. 10 b. 12
c. 13 d. 1/3

995. If a company sold 20% of the soap bars out of 6435 bars of soap. How many soap bars are left with the company o be sold?
a. 1287 b. 2145
c. 3291 d. 5148

996. Rabin,Nabin and Sabin have a business in partnership with the investment of Rs. 40000,Rs. 50000 and Rs. 60000 respectively, At the end of year they earn profit of Rs. 15000. According to the proportion of their investment, what is the salary if Rabin on profit?
a. Rs. 4000 b. Rs. 5000
c. Rs. 6000 d. Rs.10000

997. If the sides of square increases by 40%, then the area of square increase by
a. 50% b. 80%
c. 96% d. 160%

998. What come after 2,4,8,16,32,64,128,……?
a. 254 b. 255
c. 257 d.2^8

999. If Rs. 450 amounts to Rs. 540 in 5 years. What is the rate of interest?
a. 4% b. 5%
c. 6% d. 7%

1000. If the complement of an angle is 20^0 less then four times the angle, the angle is
a. 20^0 b. 24^0
c. 26^0 d. 22^0

1001. The sum of the series 3+7+11+……..+7 is
a. 666 b. 616
c. 642 d. 646

1002. The circumference of the great circle of a sphere is 44cm, its surface area is
a. 166 b. 616
c. 661 d. 666

1003.The largest numbers of boys among where 126 ball point pens & 210 pencils can be equally divided is :

a. 120 b. 24
c. 42 d. 84

1004. A post has 1/3 of its length in mud. 1/4 of it in water & 15 meters above water , its total length is ,

a. 36m b. 42m
c. 34m d. 30m

1005. 2/3 of a number is thirty less than the original number. What is 1/3 of the numbers?

a. 30 b. 60
c. 15 b. 90 e. 45

1006. A sum of simple interest become double in 5 years . it will becomes 8 times in

a. 15yrs b. 40yrs
c. 35yrs d. 20yr e. None of these

1007. If the radius of the base of a cone be doubled, its volume becomes

a. 2times b. 3times
c. 4times d. 8times e. 16times

1008. Find the greatest number of 4 digits, which when divided by 12,18,21,28 leaves in each case a remainder 5?

a. 9833 b.9828
c.9823 d. 9994 e. None of these

1009. $(0.3) - \dfrac{0.027}{(0.3)^2} + 0.09 = ?$

a. 2.6 b. 1.09
c. 0.09 d. 2 e. None

1010. One fourth of one - third of one - half of a number is 5. what is the number?

a. 60 b. 100
c. 200 d. 160 e. 120

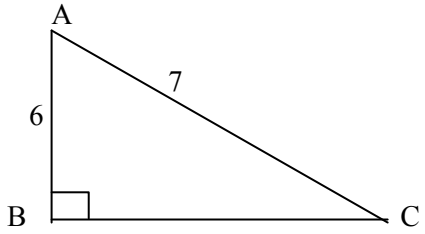
1011. A certain triangle has sides that are, respectively 6 inches, 8inches and 10 inches long . a rectangle with an area equal to that of the triangle has a width of 3 inches.
What is the perimeter of the rectangle in inches?

a. 111 b. 16
c. 22 d. 29 e. 30

1012. A room 27ft by 32ft is to be carpeted. The width of the carpet is 27 inches. What is the length , in yards , of the carpet needed for this floor ? (1yard=3 feet=36inches)

a. 1188 b. 648
c. 384 d. 128 e. 96

1013. Given Right ABC with AB with AB= 6 & AC=7, what does BC equal ?



a. 1 b. √13
c. 6 d. √29
e.√98

1014. The closest approximation to the correct answer for 5-√32.076+ 1.00017^3 is

a. 9 b. 7
c. 4 d. 3
e. 0

1015. If the numerator and denominator of a proper fraction are increased by the same quantity, the resulting factor is

a. Always greater than the original fraction
b. Always less than the original fraction
c. Always equal to the original fraction
d. One half of the original fraction
e. Not determinable

1016. Which of the following fraction is more than 3/4?

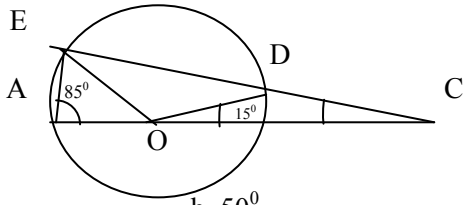
a. 35/71 b. 13/20
c. 71/101 d. 19/24
e. 15/20

1017. If 820+ R+S-610=342 & if R = 2S, then S equal to
a. 44 b. 48
c. 132 d. 184
e. 192

1018. What is the cost, in dollar ,to carpet a room X yards long & Y yard wide , if the carpet cost five dollars per square foot ?
a. XY b. 5XY
c. 25XY d. 30XY
e. 45XY

1019. If 7M= 3M-20,then M+7=
a. 0 b. 2
c. 5 d. 12 e. 17

1020. In a circle O below, AB is the diameter, angle BOD contain 15^0, and angle EOA contains 85^0 , find the number of degrees in angle ECA.



a. 45^0 b. 50^0
c. 85^0 d. None

1021. What is the smallest positive number, other than 2, when it is divided by 3,4,or5will leave a remainder of 2?
a. 22 b. 42
c. 62 d. 122
e. 182

1022. The diagonal of a rectangle is 10, what is the area of the rectangle ?
a. 24 b. 48
c. 50 d. 100
e. it cannot be determined from the information given

1023. The sum of three consecutive odd numbers is always divisible by
(I)2 (II)3 (III)5 (IV) 6
a. I only b. II only
c. I &II only d. I & III only
e. II & IV only

1024. If a discount of 20% off the market price of a jacket result in a savings of $ 15, what is discount price of the jacket ?
a. $35 b. $60
c. $75 d. $150 e. $300

1025. While researching a team paper , a student read pages 7 through 49 & 101 through 157 of a particular source book . Altogether, how many pages from this book did this students read?
a. 98 b. 99
c. 100 d. 101
e. 102

1026. If P/Q = 4/5 what is the value of 2P +Q?
a. 14 b. 13
c. 3 d. -1
e. it cannot be determined from the information than given

1027. If X(P+1)= M then P =
a. M-1 b. M
c. $\left(\frac{M-1}{X}\right)$ d. M-X-1
e. $\left(\frac{M}{X}\right)$ -1

1028. If T tons of show fall in 1 second, how many tons fall in M minutes?
a. 60MT b. MT + 60
c. MT d. 60M/T
e. MT/60

1029. If X is negative , which of the following must be true?
(I)$X^3<X^2$(II)$X+1/X<0$(III)$X=X^2$
a. I only b. II only
c. I & II only d. II &III only
e. I, II & III only

1030. What is the average (Arithmetic mean) of the all integers between –5 and 7?

a. 0 b. 5/6
c. 1 d. 6/5
e. 3

1031. If a speed of 1 meter per second is equal to the speed of K kilometers per hour. What is the value of K?(1km= 1000m)

a. 0.036 b. 0.06
c. 0.36 d. 0.6
e. 3.6

1032. The degree measure of each of the three angles if a triangle is an integer. Which of the following could not be the rated of their measures?

a. 2:3:4 b. 3:4:5
c.4:5:6 d. 5:6:7
e. 6:7:8

1033. An integer is called "octal" if it is divisible8 or by at least one of its digits is 8. how many integers between 1 and 100 are octal ?

a. 22 b. 24
c. 27 d. 30
e. 32

1034. When the price of gold went up , a jeweler raised the prices on certain rings by 60% . On one rings , however ,the price was accidentally reduced by 60%. By what percent must the incorrect price be increased to reflect the proper new price ?

a. 60 % b. 120 %
c. 300 % d. 56 %
e. It depends on the original price of ring

1035. If the average (arithmetic mean) of a, b, c and is equal to the average of a, b and c, what is terms of a, b & c ?

a. a +b + c b. $\left(\frac{a+b+c}{3}\right)$

c. $\frac{4(a+b+c)}{3}$ d. 3(a + b + c) /4

e. a + b+ c /4

1036. If a and b are the lengths of the legs of a right triangle whose hypogenous is 10, & whose area is 20, what is the value of $(a + b)^2$?

a. 5 b. 7.5
c. 180 d. 15
e. 22.5

1037. From 9 am to 2 pm , temperature rises at a constant rate from 14oF to 36^o F . what the temperature at noon ?

a. 27.2^0 F b. $+16^0$ F
c. $+26^0$ F d $+31^0$ F

1038. The co –ordinates of vertices X & Y of equilateral triangle XYZ are (-4, 0) and (4, 0) respectively . The co-ordinate of 3 vertex may be

a.($0.2\sqrt{3}$) b. ($0.4\sqrt{3}$)
c. ($4.4\sqrt{3}$) d. (0.4)
e. ($4\sqrt{3}$. 0)

1039. A board 7 feet 9 inches long is divided into three equal parts . What is the length of each part ?

a. 2 ft 6 1/3 inch b. 2ft 7 inch
c. 2 ft 8 inch d. 2 ft 8 1/3 inch
e. 2 ft 9 inch

1040. What is the smallest integer k.> 1 such that $R^2 = S^3 = K$ for some integers R & S ?

a. 4 b. 8
c. 27 d. 64 e. 81

1041. Which of the following has the same value as P/Q ?

a. p-2/Q-2 b. 1+p / 1+Q
c. 3p/3Q d. p+3/Q+3

1042. If the ratio of AB to BC is 4:9, what is the area of parallelogram ABCD ?

a. 36 b. 26
c. 18 d. 13

1043. A store owner buys eggs for M cents per dozen & sells them for M/6 cents a piece . At rate , What is the profit on dozen eggs

a. M/12 cents b. M/6 cents
c. M/2 d. m cents

e. 2M cents

1044. In a jar , 5 of the marbles are red, 4 of the marbles are blue , when one of the marbles is picked up randomly , what is the probability of drawing the red marble ?
a. 5/9 b. 4/9
c. 1 d. 1/9

1045. If C is the product of a and b , which of the following is the quotient of a and b ?
a. b^2/c b. c/ b^2
c. b /c^2 d. c^2 /b

1046. If $x^2 + y^2 = 36$ & $(x+y)^2 = 64$, what is the value of xy /
a. 14 b. 28
c. 100 d. 2304

1047. What is the greater of two numbers whose product is 900, if the sum of the two numbers exceeds their different by 30?
a. 15 b. 60
c. 75 d. 90

1048. If x & y are integers such that 3x=2y , which of following could not be the value of y ?
a. -1 b. 1
c. 8 d. 16

1049. If 12a + 3b = 1 and 7b -2a = 9 , what is the average (arithmetic mean) of a & b?
a. 0.1 b. 0.5
c. 1 d. 2.5

1050. 8% of the people eligible to vote are in between 18& 21 years of age . in election , 85% of the eligible between 18 & 21 actually voted among the eligible ?
a. 6.8% b. 7.2%
c. 8.5% d. 9.1%

1051. A farmer wishes to build a fence around a rectangular field which is 100 feet long & 60 feet wide . The fence will be of stone on the long side & the wire on the three sides . Stone costs Rs50, foot & wire costs Rs20 a foot. How much will the fence costs ?
a. Rs.3200 b. Rs.5800
c. Rs.7500 d. Rs.9400

1052. What is the range of the function defined by f(x) = 1/x +2?
a. All real numbers
b. All real numbers except -1/2
c. All real numbers expect 0
d. All real numbers except 2
e. All real numbers between 2& 3

1053. If 0.1 % of m is equal to 10% of n, then m is what percent of 10n ?
a. (1/1000)% b. 10%
c. 100% d. 1000%
e. 10000%

1054. 900/10 + 90/100 +9/1000
a. 90.09 b. 90.099
c. 90.909 d. 99.09
e. 999

1055. Fifteen percent of coin in a piggy banks are nickels and five percent are dimes . If there are 220 coins in the banks , how many are not nickels or dimes ?
a. 80 b. 176
c. 180 d. 187
e. 200

1056. A Bakery uses a special flour mixture that contains corn , wheat and rye in the ratio of 3:5:2 if the mixture contains 5 pounds of rye how many pound of whet does it contain ?
a. 2 b. 5
c. 7.5 d. 10
e. 12.5

1057. If the averages (AM) of four distinct positive integers is 11, what is the greatest possible value of any one of the integers ?
a. 34 b. 38
c. 40 d. 41
e. 44

1058. If C positive, what is the percent of 3C in nine ?

a. C/100% b. C/3%
c. 9\C% d. 3%
e. 300/C%

1059. Line a has slop of -3/2 . If points (-26) and (m,-9) are on line a, what is the value of m ?
a. 3 b. 4
c. 6 d. 8
e. 12

1060. Which of the following numbers can be written in the form of 6k +1, where k is a positive integers ?
a. 70 b. 71
c. 72 d. 73
e. 74

1061. For which of the following values of x is x2 /x3 the LEAST ?
a. 1 b. -1
c. -2 d. -3
e. -4

1062. The length of the rectangle S is 20% longer than the length of the square R, and the width of the rectangle S is 20% shorter than the width of square R , the area of the rectangle S is ,
a. 20% greater than the area of Square R.
b. 4% greater than the area of the square R.
c. equal to the area of the square R.
d . 4% less than the area of the square R .
e. 20% less than the area of the square R .

