PAST PAPERS OF MATHS (NET) (1)

1. $\forall\ a, b, \varepsilon\ R, ab\ \varepsilon\ R$
   a. Commutative law of multiplication
   b. Associative law of multiplication
   c. Closure law of multiplication
   d. Multiplicative identity
2. If the straight lines x= 1+s, y=-3- λs, z=1 + λs, and x =t/2, y = 1 +t, z =2-t with parameters s and t respectively, are co-planar then λ equal to
   a. -2
   b. -1
   c. -1/2
   d. 0
3. The intersection of the spheres x^2 +y2 +z2 +7x -2y –z=13and x2+ y2+z2-3x+3y+4z =8, x2+ y2+z2-3x+3y+4z =8 is same as the intersection of one of the sphere and the plane a.
   X-y-z =1
   b. X-2y-z=1
   c. X-y-2z=1
   d. 2x-y-z=1
4. Let and be three non-zero vectors such that no two of these are collinear. If the vector a + 2b is collinear with c r and b+ 3cr is collinear with a r (being some non-zero scalar) then a +2b +6cr equal to
   a. $\pi_a^{\rightarrow}$
   b. $\pi_b^{\rightarrow}$
   c. $\pi_c^{\rightarrow}$
   d. 0
5. A particle is acted upon by constant forces r 4i + j-3k and 3i+j –k which displace it from a point I +2j+3k to the point 5i +4j+k. the work done in standard units by the forces is given by a.
   40
   b. 30
   c. 25
   d. 15

6. If a,b, c are n d b λ c on coplanar vector an is a real number, then the vectors a+2b +3c, λb +4c and (2 λ -1)c are non-coplanar for
    a. All value of λ
    b. All expect one value of λ
    c. All expect two value of λ
    d. No value of λ

7. Let u, v, w be such that |u| =1 |v|=2, |w|=3, if the projection v along u is equal to w along u and v , w are perpendicular to each other than |u-v-w |equal to
    a. 2
    b. $\sqrt{7}$
    c. $\sqrt{14}$
    d. 14
8. If z_1 and z_2 are two complex numbers then|z_1 +z_2|
    a. < |z_1 |+|z_2|
    b. > |z_1 |+|z_2|
    c. <=|z_1 |+|z_2|
    d. >=|z_1 |+|z_2|
9. Consider the following statement s: “
        i. Mode can be computed from histogram
        ii. Median is not independent of change of scale iii. Variance is independent of change of origin and scale. ”

Which of these is/are correct?

    b. Only i
    c. Only ii
    d. Only I and ii
    e. Only I ,ii ,iii

10. In a series of 2n observations, half of them equal a and remaining half equal –a. if the standard deviation of the observation is 2. Then |a| equal to
    a. 1/n
    b. $\sqrt{2}$
    c. 2
    d. $\sqrt{2}$/n

11. The probability that A speaks truth is 4/5, while this probability for b is ¾. The probability that they contradict each other when asked to speak on a fact is
    a. 3/20
    b. 1/5
    c. 7/20
    d. 4/5

12. Division is a binary operation in
    a. The set of rational numbers
    b. The set of real numbers
    c. The set of real numbers
    d. the set R-(0)
13. If z= (1, 2) then z^ (-1) =?
    a. (1/5 ,2/5)
    b. (-1/5, 2/5)
    c. (1/5,-2/5)
    d. (-1/5 ,-2/5)
14. With two forces acting at a point, the max effect is obtained when their resultant is 4 N. If they act at right angles then their resultant is 3 N then the forces are
    a. (2+$\sqrt{2}$) and (2- $\sqrt{2}$)
    b. (2+$\sqrt{3}$) and (2- $\sqrt{3}$)
    c. (2+ ½ 2) and (2- ½ 2)
    d. (2+ ½ 3) and (2- ½ 3)
15. In right angle ΔABC ,$\angle A = 90^0$ and sides a, b ,c are respectively,5 cm, 4 cm and 3 cm. if a force F has moments 0,9 and 16 in N cm. units respectively about vertices A,B and C, then magnitude of F is
    a. 3
    b. 4
    c. 5
    d. 9
16. Three forces P. Q .R acting along IA, IB and IC where I is the in center of a ΔABC, are in equilibrium. Then P:Q:R us
    a. Cos A/2: cos B/2 : cos c/2
    b. sin A/2: sin B/2 : sin c/2
    c. sec A/2: sec B/2 : sec c/2
    d. cosec A/2: cosec B/2 : cosec c/2