1063. On Monday, a store owner received a shipment of books. On Tuesday, she sols half of them, on Wednesday , after two more were sold, She exactly 2/5 of the books left
How many of them were in the shipment?
a. 10 b.20
c. 30 d. 40
e.50

1064. If the sum of the consecutive odd integers is 735, What is the largest of these Integers?
a. 155 b. 151
c. 145 d. 143
e. 141

1065. What is the value of 'n', such that $2^n = n^2$?
a. 1 b. 2
c. 3 d. 4
e. 0

1066. Which of the following is not equivalent to the 3/5?
a. 24/40 b. 60%
c. 6 d. 3/7/7/5
e. 3/7/7/5

1067. If a is equal to b multiplied by c, Which of the following is equal to b dived by c?
a. a/bc b. ab/c
c. a/c d. a/c^2
e. a/bc^2

1068. Ram drove for h hours at a constant rate of r miles per hours. How many miles did she go during the final 20 minutes of her drive?
a. 20hr b. hr/3
c. 3hr d. hr/20
e. r/3

1069. If 20% of 220 equal 5.5% of w, what is w?
a. 10 b. 55
c. 800 d. 110
e. None

1070. A jar contains only red and blue marbles. The ratio of the number of red marbles to the number of blue marbles is 5:3, what percent of the marbles are blue?
a. 37.5% b. 50%
c. 60% d. 62.5%

1071. What is 3% of 4%?
a. 0.07% b. 0.12%
c. 1.2% d. 7%
e. 12%

1072. Jessica has 4 times as many books as john and 5 times as many as Karen. If Karen has mare than 40 books, what is the least numbers o f books that Jessica can have ?

a. 240 b. 220
c. 210 d. 205
e. 200

1073. Judy is now twice as old as adam but 6 years ago she was 5 times as old as he was.How old is judy now?

a.10 b. 16
c. 20 d. 24
e. 32

1074. What is the largest prime factor of 225?

a. 5 b. 15
c. 17 d. 51
e. 255

1075. If 20% of a is equal to the 80% of b, which of the following is equal to a + b ?

a. 5a b. 2a
c. 2.5a d. 3a
e. 5b

1076. Which of the following numbers can be expressed as the product of three different integers greater than 1?

I . 25
II . 30
III . 45

a. I only b. II only
c. III only d. II and III only
e. I, II and III only

1077. If x and y are integers such that $x^3 = y^2$, which of the following cannot be the value of y?

a. -1 b. 1
c. 8 d. 16
e. 27

1078. What is a divided by a% of a?

a. a/100 b. 100/a
c. $a^2/100$ d. $100/a^2$
e. 100a

1079. For how many integers, x , is it true that x^2-3 is negative?

a. 5 b. 6
c. 10 d. 3
e. Infinity many

1080. Which of the following express the area of a circle in term of C, it's circumference?

a. $C^2/4\pi$ b. $C^2/2\pi$
c. $\sqrt{C}/2\pi$ d. Cp/4
e. $C/4\pi$

1081. To get to a business meeting, Joanna drove m miles in h hours, arrived 1/2 hour early. At what rate should she have driven to arrive exactly on time ?

a. m/2h b. 2m+h/2h
c. 2m-h/2h d. 2m/2h-1
e. 2m/2h+1

1082. Kim was K years of age 2 years ago.In terms of K, how old will kim be in 2 years?

a. K + 4 b. K + 2
c. 2K d. K
e. K/2

1083. The sum of two positive consecutive integers is X in terms of X, what is the value of the smaller of these two integers?

a. X/2 -1 b. X-1/2
c. X/2 d. X+1/2
e. X/2+1

1084. If 100 equally priced tickets cost a total of d dollars, 5 of these tickets cost how many dollars?

a. d/20 b. d/5
c. 5d d. 5/d
e. 20/d

1085. On the last day of one - weeks sale, customers numbered 149 through 201 were waited on. How many customers were waited on

that day?

a. 51 b. 52
c. 53 d. 152
e. 153

1086. What is the value of (0.5 + 0.5 +0.5 + 0.5)/4=

a. 0.05 b. 0.125
c. 0.5 d. 1
e. 2.0

1087. Steve ran a 12 mile race at an average speed of 8 miles per hour, If Adam ran the same race at an average speed of 6 miles per hour, how many minutes longer than steve did adam take to complete the race ?

a. 9 b. 12
c. 16 d. 24
e. 30

1088. 42/23 + 23/42 =

a. 5/2 b. 2
c. 1 d. 1/2
e. 1/4

1089. If 8 & 12 each divided K without a remainder, what is the value of K?

a. 16 b. 24
c. 48 d. 96
e. it cannot be determined from the information above

1090. What is the diameter of a circle with circumferences 5 ?

a. $5/\pi$ b. $10/\pi$
c. 5 d. 5π
e. 10π

1091. If the product of (1+2), (2+3), &(3+4) is equal to one-half the sum of 20&X, what is the value of X?

a. 10 b. 85
c. 105 d. 190
e. 1,210

1092. How many numbers from 1 to 200 inclusive are equal to cube of an integers?

a. One b. Two
c. Three d. Four
e. Five

1093. If the perimeters of rectangle ABCD is equal to P, and X=2/3Y, what is the value of Y in terms of P?

a. P/10 b. 3P/10
c. P/3 d. 2P/5
e. 3P/5

1094. If x% of y is 10, what is the value of y?

a. 10/x b. 100/x
c. 1000/x d. x/100
e. x/10

1095. The range of the function y= Ix I/x is

a. $x \geq 1$
b. $x \leq -1$
c. {1, -1}
d. none

1096. The range of the function $y = e^x$ is

a. $x \geq 1$
b. $x \leq -1$
c. $x > 1$
d. $x > 0$

1097. The rage of the function $y = e^x + e^{-x}$ is

a. $x \geq 1$
b. $x \leq 1$
c. $x > 2$
d. $x \leq 2$

1098. The range of the function $y = e^x - e^{-x}$ is

a. $[0, \infty]$
b. $[-\infty, 0]$
c. $[-\infty, \infty]$
d. none

1099. The range of the function y = log (1 + x) is

a. [0, ∞]

b. [-∞, 0]

c. [-∞,∞]

d. none

1100.The range of the function y =[x], where [x] denote the integral part of x, is

a. x = 1,2,3,4……..

b. x = 0,1,2,3…….

c. x = -1, 0, 1, 2, ……..

d. ……., -1, 0, 1, 2, ……..

1101. The range of the function y = x – (x), where (x) denotes the integral part of x, is

a. x = 1, 2, 3,4

b. $x \geq 0$

c. x<1

d. $0 \leq x < 1$

1102. The range of the function $y = \sqrt{(1+x)} + \sqrt{(2-x)}$ is

a. $(0, \sqrt{3})$ b. $(0, \sqrt{6})$

c. $(\sqrt{3}, \sqrt{6})$ d. None of these

1103. If y = f(x)=$|x|$, then

a. $f(-x) = f(x)$

b. $f(x) = x^2$

c. $f(|x|) = x^2$

d. None of these

1104.If $y = f(x)$, where $f(x) = \frac{ax+b}{cx-b}$, then

a. $x = f(y)$

b. $y = f(x-a)$

c. $x = f(y-a)$

d. None of these

1105. If $f(x) = e^x$, then

a. $f = (x+y) = f(x) + f(y)$

b. $f(x+y) = f(x) + f(y)$

c. $f(xy) = f(x) + f(y)$

d. None of these

1106. If $f(x) = \log x$, then

a. $f(x+y) = f(x) + f(y)$

b. $f(xy) = f(x)f(y)$

c. $f(xy) = f(x) + f(y)$

d. None of these

1107. If f(x) = tanx, then

a. $f(2x) = 2f(x)$

b. $f(2x) = \frac{2x}{1+x^2}$

c. $f(2x) = \frac{2x}{1-x^2}$

d. None of these

1108. If $f(x) = x - \frac{1}{x}$, then

a. $f(x) = f(x)$

b. $f(-x) = -f(x)$

c. $f\left(\frac{1}{x}\right) = f(x)$f

d. $f(-x) = +f(x)$

1109. If $f(x) = \frac{1-x}{1+x}$, then

a. $f(x)=f(-x)$
b. $f(x)-f(-x)=1$
c. $f\left(\frac{1}{x}\right)=f(x)$
d. $f\left(\frac{1}{x}\right)=+f(x)$

1110. If $f(x)=\sin x+\tan x$, than
a. $f(x+\pi)=f(x)$
b. $f(x-2\pi)=f(x)$
c. $f(-x)=-f(x)$
d. None

1111. If $f(x)=\frac{x^2-a^2}{x-a}$ then, $\lim_{x\to a}$ f(x) is
a. a
b. 0
c. 2a
d. –a

1112. If $f(x)=\frac{x^n-a^n}{x-a}$ then, $\lim_{x\to a}$ f(x) is
a. 0
b. a
c. a^n
d. na^{n-1}

1113. If $f(x)=\frac{x^3-a^3}{x^2-a^2}$ then, $\lim_{x\to a}$ f(x) is
a. a/2
b. a
c. 3a/2
d. 2a

1114.If $(x)=\frac{x^2-1}{x-1}$ then, $\lim_{x\to 1}$ f(x) is
a. 0
b. 1
c. 2
d. ∞

1115. If $f(x)=\frac{x^3-8}{x^2-4}$ then, $\lim_{x\to 2}$ f(x) is
a. 2
b. 4
c. 8
d. None of these

1116. If $f(x)=\frac{x+2}{x-2}$ then, $\lim_{x\to\infty}$ f(x) is
a. 1
b. 2
c. 0
d. None of these

1117 . If $f(x)=\frac{x^2-3x+2}{x-2}$ then, $\lim_{x\to 2}$ f(x) is
a. 0
b. 1
c. 2
d. None of these

1118. If $f(n) = n^k$,where k is a rational number and n is a positive integer, then $\lim_{n\to\infty}$ f(n) is
a. ∞ if k is positive
b. 2 if k is positive
c. 0 if k is zero
d. none of these

1119. If f(n) denote the number of primes less than n,n a positive integer. Then $\lim_{n\to\infty}$ f(n) is
a. n
b. $\sqrt{n}$
c. ∞
d. None of these

1120. If f(n) = $\left(\frac{1}{2}n\right)$, where (x) denotes the integral part of x. Then $\lim_{n\to\infty} f(n)$ is

a. 0 b. 1
c. ∞ d. none of these

1121. If we square either of the imaginary cube roots of unity, we obtain
a. its real root b. the other imaginary root
c. 1 d. none of the above

1122. If $x^2+10x+21=0$ and $x^2+9x+m=0$ have one root common then m =
a. 7 b. 21
c. 15 or 14 d. none of these

1124. The value of $\frac{1+\tan^2 15}{1-\tan^2 15}$ is
a. 1 b. $\sqrt{2}$
c. $\sqrt{3/2}$ d. None

1125. $(\cos\theta+i\sin\theta)^n=\cos n\theta+i\sin n\theta$ if
a. n is a positive integer
b. n is a negative integer
c. n is a rational integer
d. any of three cases(a), (b), (c)

1126. Matrix multiplication of two n×n square matrices is
a. closed i.e. the product is a $n\times n$ matrix
b. doesn't follows associative law
c. doesn't follows distributive law.
d. always commutative

1127. If a function f is defined on a finite set A, then the range and the domain of f are equal if
a. f is a constant function
b. f is one –to-one
c. f is onto
d. none of these

1128. From the top of a light house the angle of depression of a boat is 15^0. If the light house is 60m high and its base is at sea level, the distance of the boat from the light house
a. $\frac{\sqrt{3}-1}{\sqrt{3}+1}60m$ b. $\frac{\sqrt{3}+1}{\sqrt{3}-1}60m$
c. $\left(\frac{\sqrt{3}-1}{\sqrt{3}+1}\right)^2$ d. none of these

1129. If in a ΔABC, a = 15, b= 36, c = 39 then cosA is
a. 12/13 b. 9/13
c. -12/13 d. none of these

1130. The following sets are null sets
a. $\{0\}$ b. $\{\phi\}$
c. $\{1\}$ d. ϕ

1131. The following sets are empty
a. $\{x : x = x\}$ b. $\{x : x \neq x\}$
c. $\{x : x = x^2\}$ d. none of these

1132. The gradient of the line 3y + 2x = 5 is
a. 5 b. 3/2
c. -2/3 d. 2/3

1133. The gradient of the line joining (x_1, y_1) and (x_2, y_2) is
a. $\frac{x_2-x_1}{y_2-y_1}$ b. $\frac{y_2-y_1}{x_2-x_1}$
c. $\frac{y_2+y_1}{x_2+x_1}$ d. $\frac{y_2-y_1}{x_2+x_1}$

1134. A ball is dropped on the ground from a height of 100 meters. After each rebound it reaches $4/5^{th}$ of the height from which it falls. The total distance traveled by the ball before coming to rest is

a. ∞ b. 500m
c. 1000 m d. 900 m

1135. A sum of Rs. 5000 is loaned at 12% per annum interest, the interest being compounded every three months. The amount after 4 years is

a. $5000\times\left(\frac{122}{100}\right)^{4}$ b. $5000\left(\frac{106}{100}\right)^{8}$

c. $5000\times\left(\frac{103}{100}\right)^{16}$ d. $5000\times\left(\frac{103}{100}\right)^{12}$

1136. If the letters of the words ASSASSIN are written at random in row, the probability that no S's occur together is 1/35

a. True
b. false
c. none

1137. Three identical dice are rolled. The probability that the same number will appear on each of them is

a. 1/6
b. 1/36
c. 1/13
d. 3/25

1138. The range of the relation.

R= {(x, y): x+2y<6and x, y (N}

a) {1,2} b){0,2}
c) {1,2} d) none

1139. A rectangle with one side 4cm inscribed in a circle of radius 2.5 cm. The area of the rectangle will be

a) 2 cm^2 b) 7cm^2
c) 12cm^2 d) none

1140. If w is a complex cube root of unity, then

$\left(2+2w-w^2\right)^3-\left(1-w+w^2\right)^3=$

a. 9 b. 19
c. -19 d. -9

1141. $\frac{1+2i+3i^2}{1-2i+3i^2}=$

a. i b. -1
c. – i d. 1

1142.. $1+w^n+w^{2n}=$ ....., if n is an integer not a multiple of 3

a. o b. 3
c. 1 d. w

1143. $\sin^{-1}\left\{\sin\left(\frac{5\pi}{6}\right)\right\}$ is equal to

a. 30^0 b. $5\pi/6$

c. $13\pi/6$ d. none of these

1144. $\sin^{-1}\left\{\sin\frac{2\pi}{3}\right\}$ is equal to

a. $2\pi/3$ b. $\pi/3$

c. 30^0 d. none of these

1145. $\cos^{-1}\left\{\cos\left(-45^0\right)\right\}$ is equal to

a. -45^0 b. 45^0
c. 30^0 d. none of these

1146. The principal value of $\sin^{-1}\left(\sin 2\pi/3\right)$ is

a. $-2\pi/3$ b. $2\pi/3$

c. $4\pi/3$ d. none of these

1147. The value of the expression $\sqrt{3}$ cosec20^0 -sec20^0 is equal to

a. 2 b. $2\sin 20^0/\sin 40^0$
c. 4 d. $4\sin 20^0/\sin 40^0$

1148. $\cos^{-1}\frac{1}{2}+2\sin^{-1}\frac{1}{2}=$

a. $\pi/4$ b. $\pi/6$

c. $\pi/3$ d. none of these

1149. The function $f: R \to R$ is defined by $f(x) = x^2$, is

a. one – one b. onto

c. many –one d. into

1150. The function $f: R \to R$ is defined by $f(x) = x^3$, is

a. one – one b. onto

c. many –one d. into

1151. Find the number whose square is equal to the difference between the squares of 6467 and 4683?

a. 4470 b. 4460

c. 4471 d. None

1152. A gentleman's monthly income amounts to Rs.250 and his monthly expenses amount to Rs.175. How much will he be able to save at the end of two years?