17. towards north from B to C at the rate of 5 km/h. if AB=12 and BC =5km. then its average speed for its journey from A to C and resultant average velocity direct from A to C, are respectively towards east from a point A to a point B at the rate of 4 km/h and then
    a. 17/4Km/h and 13/4 Km/h
    b. 13/4 Km/h and 17/4Km/h
    c. 17/9Km/h and 13/9 Km/h
    d. 13/9 Km/h and 17/9Km/h

18. A velocity ¼ m/s is resolved into two component along OA and OB making angles 30^0 and 45^0 respectively with the given velocity. Then the component along OB is
    a. 1/8 m/s
    b. ¼($\sqrt{3}-1$)
    c. ¼ m/s
    d. 1/8($\sqrt{6}-\sqrt{2}$)m/s
19. If t1 and t2 are the times of flight of two particles having the same initial velocity u and range R on the horizontal, then t2+ t1 is equal to
    a. U^2/g
    b. $4U^2/g$
    c. $U^2/2g$
    d. 4
20. The differential equation of the family of the curves $x^2 + y^2 - 2ax = 0$
    a. $X^2-y^2-2xyy''=0$
    b. $Y^2-x^2 =2xyy'$
    c. $X^2+y^2 +2y'' =0$
    d. None
21. If Y = cos-1(1-1nx/1+1nx) then dy/dx at x=e is
    a. -1/e
    b. -1/2e
    c. 1/2e
    d. 1/e
22. The sun of the series ½ + ¾ + 7/8 +15/16 …….. up to n terms is
    a. n-1 + 1/2n
    b. n + 1 /2n
    c. 2n +1/2n
    d. N +1 +1/2n

23. The equation of the plane passing through the midpoint of the line of the join of the points(1,2,3) and (3,4,5) and perpendicular to it is
    a. X + y+ z =9
    b. X + y+ z =-9
    c. 2X+3y+4z =9
    d. 2X+3y+4z =-9
24. The equation of the circle concentric to the circle $2x^2 +2y^2 – 3x +6y +2 =0$ and having area double the area of this circle is
    a. $8x^2 +8y^2 -24x +48y -13 =0$
    b. $16x^2 +16y^2 +24x -48y -13 =0$
    c. $16x^2 +16y^2 -24x +48y -13 =0$
    d. $8x^2 +8y^2 +24x -48y -13 =0$

25. The domain of the function f(x) cos-1x/|x| is
    a. [-1,0) U {1}
    b. [-1,1]
    c. [-1,1)
    d. None
26. If e and e’ are the eccentricities of hyperbolas x2/z2 - y2/b2 =1 and its conjugate hyperbola then the value of 1/e2 + 1/e’2 is
    a. 0
    b. 1
    c. 2
    d. None
27. The value of the $\int \frac{sinx+\cos x}{3+sin2x}$ dx is
    a. ¼ in $\frac{2-sinx-\cos x}{2+sinx+\cos x}$ +C
    b. ½ in $\frac{2+sinx}{2-sinx}$ + C
    c. ¼ in $\frac{1+sinx}{1-sinx}$ + C
    d. None
28. The solution of the differential equation $\frac{dy}{dx} - \frac{\tan y}{x} = \frac{\tan y siny}{x2}$ is
    a. $\frac{x}{siny}$ +in x=c
    b. $\frac{y}{sinx}$ +in =c
    c. ln y+ x =c
    d. ln x+ y =c

29. Z +Z is ……

a. Real number
b. Irrational number
c. 0
d. Complex number

30. If $m(\frac{z-1}{2z+1}) = -4$ then locus of z is
    a. Ellipse
    b. Parabola
    c. Straight line
    d. Circle
31. The equation (x-b)(x-c) +(x-a)(x-b) +(x-a)(x-c) =0 has all its roots
    a. Positive
    b. Real
    c. Imaginary
    d. Negative