a. Rs. 3000 b. Rs.1800

c. Rs.15000 d. Rs.2000

1153. If 25x= 9y, Find the sub-duplicate ratio of x to y.

a. 125/27 b. 125/81

c. 625/81 d. None

1154. The scalar product of two vectors **a** and **b** inclined at an angle θ is zero only if

a. **a** = 0 b. **b** = 0

c. θ = 90° d. a = 0 or b = 0 or θ =90°

1155. If a and b are unit vectors and . Ø is the angle between them then sin ½ θ =

a. $\frac{1}{2}\mathbf{a}\times\mathbf{b}$ b. 1- $\frac{1}{2}\mathbf{a}.\mathbf{b}$

c. $\frac{1}{2}|\mathbf{a}-\mathbf{b}|$ d. $\frac{1}{2}|\mathbf{a}+\mathbf{b}|$

1156. A line has the equation $\frac{x}{5}-\frac{y}{7}=1$, what is its slope?

a. 7/5 b. 5/7

c. -5/7 d. -7/5

1157. A line passes through (3, 2) and (-5, 7) ; what is its slope?

a. 5/8 b. -5/8

c. 8/5 d. -8/5

1158. A line passes through (3, 20 and (5, a). if its slope is 2; what is the value of a?

a. 3 b. 4

c. 5 d. 6

1159. A father is 2 times as old as his son.16 years ago the age of father were three times the age of son. What is present age of the father?

a. 04 b.10

c.80 d. none

1160. Sum of n terms of a series is $2n+n^2$ then its 10^{th} term is

a.31 b. 21

c. 131 d. 121

1161. The ortho center of the triangular formed by the lines whose equation are x-y+1=0, x-2y+4=0 & 9x -3y+1 =0 will be

a. (-1, 4) b. (4,-1)

c. (0, 5) d. none

1162. Which of the following statement is true?

a. A null matrix is unique

b. A unit matrix is unique

c. the inverse of matrix (if it exists) is unique.

d. The unit matrix doesn't possesses an inverse.

1163. Which of the following statement is true?

a. There exists an algebra of matrices similar to algebra of numbers

b. If A and B are both defined then A and B are square matrices of the same order

c. A diagonal matrices doesn't commutes with every other matrix of the same order.

d. The determinant of the sum of two matrices is equal to the sum of the determinants of the matrices

1164. Simplify: $\sqrt[3]{4x^5y^7} \times \sqrt[3]{2x^4y^2}$

a. $2x^2$ b. $2y^2$
c. 2xy d. None

1165. After increasing 12.5% a person gets Rs. 2700. Find his previous income

a. Rs.2000 b. Rs.2500
c. Rs. 2400 d. Rs. None

1166. If I had Rs. 300 more, I could have paid a debt of Rs. 750 and have 25 rupees over. How much do I have?

a. Rs. 375 b. Rs. 775
c. Rs.475 d. None

1167. Which is greater $\sqrt{2}$ or $3\sqrt{3}$?

a. $\sqrt{2}$ b. $3\sqrt{3}$
c. None

1168. The probability that at least one tail in 4 throws with a coin is

a. 15/16
b. 1/16
c. ¼
d. 1

1169. A purse contain 4 copper, 3 silver coins, the second contains 5 copper and 2 silver coins .A coin is taken from any purse, the probability that it is a copper coin is

a. 4/7
b. ¾
c. 3/7
d. 37/56

1170. Find the remainder when $2x^3 - x^2 - 1$ is divided by 2x+3

a. -40 b. -10
c. -27 d. -4

1171. The L.C.M and H.C.F. of the tow numbers are 840 and 14 respectively and if one of the numbers is 42 then the other no. is

a. 84 b. 280
c. 868 d. 42

1172. The roots of a quadratic equation $ax^2 + bx + c = 0$ will be unequal and real if

a. $b^2 - 4ac > 0$ b. $b^2 - 4ac < 0$
c. $b^2 - 4ac = 0$ d. none

1173. On Tuesday, a store owner received a shipment of books. On Tuesday, she sols half of them, on Wednesday , after two more were sold, She exactly 2/5 of the books left
How many of them were in the shipment?

a. 10 b.20
c. 30 d. 40
e.50

1174. If a and b are the lengths of the legs of a right triangle whose hypogenous is 10, & whose area is 20, what is the value of $(a + b)^2$?

a. 5 b. 7.5
c. 180 d. 15
e. 22.5

1175. Which is true for x + 5/9 =6/9 ?

a. x=0 b. x=1
c. x=1/9 d. none of these

1176. Which is true for x + (1/x) = 2 ?

a. x=4 b. x= 2
c. x=1 d. all

1177. Which property relates for 3(4+5) = 3.4+3.5?

a. commutative b. associative
c. distributive d. closer

1178. One of the bisectors of the angles between 3x – 4y + 17 = 0 and 12x – 5y – 8 = 0 is

a. 21x + 27y – 131 = 0
b. 99x + 77y + 51 = 0
c. 21x – 27y + 133 = 0
d. 77x – 99y +51 = 0

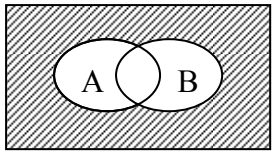
1179. The two bisectors of the angles between y = 3x + 5, y = 7x – 3 are

inclined to each other at an angle

a. $\tan^{-1}\frac{4}{21}$ b. $\tan^{-1}\left(-\frac{21}{4}\right)$

c. 90^{o} d. none of these

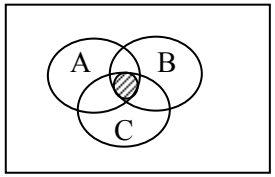
1180. The shaded area in the Venn diagram is



a. $(A \cup B)'$ b. $A \cup B'$

c. $A' \cup B'$ d. $A' \cap B'$

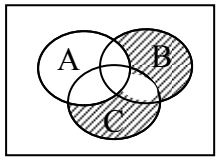
1181. The shaded area in the Venn diagram is



a. $A \cup B \cap C$ b. $A \cap B \cup C$

c. $A \cup B \cup C$ d. none of the above

1182. The shaded area in the Venn diagram is



a. $A' \cap B \cap C$ b. $A' \cap B' \cap C$

c. $A' \cup B' \cup C'$ d. none of the above

1183. Solve the quadratic equation $x^2 - 2x = 0$

a. 0,1 b. 1,2

c. 0,2 d. -2,0

1184. The fractional form of .2342 is

a. $\frac{2342}{10000}$ b. $\frac{2341}{10000}$

c. $\frac{26}{110}$ d. $\frac{26}{111}$

1185. In question $c_1A_1 + c_2A_2 + c_3A_3 =$

a. 0 b. – D

c. D d. D^2

1186. If $^{x^2-x}C_2 = {}^{x^2-x}C_{10}$ then x =

a. 12 b. 4

c. -3 d. 4 and -3

1187. If $\sin\theta = \frac{\sqrt{3}}{2}, \theta$ is an obtuse angle, than $\tan\theta$ is equal to

a. $+\sqrt{3}$ b. $-\sqrt{3}$

c. $-\frac{1}{\sqrt{3}}$ d. $+\frac{1}{\sqrt{3}}$

1188. The angle of elevation of the sum when the length of the shadow of a pole is $\sqrt{3}$ times the height of the pole is

a. 30^0 b. 45^0

c. 60^0 d. none of these

1189. If $\cos\theta = {}^{1}\!/_{\sqrt{2}}$ and $\tan\theta = 1$, the general value of θ is

a. $(2n+1)\pi + \pi/4$ b. $2n\pi \pm \pi/4$

c. $n\pi \pm n/4$ d. none of these

1190. If in a $\Delta ABC, a = 2, b = \sqrt{3}+1$ and $\angle C = 60^0$ then the value of the side is

a. $\sqrt{3}$ b. $\sqrt{6}$

c. $\sqrt{2}$ d. none of these

1191. The function f : $R \to R$ is defined by f (x) = 1 + sin x. Then the range of f is

a. the set of all real numbers in [-1, 1]
b. the set of all real numbers in [0, 2]
c. the set of all real numbers in [-2, 2]
d. the set of all real numbers in [-2, 0]

1192. The function $f: R \to R$ is defined by $f(x) = |x|$, is

a. one – one
b. onto
c. many –one
d. into

1193. The range of the function y = $|x-1|$ is

a. $x \geq 0$
b. $x \geq 1$
c. $0 \leq 1 \leq 1$
d. none of these

1194. $y = \sin^{-1}\left(\frac{1-x^2}{1+x^2}\right)$, then $\frac{dy}{dx}$ =

a. $-\frac{2}{1+x^2}$
b. $\frac{2}{1+x^2}$
c. $\frac{2}{2+x^2}$
d. $\frac{2}{2-x^2}$

1195. $\int_0^{\pi/4} \log(1+\tan x)\, dx$ is equal to

a. $\pi \log 2$
b. $-\pi \log 2$
c. $\frac{1}{2}\pi \log 2$
d. $-\frac{1}{2}\pi \log 2$

1196. In a box containing 100 bulbs, 10 are defective, what is the probability that out of a sample of 5 bulbs none is defective

a. 10^{-5}
b. $(1/2)^5$
c. $(9/10)^5$
d. 9/10

1197. The centre of the circle $3x^2 + 3y^2 + 5x - 6y + 9 = 0$ is

a. $\left(\frac{5}{3}, 2\right)$
b. (5, -6)
c. $\left(-\frac{5}{6}, 1\right)$
d. $\left(-\frac{5}{2}, 3\right)$

1198. The resultant of two forces each equal to *P* is also *P*. The angle between the force is

a. 120^0
b. 60^0
c. 90^0
b. 30^0

1199. What percentage is Rs. 25 of Rs. 125?

a. 20%
b. 25%
c. 30%
d. 35%

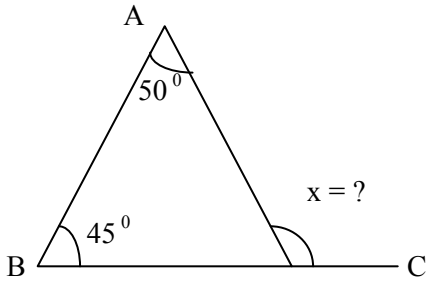
1200. The simplified form of $(27)^{4/3}$ is

a. 9
b.999
c.88
d.81

1201. The value of x in $2^{x-2} + 2^x = 5$ is

a. 0
b. 3
c. 2
d. 1

1202. In the given diagram, find the unknown angle



a. 45^0
b. 50^0
c. 95^0
d. None

1203. The angles of the triangle are in the ratio 2:3:4. Find the

angles of the triangle.

a. 40,60,80
b. 40,50,90
c. 50,50,80
d. None

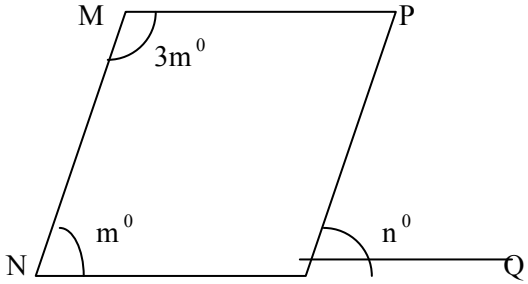
1204. What is the greatest side in the Δ of angle A = 70^0 & B = 30^0

a. AB
b. BC
c. AC
d. None

1205. In ΔABC , AB = AC and angle BAC = 60^0. Find angle ACB

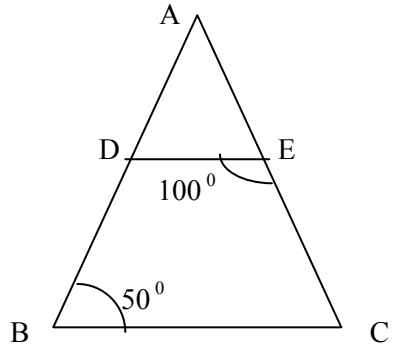
a. 30
b. 60
c. 45
d. None

1206. Find the value of m and n from the following figure, MNOP is a parallelogram



a. 36^o and 35^o
b. 40^o and 42^o
c. 45^o and 45^o
d. none

1207. In a ΔABC; Δ is the midpoint of AB and DE II BC, find DE if BC = 2.8 Cm



a. 3.5
b. 1.4
c. 2.8
d. None

1208. If α, β are the roots of $4x^2 + 5x - 21 = 0$, find $\frac{1}{\alpha} + \frac{1}{\beta}$

a. 8/21
b. 5/21
c. -5/21
d. None

1209. If a = 3cm, b = 2.4cm, and c = 5.5cm, you will construct

a. isosceles triangle
b. scalene triangle
c. rt. Angled
d. none

1210. A line cannot intersect a circle more that

a. one point
b. two point
c. three point
d. none

1211. The area of sq. is $900cm^2$. The length of its diagonal is

a. $30\sqrt{2}$
b. $20\sqrt{3}$
c. $25\sqrt{2}$
d. none

1212. Rosha can see upto 14km/hr. The area of land that she can see around is,

a. 612 sq.km
b. 614 sq.km
c. 616 sq.km
d. none

1213. In how many years will a sum of money double at 10% p.a. simple interest

a. 5
b. 6

c. 7 d. none

1214. The value of $\cos 15^0$ is

a. $\frac{\sqrt{3}-1}{2\sqrt{3}}$ b. $\frac{1-\sqrt{3}}{2\sqrt{2}}$

c. $\frac{\sqrt{3}+1}{2\sqrt{2}}$ d. None

1215. If x and y are integers and xy = 5 then the value of $(x+y)^2$ is

a. 13 b. 25

c. 36 d. None

1216. The roots of a quadratic equation $x^2 - x - 30 = 0$, are

a. -5,6 b. 10,3

c. 5,6 d. None

1217. After paying an income tax of 5%, Ujjwal has Rs.7600 left. What is his income?

a. Rs800 b. Rs.8000

c. Rs.4000 d. None

1218. The roots of the quadratic equation $x^2 - 6x + 7 = 0$ are

a. $\sqrt{3}, \sqrt{2}$ b. $3+\sqrt{2}, 3-\sqrt{2}$

c. 3,2 d. None

1219. The product of roots of the quadratic equation $x^2 + \sqrt{3}x - 6 = 0$ is

a. -16 b. 6

c. -6 d. None

1220. The simplified form of $(27)^{4/3}$ is

a. 81 b. 88

c. 82 d. None

1221. If $a^3 = \frac{1}{64}$, then a is

a. 1/5 b. 1/6

c. 1/4 d. None

1222. What is 1/5% of Rs. 500?

a. Rs. 1 b. Rs.2

c. Rs.1.5 d. None

1223. If sinA+cosecA = 2, then $\sin^3 A + \cos ec^3 A$ is

a. 8 b. 2

c. 4 d. none

1224. If one angle of a Δ is equal to the sum of the other two, then the triangle is

a. right angle b. isosceles

c. equilateral d. None

1225. If the equation of a st. line is $2x - 3y + 5 = 0$, then the slope

a. -3/2 b. -2/3

c. 2/3 d. None

1226. If cosA = -3/5 and A lies in the 4th quadrant, than tanA is

a. 4/3 b. -4/3

c. 4/5 d. None

1227. If a – b = 10, $a^2 - b^2 = 20$. What is the value of b?

a. -6 b. -4

c. 4 d. None

1228. If a – b = 1 , b – c = 2 and c – a = d, find the value of d

a. -3 b. -1

c. 1 d. None

1229. 4/7 of the 350 students of Cambridge institute are girls, 7/8 of the girls got admission in St. Xaviers College, how many girls did not get admission in st. Xaviers?

a. 25 b. 50

c. 45 d. None

1230. What is the compound interest on Rs. 8000 for 2 years at the rate of 6% per annum.

a. 987 b. 988.80

c. 898 d. None

1231. Find the value of x in $4^x - 4^{x-1} = 192$

a. 4 b. 16

c. 5 d. None

1232. Each exterior angle of an equilateral triangle is

a. 60^0 b. 90^0

c. 120^0 d. None

1233. If f:A $\rightarrow R$, defined by f(x) = $\frac{x}{2x-1}$ and A = { -1, 0, 1, 2} find the range of f.

a. {1,2,3} b. {2,3,4}

c. { 4,5,6} d. $\left\{-\frac{1}{3},0,1,\frac{2}{3}\right\}$

1234. If f(x) = $2x^2-3x+1$, find f(x – 2)

a. $2x^2-11x-9$ b. $2x^2-11x+9$

c. $2x^2+11x+9$ d. None

1235. If f(x) = $2x^3-3x-5$ and g(x) = 2x – 5, find $\frac{f}{g}(x)$

a. x+2 b. x + 1

c. x + 3 d. None

1236. If f(x) = 2x – 3 and g(x) = 3x + 2; find (f + g)(x).

a. 4x+1 b. 5x-1

c. 2x+1 d. None

1237. Evaluate: $\lim_{x \to 2} (3x^2+2x+1)$

a. 15 b. 20

c. 10 d. None

1238. If $f(x)\frac{(4x-3)}{2x+1}$ find $f^{-1}(x)$

a. $(x+3)$ b. $-\frac{(x+3)}{2x-4}$

c. $\frac{2x}{x+1}$ d. None

1239. Workout the limit $\lim_{x \to a} \frac{x^2-a^2}{x-a}$

a. ab b. 2c

c. 2a d. None

1240. Find the limitary value of

Lim $\frac{5x^2+2x}{x^2+2}$ $x \to \infty$

a. 5 b. 6

c. 7 d. 8

1241. Find the acute angle between the lines $3x-2y+7=0$ and $2x+y-8=0$

a. 5/2 b. 6/2

c. 3/2 d. 7/2

1242. Find the difference coefficient of $f(x)=3x^2$

a. 5x b. 6x

c. 7x d. None

1243. Find the derivative of $f(x)=4x^2-3$

a. 8x b. 5x

c. 9x d. None

1244. Find the derivative of $f(x)=\frac{1}{4}+2x^3-\frac{2}{3}x$

a. 1/4(6x) b 1/6(2x)

c. $\frac{1}{4}+6x^2-\frac{2}{3x^2}$ d. None

1245. Integrate: $\int x dx$

a. x^2 b. $\frac{x^2}{2}+c$

c. 2x d. None

1246. For what value of a area the points (a, 4), (0, 1) and (4,7) collinear?

a. a = 1 b. a = 3

c. a = 2 d. None

1247. The polar form of (3,3) is given by

a. $\left(3,\frac{\pi}{4}\right)$ b. $\left(3\sqrt{2},\frac{\pi}{4}\right)$

c. $\left(\sqrt{2},\frac{\pi}{4}\right)$ d. None

1248. Find the Cartesian form of the polar coordinates $\left(4,\frac{\pi}{6}\right)$

a. (3,2) b. $\left(\sqrt{3},2\right)$

c. $\left(3\sqrt{3},-2\right)$ d. $\left(2\sqrt{3},2\right)$

1249. State the sign of $\sin 210^0$

a. positive b. negative

c. both a and b d. neither a nor b

1250. Find the value of $\tan 150^0$

a. $\sqrt{3}$ b. $-\sqrt{3}$

c. $-\frac{1}{\sqrt{3}}$ d. $\frac{1}{\sqrt{3}}$

1251. If $\sin\theta=\frac{3}{5}$, find the value of $\cos\theta$

a. 3/4 b. 4/3

c. 4/5 d. None

1252. If $Tan\theta=\frac{5}{12}$ what is the value of $\sec\theta$

a. 12/5 b. 12/13

c. 13/12 d. 5/3

1253. Simplify: $\sin(x+y)+\sin(x-y)$

a. 2sinx.cosy b. 2sinx.siny

c. 2cosx.siny d. none

1254. Simplify: $\cos(x+y)-\cos(x-y)$

a. 2cosx.cosy b. 2sinx.siny

c. -2cosx.coxy d. None

1255. $\frac{cox10^0-\sin 10^0}{\cos 10^0+\sin 10^0}$ simplifies to

a. cos35o b. sin35o

c. tan35o d. None

1256. Find the expression for $\cos 3\theta$ in terms of $\cos\theta$

a. $4\cos^3\theta-3\cos\theta$ b. $4\cos^3\theta+3\cos\theta$

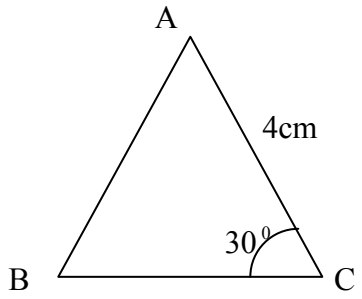
c. $3\cos^3\theta-4\cos\theta$ d. None

1257. Find the expression for $\sin 3\theta$ in terms of $\sin\theta$

a. $4\sin^3\theta-3\sin\theta$ b. $4\sin^3\theta-3\sin^3\theta$

c. $3\sin^3\theta-4\sin\theta$ d. $3\sin\theta-4\sin^3\theta$

1258. Find the area of ΔABC as shown in the figure below.



6 cm

a. $4cm^2$ b. $2cm^2$
c. $6cm^2$ d. None

1259. Factorize the quadratic equation $x^2 + 8x + 16$
a. $(x-2)^2$ b. $(x-4)^2$
c. $(x+2)^2$ d. $(x+4)^2$

1260. For what value of k, the quadratic equation $x^2 - 12x + k = 0$ has equal roots.
a. 36 b. 21
c. 24 d. 46

1261. Discuss the nature of the roots of quadratic equation $x^2 - x + 4 = 0$
a. imaginary roots b. repeated roots
c. real roots d. no roots

1262. Examine the nature of roots of the quadratic equation $3x^2 + 2x + 3 = 0$
a. imaginary roots b. repeated roots
c. real roots d. no roots

1263. For what value of k will the equation $x^2 + kx - 3 = 0$ have one root equal to -3
a. 1 b. 2
c. -2 d. 3

1264. For what value of k are the vectors $\vec{a} = \begin{pmatrix} 3 \\ 4 \end{pmatrix}$ and $\vec{b} = \begin{pmatrix} 8 \\ k \end{pmatrix}$ perpendicular
a. k = 6 b. k = 2
c. k = 1 d. None

1265. If $\vec{a} \begin{pmatrix} 3 \\ 4 \end{pmatrix}$, find the magnitude of vector $\vec{5a}$.
a. 5 b. 10
c. 15 d. 25

1266. If $x3 - 3x^2 + kx + 6$ has one factor x+3, find k
a. 14 b. 16
c. -16 d. 12

1267. Which of the following is not the factor of $2x^3 + x^2 - 13x + 6$?
a. x+6 b. x-2
c. 2x-1 d. x+3

1268. Evaluate:

$$\begin{vmatrix} \text{Sinx} & \text{Cosx} \\ \text{-cosx} & \text{sinx} \end{vmatrix}$$

a. sin2x – cos2x b. 1
c. -1 d. None of these

1269. If $\begin{vmatrix} 5 & 16 \\ n & 7 \end{vmatrix}$ = +67 than n equals
a. 1 b. 2
c. 3 d. 4

1270. If (2x – 5) is one of the factor of $2x^2 - 3x - 5$, what is the other?

a. $(2x+1)$ b. $(x+1)$

c. $(x-1)$ d. None

1271. If $[f(x)=x-1 \& g(x)=2x+2]$, find the value of $(f-g)x$

a. –x-3 b. –x+3

c. x+3 d. None

1272. If f(x) = x^3-27 & $g(x)=x^2+3x+9$. Find f/g (2)

a. -2 b. -1

c. -3 d. None

1273. Workout the value of $\lim_{x \to a} \frac{x^n-a^n}{x-a}$

a. a^{n-1} b. na^{n-1}

c. an^{a-1} d. None

1274. Find $\frac{dy}{dx}$ of $y = x^7$

a. x^6 b. $7x^6$

c. $6x^7$ d. None

1275. Find $f'(x)$ of $y=5x^6$

a. $\frac{5}{6}x^5$ b. $\frac{5}{6}x^7$

c. $30x^5$ d. None

1276. $\int x^n dx =$

a. $\frac{x^n}{x}+c$ b. $\frac{x^{x+1}}{x+1}+c$

c. $\frac{x^{x-1}}{x-1}+c$ d. None

1277. $\int 3xdx =$

a. $\frac{3x^2}{2}+c$ b. $\frac{2x^3}{3}$

c. $\frac{3x}{2}$ d. None

1278. Find the length of AB if $A(1,3) \& B(7,-5)$

a. 5 units b. 10 units

c. 8 units d. None

1279. Find the midpoint of AB if A(1,3) and B(7,-5)

a. $(8,-2)$ b. $(4,-1)$

c. $(8,2)$ d. None

1280. A line passes through $(5,\sqrt{3})$ and $(5,4\sqrt{3})$. The line

a. has slope b. zero slope

c. is parallel to y – axis d. None

1281. Find the point of intersection between the lines 2x-y-5=0 and 3x-y-7=0

a. $(2,-1)$ b. $(2,1)$

c. $(-2,1)$ d. None

1282. $\tan(90^0-\theta)$ is equal to

a. $\tan\theta$ b. $-\tan\theta$

c. $\cot\theta$ d. None

1283. $\cos(90+\theta)$ is equal to

a. $\sin\theta$ b. $\cos\theta$

c. $-\sin\theta$ d. None

1284. Sin(-θ) is equal to

a. $-\sin\theta$ b. $-\cos\theta$

c. $\cos\theta$ d. None

1285. $\sin(270^0-\theta)$ is equal to

a. . $-\cos\theta$ b. $-\sin\theta$

c. $\sin\theta$ d. None

1286.tan(A-B) is equal to

a. $\dfrac{\tan A+\tan B}{1-\tan A+.\tan B}$ b. $\dfrac{\tan A-\tan B}{1+\tan A.\tan B}$

c. $\dfrac{\tan A-\tan B}{1-\tan A.\tan B}$ d. None

1287. tan2A is equal to

a. $\dfrac{2\tan A}{1-\tan^2 A}$ b. $\dfrac{3\tan A}{1-4\tan A}$

c. $\dfrac{\tan A}{1-\tan A}$ d. None

1288. $\sin C+\sin D$ is equal to

a. $2\sin\dfrac{C+D}{2}\cos\dfrac{C-D}{2}$ b. $2\sin\dfrac{C+D}{2}\sin\dfrac{C-D}{2}$

c. $2\sin(C+D).\cos(C-D)$ d. None

1289. In $\Delta ABC, COSA$ is equal to

a. $\dfrac{b^2+c^2+a^2}{2bc}$ b. $\dfrac{b^2-c^2+a^2}{2bc}$

c. $\dfrac{b^2+c^2-a^2}{2bc}$ d. None

1290. The total surface area of a hemisphere of radius 'r' is

a. $\dfrac{\pi r^2}{4}$ b. $2\pi r^2$

c. $3\pi r^2$ d. None

1291. The total surface area of cuboids with dimension l, b& h is

a. $2(lb+bh+lh)$ b. $(lb+bh+lh)$

c. $6(lb+bh+lh)$ d. None

1292. The roots of a quadratic equation $ax^2+bx+c=0$ will be unequal and real if

a. $b^2-4ac>0$ b. $b^2-4ac<0$

c. $b^2-4ac=0$ d. none

1293. In internal bisector of a Δ meet at a point, the point is called

a. circumcenter b. in - centre

c. centroid d. none

1294. The equation $Ax+By+C=0$ always represents a

a. straight line b. Circle

c. parabole d. None

1295. If A = { a, b, c} , B = { 1,2,3,4} find $\cap(A\cap B)$

a. 2 b. 3

c. 0 d. None

1296. If A = { a, b, c, d} and B = { e, f, g, h}. find $A\cup B$

a. 0 b. { a, b, c, d, e, f, g}

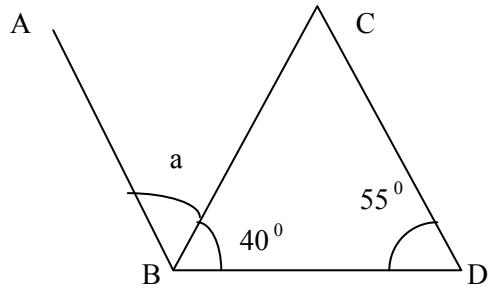
c. {e, f} d. None

1297. A boy is 3 years older than his sister two years ago the sum of their ages was 19. How old is the boy now?

a. 13 years b. 14 years

c. 15 years d. None

1298. In the figure below. Find the value of a where AB is parallel to CD.



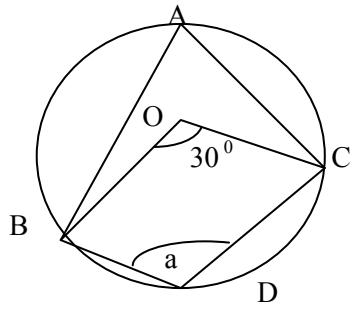
a. 80^0

b. 85^0

c. 90^0

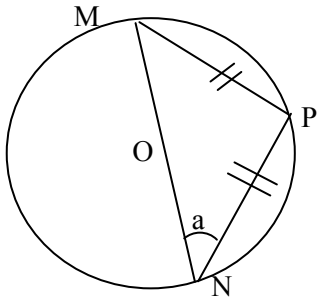
d. None

1299. In given circle, O is centre. Find the value of a



a. 165^0
b. 330^0
c. 340^0
d. None

1300. O is the centre of the circle. Given that, MP=PN. Find a



a. 45 b. 55
c. 65 d. None

1301. Sum of n terms of a series is $2n+n^2$ then it's 10^{th} term is
a. 31 b. 21
c. 31 d. 121

1302. In the expansion of $(p+q)^4$, how many terms are there?
a. 4 b. 5
c. 6 d. 3

1303. Which of the following is equal to sin (-45^0)
a. sin 45 b. cos45
c. –cos45 d. –sin45

1304. If f(x) = $2x^2$ and g(x) = 3x – 1, find (f + g) (x)
a. $2x^2-3+1$
b. $2x^2+3x-1$
c. $2(3x-1)^2$
d. $2x^2/3x-1$

1305. What is the C.I on Rs. 8000 for 2 years at the rate of 6% per annum?
a. 987 b. Rs. 898
c. Rs.988.810 d. Rs.889.80

1306. A sq. garden has area $6400m^2$ .If two paths of 2m outside are running midway and intersecting each other inside the garden. Fin the area of the paths.
a. $316m^2$ b. $314m^2$
c. $318m^2$ d. None

1307. Find the +ve angle that the line $\sqrt{3y}-3x+3\sqrt{3}=0$ makes with x- axis
a. 30^0 b. 45^0
c. 60^0 d. 120^0

1308. In a rhombus ABCD if AC = 5 cm, BD = 6 cm. Find the area
a. $30cm^2$ b. $15cm^2$
c. $20cm^2$ d. None

1309. Find the value of $\tan 15^0$

a. $2-\sqrt{3}$ b. $\sqrt{3}-2$

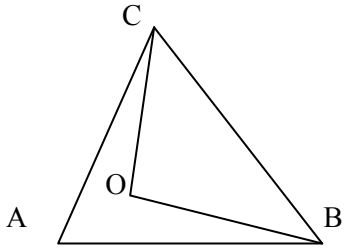
c. $\dfrac{\sqrt{3}-2}{2\sqrt{2}}$ d. $\dfrac{2-\sqrt{3}}{2\sqrt{2}}$

1310. Express $\cos 70^0 - \cos 40^0$ as product

a. $\sqrt{3}\cos 10^0$ b. $2\cos 75^0 - \sin 25^0$

c. $-2\sin 55^0.\sin 15^0$ d. $2\cos 55^0.\cos 75^0$

1311. If CO and BO are bisectors of $\angle ACB$ & $\angle ABC$ respectively then the measure of $\angle BOC$ is



a. 90^0 b. 100^0

c. 110^0 d. None

1312. Find the remainder when $2x^3 - x^2 - 1$ is divided by 2x+3

a. -40 b. -10

c. -27 d. -4

1313. The L.C.M and H.C.F. of the tow numbers are 840 and 14 respectively and if one of the numbers is 42 then the other no. is

a. 84 b. 280

c. 868 d. 42

1314. The price of the of 50 books is Rs. 4000. If the price is increased by 25% what will be the price of 36 books?

a. 3500 b. 3600

c. 4000 d. 2500

1315. Angle between the lines represented by $x^2 - 2xy\cot\theta - y^2 = 0$ is

a. 30^0 b. 45^0

c. 60^0 d. 90^0

1316. 4/7 of the 350 students of Cambridge institute are girls, 7/8 of the girls got adimission in st. Xaviers college, how many girls did not get admission in St. Xaviers ?

a. 25 b.50

c. 45 d. 200

1317. Simplify: $4\sqrt{28} - \sqrt{63}$

a. $8\sqrt{7}$ b. $7\sqrt{7}$

c. $6\sqrt{7}$ d. $5\sqrt{7}$

1318. If f(x) = $\dfrac{x-1}{x+1}, x \neq 1,$ then (ff)(x)=

a. $\dfrac{x+1}{x-1}$ b. $\dfrac{1}{x}$

c. x d. none

1319. A quadrilateral with all rides equal is

a. parallelogram b. square

c. rectangle d. rhombus

1320. nth terms of the sequence 2,4,6,8,10…….is

a. 2n-1 b. 2n+1

c. n^2 d. None

1321. If 0<x<1, which of the following lists the number is increasing order?

a. $\sqrt{x}, x, x^2$ b. $x^2, x, \sqrt{x}$

c. $x^2, \sqrt{x}, x$ d. None

1322. If f : R $\longrightarrow$ R and g : R $\rightarrow$ R such that f(x) = x and g(x) = 1/x then

a. $gof(x) \neq fog(x)$ b. $gof(x) = fog(x)$

c. $gof(x) \neq fog(x)$ d. None

1323. The value of the determinant $\begin{bmatrix} 1 & 2 \\ 3 & 1 \end{bmatrix}$ equals to

a. 0 b. 2
c. 5 d. none

1324. If $x - y = 5$ and xy = 6, find the value of $x^3 - y^3$

a. 219 b. 129
c. 215 d. 155

1325. $x(x-3) = x$ then x are

a. 0,-4 b. 0, 4
c. -4, 4 d. 0, 3

1326. A bag contains 2 red marbles , 3 green marbles and 4 orange marbles. If a marble is picked at random, what is the probability of the marbles not having orange?

a. 9/5 b. 5/9
c. 1/9 d. 2/9

1327. When $2\cos^2\theta = -\sqrt{3}\cos\theta$, then the value of $\theta(0^0 \le \theta \le 180^0)$ is

a. 900 b. 1500
c. 900,1500 d. 900,1200

1328. Express $\sin 35^0.\cos 25^0$ as sum

a. $\cos 5^0 - \cos 25^0$ b. $\frac{1}{2}\cos 20^0$

c. $-\frac{1}{2}\sin 100^0$ d. None

1329. In what ratio does the point on x – axis divide the segment joining (2, 3) and)(0, 5) ?

a. 5:3 b. -5:3
c. -3:5 d. 3:5

1330. Find the area of Δ whose sides are 3cm, 4cm, and 5cm

a. 25cm^2 b. 6 m^2
c. 8cm^2 d. 10cm^2

1331. If A = { a, h, c, d}, B = { e, f, g, h} find $A \cup B$

a. o b. {a, h, c, d, e, f, g}
c. {e, f} d. { a, h}

1332. A function is defined by f(x) = $\frac{3x^2 + 2x - 1}{x+1}$ whose x $\in R$ and r $\neq -1$. Then the value of $\frac{f(2)}{f(-3)}$ = 1 will be

a. -1/2 b. 1/2
c. 5/3 d. None

1333. If 80% of adult population of a village is registered to vote and 60% of those registered actually voted in a particular elections, what percent of the adults in the village did not vote in that election?

a. 40% b. 48%
c. 50% d. 52%

1334. The angle between the vectors 2i+3j+k and 2i-3j-k is

a. $\frac{\pi}{4}$ b. $\frac{\pi}{3}$

c. $\frac{\pi}{2}$ d. None

1335. If $4\cos^2 x = 1$, then the value of x is

a. 60^o, 120^o b. 120^o, 240^o
c. 30^o, 60^o d. 180^o, 270^o

1336. Factorized form of $x^4 + x^2y^2 + y^4$ is

a. $(x^2 + xy + y^2)(x^2 - xy + y^2)$
b. . $(x^2 + xy + y^2)(x^2 + xy + y^2)$
c. $(x^2 - xy + y^2)$
d. $(x-y)(x+y)(x^2 + xy + y^2)$

1337. What is the coefficient of x in the polynomial $p(x) = (x+3)(x^2 + x + 2)$

a. 5 b. 4
c. 3 d. 2

1338. The sum of two numbers is 16 and sum of their square is 130. Find the numbers?
a. 9,7 b. 8,8
c. 10,6 d. 11,5

1339. The value of $\sqrt{-2}.\sqrt{-3}$ is
a. $\sqrt{6}$ b. $-\sqrt{6}$
c. $\pm\sqrt{6}$ d. None

1340. The value of $\dfrac{1+\tan^2 15}{1-\tan^2 15}$ is
a. 1 b. $\sqrt{2}$
c. $\sqrt{3/2}$ d. None

1341. The greatest chord in a circle is
a. tangent b. chord
c. secant d. diameter

1342. If f(x)= $(x+3)^2$, find f(x-3)
a. 0 b. x^2
c. x^2-9 d. None

1343. If $\begin{pmatrix} 4 & 1 \\ 7 & -1 \end{pmatrix}$, $\begin{pmatrix} 2 & -1 \\ 1 & 3 \end{pmatrix}$ = $\begin{pmatrix} x & -1 \\ 11 & y \end{pmatrix}$, then x and y are
a. 9 and 16 b. -9 and 16
c. 9 and -16 d. None

1344. Examine the nature of roots of the quadratic equation $3x^2-2x+3=0$
a. Imaginary roots b. repeated roots
c. Real roots d. No roots

1345. If the line $5x+2y-b=0$ passes through the intersection of $2x+y-1=0$ & $x-3y-18=0$, find the value of b
a. 4 b. 5
c. -4 d. -1

1346. A shopkeeper fired the marked price of his t.v. to make a profit of 40% allowing 20% discount on the marked price of the t.v. was sold , what percent profit will he make?
a. 10% b. 12%
c. 15% d. 11%

1347. Express $x^2-2x-3=0$ to the form $(x+p)2=q$
a. $(x+1)^2=4$ b. $(x-1)^2=4$
c. $(x+1)^2=3$ d. $(x-1)^2$

1348. Find the limiting value of $\lim\limits_{x\to 2}\left(x^2+3x-1\right)$
a. 10 b. 9
c. 8 d. 7

1349. The radius of a wheel is 35cm. The distance it covers is 10 complete reduction is?
a. 20m b. 22m
c. 24m d. 4m

1351. A train travels at the rate of 58 miles/hr. Express it in m/s.
a. 25.78 b. 252.80
c. 25.28 d. 40.27

1352. The equation $ax^2+2bxy+by^2=0$ always represent two st. lines
a. passing through origin b. not pasing through origin
c. does not represent st. line d. represent 2 circles

1353. What type of symmetry has the graph of $y=x^2-2$?
a. x – axis b. y – axis
c. the line y = x d. No symmetry

1354. Find the limiting value of $\lim\limits_{x\to 2}\dfrac{x^3-8}{x^2-4}$

a. 0 b. 1
c. 2 d. 3

1355. The largest sphere is curved out of a cube of wood of side 21cm. Then the volume of the remaining wood will be
a. 4410cm^3 b. 4010cm^3
c. 4900cm^3 d. none

1356. Find the angle between the lines $y+\sqrt{3}x-5=0$ and $\sqrt{3}y-x+6=0$
a. 60^0 b. 90^0
c. 45^0 d. 180^0

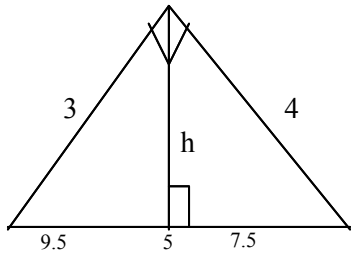
1357. How many stationary points has the curve $f(x)=x^3-6x^2+9x-2$?
a. 1 b. 2
c. 3 d. no stationary points

1358. The kind of function which has the property that for every y in the co domain there is an x in the domain such that f(x)=y is called
a. onto function b. one to one function
c. bijection d. none

1359. Find the polar form of $(-2,-2)$
a. $2\sqrt{2},\pi/4$ b. $2\sqrt{2},-\pi/4$
c. $\sqrt{2},\pi/4$ d. $\sqrt{2},\frac{3\pi}{4}$

1360. In a race of 1Km. A beats B by 20m and B beats c by 50m. By how much does A beat C?
a. 70 m b. 35 m
c. 69 m d. 80 m

1361. In the given figure alongside, what is the value of h?



a. 3.12 b. 2.6
c. 2.4 d. 2.8

1362. Differentiate x^{-3} with respect to x
a. $-3x^2$ b. $-3x^4$
c. $\frac{-3}{x^4}$ d. None

1363. If the range and co-domain of a function are equal , then the function is called
a. onto b. one to one
c. into d. None

1364. A man bought an article for Rs. 1 and sold it for Rs. 1.20. What is percentage gain
a. 20% b. 12%
c. 1.2% d. 10%

1365. Find the value of $\tan 75^0$
a. $2-\sqrt{3}$ b. $2+\sqrt{3}$
c. $\sqrt{3}-2$ d. None

1366. The value of $\text{cosec}35^0-\sec 55^0$ will be
a. 0 b. -1
c. 10 d. None

1367. Find the equation of the locus of the moving point so that it is at a distance of 5 units from the x – axis

a. x = 5 b. y = 5

c. $x^2 + y^2 = 25$ d. x + y = 5

1368. It is the degree of the polynomial $5 - x^2 + 3x^5$

a. 2 b.3

c. 4 d. 5

1369. Angle between the two lines x = 0 and y = 0 is

a. 45^0 b. 90^0

c. 180^0 d. 60^0

1370. Find the value of k in order that the point (k, 1) , (5, 50 and (10, 7) may be collinear

a. -3 b. -4

c. -6 d. -5

1372. The set S = $\{x : x^2 + 6 = 0\}$ and x is real

a. singleton set b. a pair set

c. a null set d. none

1373. Find the inverse of matrix $\begin{pmatrix} 1 & 1 \\ 0 & 1 \end{pmatrix}$

a. $\begin{pmatrix} 1 & 0 \\ -1 & 1 \end{pmatrix}$ b. $\begin{pmatrix} -1 & 0 \\ 0 & 1 \end{pmatrix}$

c. $\begin{pmatrix} 1 & -1 \\ 0 & 1 \end{pmatrix}$ d. None

1374. If the internet of the loan is decreased by Rs. 15 when the rate of interest fall from $5\frac{1}{4}\%$ to $4\frac{3}{4}\%$. What is the amount of money borrowed?

a. Rs. 1000 b. Rs. 1500

c. Rs. 3000 d. none

1375. $\frac{(2.5)^2 - (1.5)^2}{(2.5 + 1.5)}$, find the value

a. 2 b. 1

c. 4 d. none

1376. A 2×2 matrix A with Aij = ij

a. $\begin{pmatrix} 1 & 2 \\ 2 & 4 \end{pmatrix}$ b. $\begin{pmatrix} 2 & 4 \\ 1 & 2 \end{pmatrix}$

c. $\begin{pmatrix} 4 & 2 \\ 2 & 1 \end{pmatrix}$ d. $\begin{pmatrix} 2 & 1 \\ 4 & 2 \end{pmatrix}$

1377. If the replacement set of the set of $5x - 1 \le 9$ is { -2, -1, 0, 1, 2, 3, 4}. Find the solution

a. { -2, -1, 0} b. { -2, 1, 0, 1}

c. {2} d. {-2, -1, 0, 1, 2}

1378. The value of $\sin 75^0$ is

a. $\frac{(\sqrt{3}+1)}{2\sqrt{2}}$ b. 1.5

c. -1 d. 0

1379. Find the values of k if a = 3i - 5j and b = 9i + kj are parallel

a. 3 b. 5

c. -5 d. -15

1380. The Δ formed b y joining the point (a, -a), (-a, a) and $(a, \sqrt{3} - a\sqrt{3})$ is

a. Scalene b. Right angled

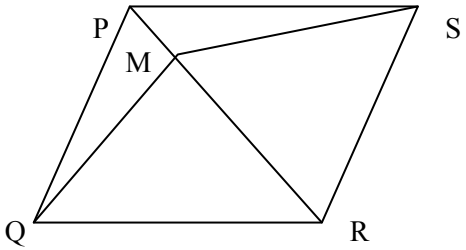
c. isosceles d. Equilateral

1381. Value of x in $3x + 1 + 3x = 108$ is

a. 3 b. 2

c. 4 d. -3

1382. In the figure alongside PQRS is a parm



a. $\Delta PQM = \Delta PSM$

b. $PQM \cong \Delta PSM$

c. $\Delta PQM = \approx \Delta PSM$

d. None

1383. 2 years ago the population of village was 16000. The rate of population growth of that village is 5%. Find the population t present

a. 17640 b. 17460

c. 17064 d. 17046

1384. There are 3 red, 2blue and 5 white balls in a box.A ball is taken out randomly. What is the probability of a ball being blue or white?

a. 7/10 b. 3/10

c. 2/7 d. 5/7

1385. The point of intersection of perpendicular bisector of the sides of a triangle is known as

a. center b. in center

c. orthocenter d. circumcenter

1386. If p painters can paint h house4s in d days how many houses can 5 painters, working at a same rate, paint in 2 days

a. 10h/dp b. dhp/10

c. 5hp/2d d. 2hp/5d

1387. Solve the quadratic equation $x^2-2x=0$

a. 0,1 b. 1,2

c. 0,2 d. -2,0

1388. In the figure a long side CD is tangent & BC⊥CD. Then the triangle ACD and BCD are

a. similar b. congruent

c. equal in area d. none

1389. The angle of elevation of the top of a tree at a point 15m from the tree is 30 find the foot of the tree.

a. 8.25m b. 8.66m

c. 9.2m d. 9.6m

1390. Find the point of intersection between the lines 2x-y-5=0 &3x-y-7=0

a. 2,-1 b. 2,1

c. -2,1 d. -2,-1

1391. Value of $x^2-xy/x^2+xy \div x^2(x-y)/x^3+x^2y$ is

a. 1 b. x

c. x+y d. x-y

1392. In a mixture of 35 liters, the ratio of milk to water is 4:1. another 7 liters of water is added to the mixture . Then ratio of milk to water in the resulting mixture will be

a. 2:1 b. 3:5

c. 10:13 d. None

1393. The area of circle centered at (1,2) & passing through (4,6) is

a. 5π b. 25π

c. 10π d. 15π

1394. Find the diameter of sphere whose volume is $4/3\pi cm^3$

a. 1cm b. 2cm

c. 7cm d. 4/3cm

1395. A natural no is chosen at a random from amongst the first 1000. What is the probability that the no so chosen is divisible by 3

a. 3/10 b. 33/100

c. 333/1000 d. 332/1000

1396. If $x^2-y^2=28$ & x-y=8, what is the average of x&y

a. 1.75 b. 3.5

c. 7 d. 8

1397. If A={1,2} &B={a,b}be the given sets . How many one to one and

into function may be defined from A to B

a. 0 b. 1

c. 2 d. 3

1398. The half plane $y \geq x+1$ contains the point

a. 3,3 b. 1,3

c. 0,0 d. 2,2

1399. If $5x+13=31$ find $\sqrt{5x + 31}$

a. 7 b. $\sqrt{173/5}$

c. 15 d. $\sqrt{13}$

1400. The domain of the relation R where $R=\{(x,y) : y= x+8/x;$ $x,y \in N \& x<9\}$ will be

a. {x,2,3} b. {1,2,4,8}

c. {1,0,4,8} d. None

1401. If A (5,3) and B (7,5) are the paints. Find direction of AB

a. 45^0 b. 135^0

c. 225^0 d. 315^0

1402. If point (x, 2) is equidistant from (8, -2) and (2, -2) find the value of x.

a.3 b.4

c. 5 d. 6

1403. Find the bisector of abtuse between the pair of lines and $10x + 5y +14 =0$

a. $5x +5y +14=0$

b. $5x +10y -15=0$

c. $15x +15y +1=0$

d. $5x -5y +27=0$

1404. When $\tan \theta =1$

a. $\sin \theta - \cos\theta = \tan \theta$

b. $\sin \theta - \cos\theta = 0$

c. $\tan \theta = \sin \theta$

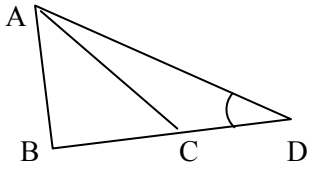
d. $\tan \theta = \cos \theta$

1405. If $[cn] = x^3 +1$ is defined in closed interval $-1 \geq \times \leq 2$ what is image of -2?

a. -7 b. 7

c. +7 d. none

1406. In the given figure $\Delta BAC- \Delta ADB$, AB +=4cm, BD =8 cm and AD =10 cm BC=?



a. 2m b. 1 cm

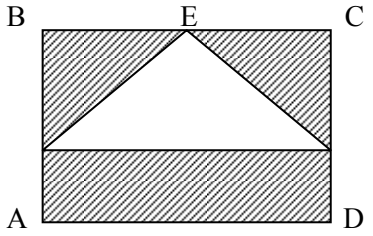
c. 3cm d. 4cm

1407. The paint (a, o) ,(o, b) and (1, 1) are collinear if

a. a+b = ab b. a-b =ab

c. b-a =ab d. a+b+ab=0

1408. In fig ABCD is a square and AED is an equilateral triangle. If AB=2 what is the area of shaded region ?



a. $\sqrt{3}$ b. 2

c. $-\sqrt{2}$ d. $-\sqrt{3}$

1409. The total surface area of a hemisphere of radius 'r' is

a. ¼ r^2 b. 2 r^2

c. 3 r^2 d. 4 r

1410. The equation $x^2 +k_1 y^2 +k^2 xy=0$ represent a pair of perpendicular lines if

a. $k_1 =1$ b. $k_1 =2k_2$

c.2 $k_1 = k_2$ d. None

1411. If 120 % of 'a' is equal to 80 % of 'b' which of the following is equal to a+b ?
a.1.5 a b.2a
c. 2.5 a d. 3a

1412. A line passes through (5,4) and (5,11) .me line
a. has no shape b. zero shape
c. is parallel to x-axis d. none of the above

1413. If g (x) = 2x +1 and h(x) =x-1 find gh (x)
a. 3x b. x+2
c.0 d. 2x-1

1414. If $x^2 + 4x + 4 = 0$ then x +6=?
a. 4 b.6
c. 0 d. square root 13

1415. The point (0 ,-1) (-2 ,3), (6,7) (8,3) are
a. collinear b. vertices of parallelogram
c. vertices of rectangular d. vertices of square

1416. If ¾ of a number is 7 more than 1/6 of the number ,what is 5/3 of the number?
a. 20 b. 24
c. 18 d. 15

1417. Find the coefficient of x^2 in the polynomial (3 x^2 in the polynomial) $(3x^2 + 4)(5x-1)$
a .3 b.-3
c. 6 d. 15

1418. Order of matrix A & B are mxn & n × p.Which of the following statement is not true.
a. AB is defined
b. BA is defined
c. Order of AB is m × P
d. A+B is not defined

1419. A father is 2 times as old as his son.16 years ago the age of father were three times the age of son. What is present age of the father?
a. 40 b.10
c.80 d. none

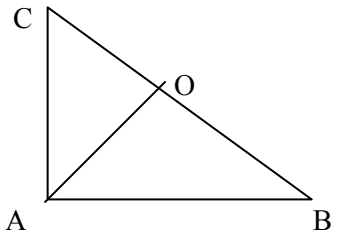
1420. Sum of n terms of a series is $2n+n^2$ then its 10^{th} term is
a.31 b. 21
c. 131 d. 121

1421. The ortho center of the triangular formed by the lines whose equation are x-y+1=0, x-2y+4=0 & 9x -3y+1 =0 will be
a. (-1, 4) b. (4,-1)
c. (0, 5) d. none

1422. What type of symmetry has the graph of function y = -2?
a. y=axis
b. line perpendicular to graph of y = -2
c. only a
d. a & b both

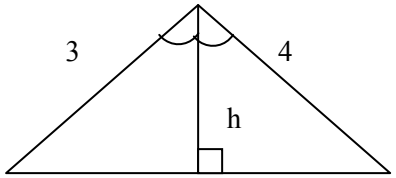
1423. The polar equation is r=1+2 cosθ .What is its Cartesian form?
a. $x^2 + y^2 =$ square root $x^2 + y^2 + 2x$
b. $x^2 - y^2 =$ square root $x^2 + y^2 + 2x$
c. $x^2 + y^2 =$ square root $x^2 - y^2 + 2x$
d. $x^2 - y^2 =$ square root $x^2 - y^2 + 2x$

1424. In the figure along side OA = OB = OC. Then the measure of ∠BAC is



a. 110^0 b. 100^0
c. 90^0 d. 80^0

1425. In the figure along side. What is the value of h?



a. 2.2 b. 2.4
c. 2.6 d. 3.12

1426. Value of x in 3x – 11 = 108 is
a. 3 b. 2
c. 40 d. -3

1427. P is the point (-1, -1), Q is (3, -1) and R is (3, 2). Which of the following is true?
a. $\vec{PQ} = \vec{QR} + \vec{RP}$ b. $\vec{PQ} = \vec{RQ} + \vec{RP}$
c. $\vec{PQ} = \vec{RQ} - \vec{RP}$ d. $\vec{PQ} = \vec{RP} - \vec{RQ}$

1428. In cos $(90^0 - \alpha)$ – BC/ CA. What is the ratio of cos α?
a. b.
c. d.

1429. If $\sqrt{2}\sin\theta = 1$, which of the following is not the value of θ?
a. 45^0 b. 135^0
c. 225^0 d. 405^0

1430. At the point (4, 4) $f(x) = 4$ but again it is not a maximum point why?
a. at (4, 4) $f'(x) \neq 0$
b. at (4, 4) on the graph is not a turning point
c. both a & b are true
d. both a & b are false

1431. The roots of quadratic equation $ax^2+bx+C = 0$ will be unequal and real if
a. $b^2 - 4ac > 0$ b. $b^2 - 4ac < 0$
c. $b^2 = 4ac = 0$ d. none

1432. The half plane $y \geq x + 1$ contains the point
a. (3, 3) b. (1, 3)
c. (0, 0) d. (2, 2)

1433. Angle between lines represented by $x^2 - 2xy \cot\theta - y^2 = 0$ is
a. 30^0 b. 45^0
c. 60^0 d. 90^0

1434. The market price of a watch is Rs.640. What is the selling price if a discount of 15% is allowed?
a) 736 Rs b) Rs 544
c) Rs 625 d) Rs 525

1435. One difference between compound interest and simple interest on Rs 5120 for 3 years at 12.5% per annum is
a) 150 Rs b) 200 Rs
c) 250 Rs d) 300 Rs

1436. The range of the relation.
R= {(x, y): x+2y<6and x, y (N}
a) {1,2} b){0,2}
c) {1,2} d) none

1437. A rectangle with one side 4cm inscribed in a circle of radius 2.5 cm. The area of the rectangle will be
a) 2 cm^2 b) 7cm^2
c) 12cm^2 d) none

1438. The principle value, which amounts to Rs1200 at 8% p.a. S.I after 9 years will be
a) $649^{29/43}$ b) $697^{11/43}$
c)697 d)none

1439. If p Painter can paint h house in d days how many houses can 5 painters working at the same rate , paint in 2 days?
a)10h/dp b)dhp/10
c) 5hp/2d d) 2hp/5d

1440. $0 < a < b < 1$. If $x = \sqrt{a+b}$ and $y = \sqrt{a} + \sqrt{b}$ then
a) x>y b) x<y
c) x=y d) none

1441. Two right circular cones x& y are made. x having three times the radius of y & y having half the volume of x. Then the ratio of height

of x& y will be

a) 1:9 b) 9:1

c)2:9 d)none

1442. In a race of 1km.A beats B by 20m & B beats C by 50m.By how much does A beat C

a) 70m b) 35m

c) 69m d) 80m

1443. Find the angle between the Lines 3x-y+2 = 0
x+3y+4=0

a. 90^o b) 45^o

c) 30^o d) 60^o

1444. What is the relation between the central angle with the angle at the circumference standing on same arc?

a) Equal b) Double

c) 3 times d) 4 times

1445. A (1,3),B(7,1)& C (4,5) are vertices of a triangle what is its area?

a) 18 sq.unit b) 16 sq.unit

c) 12 sq.units d) 28 sq.unit

1446. At is the degree of the polynomial $5-x2+3y^5$

a) 2 b) 3

c) 4 d) 5

1447. A 2 × 2 matrix A with Aij=ij is

a) [12 24] b) [24 42]

c) [42 21] d) [24 12]

1449. My salary was first increased by 10% and then decreased by 10%.What is the total percentage change in my salary

a) 2.2% b) 1.5%

c) 1% d) 3%

1450. If f(x) =x-1/x+1,x≠1 then (ff)(x)=

a) x+1/x-1 b) 1/x

c) x d) none

1451. The sum of two number is 16 and sum of their squares is 130 .Find the numbers?

a) 9, 7 b) 8,8

c) 10,6 d) 11,5

1452. The LCM and HCF of two numbers are 840 and 14 resp. And if one of number is 42 then other number is

a) 84 b) 280

c) 868 d) 42

1453. n^{th} term of sequence 2,4,6,8,10---- is

a. 2n-1 b) 2n+1

c) 2n d) 2n+2

1454. The perimeter of triangle is 12cm & ratio of sides are 3:4:5.Find the area.

a) 12cm2 b) 6cm

c) 4cm2 d) 6cm2

1455. An equilateral triangle of side 3" is cut into smaller equilateral triangle of side one inch each .What is the maximum number of such triangles that can be formed.

a) 3 b) 9

c) 6 d) 13

1456. A dealer ordinarily make a profit of 16% .If his cost goes down by 20% and he decrease his price by 10%.What percent does he gain?

a) 28.2% b) 30.50%

c) 15% d) none

1457. Find the remainder when $3x^2 + 2x-7$ is divided by x-1

a) -2 b)-3

c)-7 d)12

58) If two circles touch , the point of contact lie on a:

a) st line b) quadrilateral

c) Square d) none

1459. If A={1,2} and B={a, b} be the given sets. How many one to one and into functions may be defined from A to B.

a) 0 b) 1

c) 2 d) 3

1460. The point of interaction if perpendicular bisector of the sided of a triangle is known as

a) Center b) Incentre

c) Ortho Centre d) Circumcentre

1461. Determine the nature of roots of the quadratic equation $3x^2-5x-2=0$

a) Imaginary roots b) Repeated roots

c) real roots d) No roots

1462. The value of $\tan\frac{\pi}{3}.\sin\frac{\pi}{3}+\sin\frac{\pi}{4}.\cos\frac{\pi}{2}+\cos\frac{\pi}{2}.\sin\frac{\pi}{3}$ will be

a) $\frac{3}{2}$ b) $\frac{-1}{2}$

c) $\sqrt{3}/2$ d) none

1463. If f: R→R and g: R→R such that f(x)=x and g(x)=1/x then

a. gof (x) ≠fog(x) b) gof(x)=fog(x)

c) gof(x) ≠fog(x) d) all of the above

1464. If x-y = 5 & xy = 6.Find the value of x^3-y^3

a) 219 b) 129

c) 215 d) 228

1465. Examine the nature of roots of the quadratic equation $3x^2-2x+3=0$

a) Imaginary roots b) Repeated roots

c) Real roots d) No roots

1466. A box contains 17 oranges and 3 bad oranges. If 3 oranges were drawn one after the other. Then what is the probability that all the 3 oranges are good?

a) ½ b)20/27

c)34/57 d) none

1467. If one type of rice costing Rs.20/kg and another type of rice costing Rs.17 kg are mixed in the ratio 1:2.What is the cost of the mixture /kg?

a) Rs. 17.50 b) Rs.18

c) Rs.18.50 d) Rs.19

1468. Find $(2\sqrt{3}+20\sqrt{3})1/2-2\sqrt{3}$

a) $9\sqrt{3}$ b) 5

c) $5\sqrt{3}$ d)12

1469. Find the value of K if $\vec{a}=32\vec{}-53\vec{}$ & $\vec{b}+92\vec{}+K3\vec{}$ are parallel

a) 3 b)5

c)-5 d)-15

1470. A house of 1080 sq. meters in area was constructed in a land of 1800 sq meters in area, what percent of land was covered by the house?

a) 40% b) 50%

c) 60% d) 70%

1471. In a triangle ABC, a=3, b=5, c=4 then, cos c is

a.10/3 b. 9

c. 10 d. 3/5

1472. A post has 1/3 of it's length in mud, 1/4 of it in water and 15 m above the water, what is the total length of the post?

a. 18m b. 72m

c. 8m d. 36m

1473. If the line 2x + 3ay-1=0 & 3x+4y+1=0 are mutually perpendicular, then the value of a is

a. -1/2 b. 3

c. 5 d. None

1474. A sum of money is divided between Mary and David in the ratio 5:8. If Mary's share is Rs. 225. then the total amount of money will be :

a. 300 b 400

c. 585 d. None

1475. If $4\cos^2 x=1$, then the value of x is

a. $60^0,120^0$ b. $120^0,240^0$

c. $30^0, 60^0$ d. $180^0, 270^0$

1476. The value of √-2 .√-3 is

a. √6 b. √-6

c. +-√6 d. None

1477. The circumference of the base of a cone is 44cm and the sum of its radius and slanting height is 32cm.Find total surface area

a. $32cm^2$ b. $44cm^2$

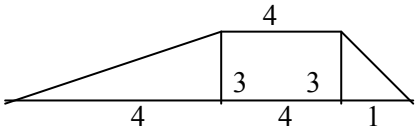
c. $102cm^2$ d. $704cm^2$

1478. What is the probability of drawing a heart or an ace from a deck of 52 cards?

a. 26/52 b. 4/13

c. 1/52 d. 2/13

1479. In a figure what is the area of trapezoid?



a. 19.5 b. 21
c. 25.5 d. 27

1480. In the triangle ABC, if A= 6B=3C, what will be the value of B?
a. 30^0 b. 20^0
c. 10^0 d. 15^0

1481. A dealer gains the selling price of 10 radio sets by selling 6 sets. His percentage profit will be
a. 10% b. 15%
c. 20% d. None

1482. If $f(x) = 2x^2$ & $g(x) = 3x+1$
Find (f+g) (x)
a. $2x^2-3+1$ b. $2x^2+3x-1$
c. $2(3x+1)^2$ d. $2x^2/3x-1$

1483. Factorized form of $x^4+x^2y^2+y^4$ is
a. $(x^2+xy+y^2)(x^2-xy+y^2)$ b. $(x^2+ xy + y^2)(x^2+xy+y^2)$
c. (x^2-xy+y^2) d. $(x+y)\ (x-y)\ (x^2+xy+y^2)$

1484. Find the laws of the moving point so that the algebraic sum of its distance is always 5
a. $x^2+y^2=25$ b. x=5
c. y=5 d. x+y=5

1485. The polar form of (3,3)is given by
a. 3, $\pi/4$ b. $3\sqrt{2}$, $\pi/4$
c. $\sqrt{2}$, $\pi/4$ d. $2\sqrt{3}$, $\pi/4$

1486. Simplify cos(x+y)- cos(x-y)
a. 2sinx .cosy b.2sinx. siny
c. -2cosx . cosy d. -2sinx.siny

1487. Obtuse angle between the linear pair $x^2-4xy+y^2=0$ is
a. 1350 b. 1200
c. 1500 d. 1750

1488. If one type of rice costing Rs.20 per kg and another type of rice costing Rs. 17 per kg are mixed in the ratio 1:2, what is the cost of the mixture per kg?
a. Rs. 17.50 b. Rs. 18
c. Rs. 18.50 d. RS. 19

1489. At what rate percentage per annum compound interest will be Rs. 2304 amount to Rs. 2500 in 2 years?
a. 25/6% b. 30%
c. 17% d. None

1490. Solve the quadratic equation $x^2 - 2x = 0$
a. 0,1 b. 1,2
c. 0,2 d. -2,0

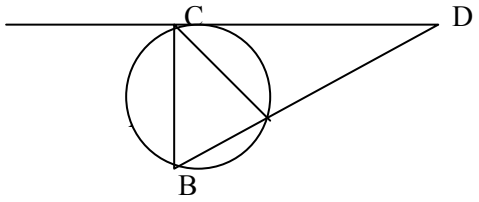
1492. If 80% of the adult population of a village is registered to vote , and 60% of those registered actually voted in a particular election, what percent of the adults in the village did not vote in that election?
a. 40% b. 48%
c. 50% d. 52%

1494. A quadrant with all sides equal is
a. Parm b. square
c. rectangle d. rhombus

1495. In what time will a sum of Rs. 1562.50 produce Rs. 195.10 at 4% per annum compound interest?
a. 2yrs b. 3yrs
c. 10yrs d. none

1496. In figure a long side CD is tangent and BC $\perp$CD. Then the triangle

ACD and BCD are



a. similar b. congruent
c. equal in area d. none

1497. Find the single equation that represent the pair of lines y=3x, and y=5x
a. $15x^2-8xy+y^2=0$ b. $15x^2+8xy-y^2=0$
c. $8x^2-15xy+y^2=0$ d. $15x^2-8xy-y^2=0$

1498. Is A = {a, h, c, d } , B= {e, f, g, h } then find AUB
a. 0 b. { a, h, c, d, e, f, g }
c. {e, f } d. {a, h }

1499. The triangle is formed by joining the points (a,-a), (-a, a) and (a, √3, a√3) is
a. scalene b. right angled
c. isosceles d. equilateral

1500. Two acute angle of rt. Angled triangle are
a. complementary b. supplementary
c. equal d. none

Answer Sheet

S.n.	Ans	S.n.	Ans	S.n.	Ans	S.n.	Ans
1	A	27	C	53	C	79	B
2	B	28	A	54	C	80	A
3	C	29	D	55	A	81	D
4	D	30	B	56	A	82	C
5	C	31	A	57	C	83	B
6	C	32	A	58	D	84	B
7	A	33	A	59	D	85	C
8	D	34	B	60	B	86	A
9	B	35	A	61	C	87	D
10	A	36	D	62	A	88	A
11	A	37	B	63	B	89	C
12	B	38	A	64	D	90	B
13	C	39	B	65	D	91	D
14	C	40	D	66	B	92	A
15	D	41	D	67	B	93	C
16	A	42	C	68	C	94	B
17	C	43	D	69	B	95	D
18	C	44	B	70	D	96	E
19	D	45	B	71	A	97	C
20	A	46	b	72	D	98	C
21	B	47	c	73	D	99	A
22	A	48	b	74	C	100	C
23	B	49	C	75	D	101	C
24	C	50	C	76	A	102	B
25	D	51	C			103	A
26	C	52	C	78	B	104	A

S.n.	Ans	S.n.	Ans	S.n.	Ans	S.n.	Ans
105	B	131	E	157	C	186	A
106	A	132	D	158	C	187	B
107	B	133	B	159	B	188	A
108	A	134	B	160	A	189	B
109	C	135	A	161	A	190	A
110	D	136	C	162	A	191	C
111	B	137	D	163	C	192	A
112	A	138	C	164	D	193	A
113	B	139	A	165	C	194	A
114	B	140	D	166	A	195	A
115	A	141	C	167	C	196	A
116	B	142	C	168	C	197	A
117	C	143	C	169	C	198	A
118	C	144	C	170	B	199	B
				171	D		
119	B	145	B	172	D	200	D
120	B	146	B	173	B	201	A
121	B	147	D	174	C	202	A
122	C	148	D	175	B	203	B
123	B	149	C	176	B	204	A
124	A	150	A	178	A	205	B
125	D	151	A	179	B	206	B
126	B	152	C	180	C	207	A
127	A	153	D	182	C	208	B
128	C	154	B	183	C	209	A
129	B	155	D	184	A	210	A
130	D	156	C	185	C	211	B

S.n.	Ans	S.n.	Ans	S.n.	Ans	S.n.	Ans
212	A	238	A	264	D	290	A
213	B	239	B	265	D	291	B
214	A	240	D	266	C	292	B
215	A	241	B	267	B	293	B
216	A	242	D	268	C	294	B
217	B	243	A	269	D	295	C
218	B	244	C	270	A	296	D
219	A	245	B	271	C	297	A
220	A	246	D	272	C	298	C
221	A	247	B	273	D	299	B
222	B	248	C	274	A	300	A
223	A	249	D	275	B	301	C
224	A			276	A	302	A
225	C	251	C	277	D	303	B
226	C	252	C	278	C	304	B
227	B	253	A	279	D	305	C
228	A	254	B	280	B	306	D
229	B	255	B	281	A	307	A
		256	B	282	A	308	B
231	B	257	A	283	D	309	B
232	A	258	A	284	A	310	C
233	C	259	D	285	C	311	A
234	A	260	A	286	A	312	B
235	C	261	A	287	A	313	D
236	B	262	C	288	B	314	A
237	C	263	d	289	d	315	B

S.n.	Ans	S.n.	Ans	S.n.	Ans	S.n.	Ans
316	D	342	B	368	C	394	C
317	A	343	B	369	A	395	B
318	D	344	C	370	A	396	C
319	C	345	D	371	D	397	D
320	B	346	D	372	C	398	A
321	B	347	C	373	B	399	A
322	B	348	A	374	D	400	C
323	D	349	b	375	C	401	C
324	B	350	d	376	A	402	B
325	A	351	b	377	A	403	A
326	C	352	a	378	A	404	A
327	D	353	D	379	C	405	D
328	C	354	B	380	A	406	D
329	B	355	C	381	A	407	D
330	D	356	A	382	A	408	D
331	D	357	B	383	B	409	D
332	D	358	D	384	B	410	A
333	A	359	B	385	A	411	A
334	C	360	A	386	A	412	B
335	B	361	A	387	B	413	A
336	A	362	B	388	D	414	D
337	A	363	B	389	B	415	A
338	B	364	A	390	A	416	A
339	A	365	B	391	B	417	D
340	C	366	A	392	C	418	B
341	d	367	d	393	a	419	d

S.n.	Ans	S.n.	Ans	S.n.	Ans	S.n.	Ans
420	C	446	A	472	B	498	D
421	D	447	B	473	C	499	C
422	B	448	C	474	C	500	C
423	D	449	C	475	C	501	C
424	D	450	C	476	A	502	A
425	C	451	A	477	B	503	B
426	C	452	B	478	D	504	C
427	D	453	A	479	D	505	A
428	A	454	C	480	D	506	A
429	D	455	A	481	C		
430	D	456	D	482	B	508	B
431	C	457	C	483	D	509	D
432	C	458	A	484	A	510	B
433	C	459	B	485	C	511	A
434	d	460	A	486	C	512	B
435	B	461	C	487	B		
436	B	462	B	488	B	514	D
437	B	463	C	489	D	515	
438	D	464	A	490	D	516	B
439	A	465	A	491	D	517	B
440	C	466	A	492	B	518	A
441	B	467	B	493	C	519	A
442	C	468	D			520	D
443	D	469	D	495	A	521	D
444	D	470	A	496	A	522	A
445	C	471	B	497	C	523	A

S.n.	Ans	S.n.	Ans	S.n.	Ans	S.n.	Ans
524	A	550	A	576	D	602	C
525	A	551	A	577	C	603	C
526	A	552	C	578	C	604	C
527	C	553	A	579	C	605	D
528	D	554	A	580	D	606	B
529	A	555	A	581	B	607	B
530	C	556	D	582	A	608	A
531	B	557	C	583	B	609	A
532	D	558	C	584	A	610	A
533	B	559	B	585	D	611	B
534	D	560	A	586	D	612	C
535	C	561	C	587	C	613	C
536	C	562	B	588	A	614	A
537	D	563	C	589	D	615	D
538	C	564	D	590	D	616	B
539	B	565	C	591	C	617	D
540	B	566	B	592	D	618	B
541	D	567	B	593	A	619	D
542	B	568	D	594	B	620	C
543	B	569	C	595	C	621	A
544	A	570	C	596	B	622	B
545	A	571	D	597	A	623	C
546	A	572	B	598	D	624	B
547	C	573	C	599	D	625	A
548	C	574	C	600	A	626	C
549	b	575	A	601	B	627	C

S.n.	Ans	S.n.	Ans	S.n.	Ans	S.n.	Ans
628	B	654	A	680	B	706	A
629	A	655	D	681	B	707	C
630	A	656	C	682	B	708	A
631	B	657	B	683	D	709	C
632	C	658	D	684	C	710	A
633	C	659	B	685	C	711	C
634	C	660	A	686	B	712	A
635	C	661	C	687	A	713	A
636	B	662	D	688	C	714	B
637	D	663	D	689	A	715	B
638	D	664	C	690	D	716	A
639	A	665	C	691	A	717	C
640	D	666	A	692	C	718	C
641	B	667	C	693	C	719	C
642	A	668	D	694	D	720	B
643	D	669	B	695	A	721	C
644	D	670	C	696	A	722	B
645	C	671	B	697	A	723	A
646	B	672	B	698	C	724	B
647	C	673	C	699	A	725	A
648	C	674	D	700	C	726	D
649	C	675	C	701	C	727	B
650	B	676	C	702	C	728	C
651	B	677	D	703	D	729	A
652	C	678	A	704	A	730	B
653	C	679	A	705	D	731	B

S.n.	Ans	S.n.	Ans	S.n.	Ans	S.n.	Ans
732	B	758	A	785	D	811	A
733	C	759	D	786	C	812	C
734	B	760	D	787	B	813	C
735	D	761	C	788	B	814	C
736	D	762	D	789	B	815	B
737	D	763	D	790	D	816	B
738	D	764	A	791	A	817	B
739	D	765	C	792	D	818	B
740	A	766	D	793	D	819	C
741	B	767	A	794	A	820	B
742	A	768	C	795	D	821	D
743	D	769	A	796	D	822	C
744	C	770	C	797	B	823	D
745	A	771	A	798	B	824	A
746	C	772	A	799	B	825	A
747	C	773	C	800	A	826	B
748	B	774	B	801	D	827	B
749	B	775	C	802	D	828	C
750	A	776	D	803	C	829	D
751	A	777	B	804	C	830	D
		778	A				
752	C	779	D	805	D	831	D
753	D	780	D	806	C	832	B
754	C	781	C	807	C	833	B
755	A	782	C	808	D	834	B
756	A	783	C	809	D	835	C
757	B	784	D	810	E	836	C

S.n.	Ans	S.n.	Ans	S.n.	Ans	S.n.	Ans
837	A	863	B	889	A	915	B
838	D	864	C	890	B	916	C
839	C	865	D	891	D	917	C
840	B	866	C	892	C	918	A
841	A	867	D	893	C	919	B
842	A	868	C	894	A	920	A
843	A	869	C	895	B	921	A
844	C	870	D			922	B
845	D	871	C	897	B	923	D
846	C	872	D	898	A	924	D
847	D	873	D	899	C	925	D
848	B	874	C	900	A	926	B
849	D	875	D	901	B	927	B
850	A	876	D	902	C	928	C
851	B	877	D	903	C	929	B
852	B	878	A	904	B	930	D
853	B	879	B	905	D	931	B
854	D	880	B	906	C	932	B
855	D	881	D	907	C	933	C
856	C	882	C	908	D	934	A
857	B	883	C	909	C	935	A
858	E	884	B	910	D	936	D
859	A	885	A	911	D	937	E
860	D	886	A	912	A	938	E
861	C	887	A	913	E	939	B
862	B	888	D	914	C	940	A

S.n.	Ans	S.n.	Ans	S.n.	Ans	S.n.	Ans
941	C	967	B	993	C	1019	B
942	E	968	A	994	C	1020	A
943	D	969	A	995	D	1021	E
944	D	970	C	996	A	1022	E
945	D	971	B	997	C	1023	B
946	A	972	D	998	D	1024	C
947	A	973	D	999	A	1025	C
948	B	974	C	1000	D	1026	E
949	A	975	B	1001	A	1027	E
950	A	976	D	1002	B	1028	A
951	C	977	B	1003	C	1029	C
952	B	978	B	1004	A	1030	C
953	A	979	C	1005	A	1031	E
954	B	980	C	1006	C	1032	E
955	B	981	D	1007	C	1033	C
956	A	982	D	1008	A	1034	C
957	A	983	D	1009	C	1035	B
958	A	984	C	1010	E	1036	C
959	D	985	B	1011	C	1037	A
960	A	986	C	1012	D	1038	D
961	A	987	A	1013	B	1039	B
962	A	988	E	1014	E	1040	D
963	B	989	A	1015	A	1041	D
964	C	990	A	1016	D	1042	E
965	A	991	D	1017	A	1043	D
966	A	992	B	1018	E	1044	A

S.n.	Ans	S.n.	Ans	S.n.	Ans	S.n.	Ans
1045	B	1071	B	1097	C	1124	D
1046	A	1072	E	1098	C	1125	A
1047	B	1073	B	1099	C	1126	A
1048	A	1074	A	1100	D	1127	B
1049	B	1075	B	1101	D	1128	A
1050	A	1076	B	1102	C	1129	A
1051	D	1077	E	1103	A	1130	D
						1131	D
1052	A	1078	B	1104	A	1132	C
1053	D	1079	D	1105	B	1133	B
1054	C	1080	A	1106	C	1134	D
1055	B	1081	E	1107	C	1135	C
1056	E	1082	A	1108	B	1136	A
1057	D	1083	B	1109	B	1137	B
1058	B	1084	A	1110	C	1138	A
1059	D	1085	C	1111	C	1139	C
				1112	D		
1060	D	1086	C	1113	C	1140	A
1061	B	1087	E	1114	C	1141	C
1062	D	1088	B	1115	D	1142	A
1063	B	1089	B	1116	A	1143	B
1064	B	1090	A	1117	B	1144	B
1065	B	1091	D	1118	A	1145	A
1066	C	1092	E	1119	C	1146	B
1067	D	1093	B	1120	C	1147	C
1068	B	1094	C	1121	B	1148	D
1069	C	1095	C	1122	D	1149	C
1070	A	1096	D			1150	A

S.n.	Ans	S.n.	Ans	S.n.	Ans	S.n.	Ans
1151	B	1177	C	1203	A	1229	A
1152	B	1178	A	1204	A	1230	B
1153	C	1179	C	1205	B	1231	A
1154	D	1180	A	1206	C	1232	C
1155	C	1181	D	1207	B	1233	D
1156	D	1182	D	1208	B	1234	A
1157	B	1183	C	1209	B	1235	B
1158	D	1184	A	1210	B	1236	B
1159	D	1185	A	1211	A	1237	A
1160	B	1186	D	1212	C	1238	B
1161	A	1187	B	1213	D	1239	C
1162	C	1188	C	1214	C	1240	A
1163	B	1189	B	1215	C	1241	D
1164	D	1190	B	1216	A	1242	B
1165	C	1191	B	1217	B	1243	A
1166	C	1192	C	1218	B	1244	D
1167	B	1193	A	1219	C	1245	B
1168	A	1194	A	1220	A	1246	C
1169	D	1195	B	1221	C	1247	B
1170	B	1196		1222	A	1248	D
1171	B	1197	C	1223	B	1249	B
1172	A	1198	A	1224	A	1250	C
1173	B	1199	A	1225	C	1251	C
1174	C	1200	D	1226	B	1252	C
1175	C	1201	C	1227	B	1253	A
1176	C	1202	C	1228	A	1254	D

S.n.	Ans	S.n.	Ans	S.n.	Ans	S.n.	Ans
1255	C	1281	A	1307	C	1333	D
1256	A	1282	C	1308	B	1334	D
1257	A	1283	C	1309	A	1335	A
1258	C	1284	A	1310	C	1336	A
1259	D	1285	A	1311	D	1337	A
1260	A	1286	B	1312	B	1338	A
1261	A	1287	A	1313	B	1339	A
1262	A	1288	A	1314	B	1340	D
1263	B	1289	C	1315	D	1341	D
1264	A	1290	B	1316	A	1342	B
1265	D	1291	A	1317	D	1343	D
1266	C	1292	A	1318	C	1344	A
1267	A	1293	B	1319	B	1345	D
1268	B	1294	A	1320	D	1346	B
1269	B	1295	C	1321	B	1347	B
1270	B	1296	D	1322	B	1348	D
1271	A	1297	A	1323	D	1349	B
1272	B	1298	B	1324	D		
1273	B	1299		1325	B	1351	A
1274	B	1300	A	1326	B	1352	A
1275	C	1301	B	1327	C	1353	B
1276	D	1302	B	1328	D	1354	D
1277	A	1303	D	1329	C	1355	A
1278	B	1304	B	1330	B	1356	B
1279	B	1305	C	1331	B	1357	B
1280	B	1306	a	1332	A	1358	A

S.n.	Ans	S.n.	Ans	S.n.	Ans	S.n.	Ans
1359	B	1385	D	1411	C	1437	C
1360	C	1386	A	1412	A	1438	A
1361	B	1387	C	1413	D	1439	A
1362	A	1388	A	1414	A	1440	B
1363	A	1389	B	1415	C	1441	C
1364	A	1390	A	1416	A	1442	C
1365	B	1391	A	1417	B	1443	A
1366	A	1392	A	1418	B	1444	B
1367	B	1393	B	1419	D	1445	A
1368	D	1394	B	1420	B	1446	D
1369	B	1395	C	1421	A	1447	A
1370	D	1396	A	1422	D		
		1397	A	1423	A	1449	C
1372	C	1398	B	1424	C	1450	C
1373	C	1399	A	1425	D	1451	A
1374	C	1400	B	1426	C	1452	B
1375	B	1401	A	1427	C	1453	C
1376	A	1402	C	1428	A	1454	D
1377	D	1403	C	1429	C	1455	B
1378	A	1404	B	1430	C	1456	D
1379	D	1405	D	1431	A	1457	A
1380	A	1406	A	1432	B	1458	A
1381	D	1407	A	1433	D	1459	A
1382	A	1408	D	1434	B	1460	D
1383	A	1409	C	1435	C	1461	C
1384	A	1410	A	1436	A	1462	A

S.n.	Ans	S.n.	Ans				
1463	B	1489	A				
1464	C	1490	C				
1465	A						
1466	C	1492	D				
1467	B						
1468	A	1494	B				
1469	D	1495	B				
1470	C	1496	A				
1471	D	1497	A				
1472	D	1498	B				
1473	A	1499	D				
1474	C	1500	A				
1475	A						
1476	A						
1477	D						
1478	B						
1479	A						
1480	B						
1481	D						
1482	B						
1483	A						
1484	D						
1485	B						
1486	D						
1487	B						
1488	B						