32. The sum of coefficients of the expansion $(1/x + 2x)^n$ is 6561. The coefficient of term independent of x is
    a. $16.8c_4$
    b. $8c_4$
    c. $8c_5$
    d. None
33. The area enclosed between the curves y=x and $y = 2x - x^2$ is
    a. ½
    b. 1/6
    c. 1/3
    d. ¼
34. The set of all rational numbers between 1 and 2
    a. An empty set
    b. A real set
    c. A finite set
    d. An infinite set
35. In an ellipse the angle between the lines joining the foci with the +ive end of minor axis is a right angle , the eccentricity of the ellipse is
    a. $\frac{1}{\sqrt{2}}$
    b. $\frac{1}{\sqrt{3}}$
    c. $\sqrt{2}$
    d. $\sqrt{3}$

36. If |a| = 3, |b|= 5 and |c|= 4 and a + b + c =0, then the value of a.b +b.c is equal to a. 0
    b. -25
    c. 25
    d. None
37. The equation of a line is 6x –x2 = 3y -1 = 2z-2 the direction ratios of the line are a. 1,2,3
    b. 1,1,1
    c. 1/3,1/3, 1/3
    d. 1/3,-1/3,1/3
38. Y =sin -1x/2 + cos-1x/2 then the value dy /dx is
    a. 1
    b. -1
    c. 0
    d. 2

39. Z=4x +2y, 4x+2y >=46, x+3y<=24 and x and y are greater than or equal to zero, then the max value of z
    a. 46
    b. 96
    c. 52
    d. None
40. On one bank of river there is a tree on another bank, an observer makes an angle of elevation of 60^0 at the top of the tree. The angle of elevation of the top of the tree at a distance 20 m away from the bank is 30^0 .the width of the river is
    a. 20 meters
    b. 10meters
    c. 5 meters
    d. 1 m

41. $\sqrt{0.0001}\ is$
    a. An integer number
    b. An irrational number
    c. A rational number
    d. An imaginary number
42. If A= [$1/x^2$, x/4y] and B [-3/1, 1/0] adj. A +B[1/0,0/1] then values of x and y are a. 1,1
    b. $\pm(1,1)$
    c. 1,0
    d. None
43. If $\tan^{-1}$ 1-x/1+x = ½ tan-1 x then value of x is

a. ½

b. $\overline{\sqrt{3}1}$

c. $\sqrt{3}$

d. 2

44. The number of values of k for which $(\log x)^2$ -log x –log k =0 is /are

a. 1

b. 2

c. 3

d. 4

45. The value of limt a→ 0 $\text{cosec}^{-1}(\sec\alpha) + \cot^{-1}(\tan\alpha) + \cot^{-1}\cos(\sin^{-1}\alpha)/\alpha$ is a. 0

b. -1

c. -2

d. 1

46. The value of $\int_{\pi}^{2\pi}$ [2 sin x] dx is

a. π/3

b. - 4π/3

c. 4π/3

d. - π/3

47. $\int_{0}^{10} | x * (x-1)(x-2)|dx$

a. 160.05

b. 1600.5

c. 16.005

d. None

48. The value of lim x→ 0 (1 + sin x –cos x +log (1-x) /3) is

a. -1

b. ½

c. - ½

d. 1

49. The equation of tangent to the curve $x^2/3 - y^2/2 = 1$ which is parallel to y =x is a. Y =x ± 1

b. Y =x – ½

c. Y =x + ½

d. Y = 1- x

50. If $(\frac{z+i}{z-i}) = 3$ then radius of circle is

a. $\frac{2}{\sqrt{21}}$

b. $\frac{1}{\sqrt{21}}$

c. $\frac{\sqrt{21}}{2}$

d. $\sqrt{21}$

51. Let f(x) = cos x cos 2x cos 4x cos 8x cos16x then the value of f'(π/4) is
    a. $\sqrt{2}$
    b. $-\sqrt{2}$
    c. 2
    d. -2
52. Let (sin a) x^2 + (sin a) x + (1-cos a) = 0 the value of a. For which roots of this equation are real and distinct.
    a. (0 , 2 $\tan^{-1}$ ¼)
    b. (0 , 2 π /3)
    c. (0 , π)
    d. (0, 2 π)

53. The angle of elevation of top of a tower from a point on the ground is 30^0 and it is 60^0 when it is viewed from a point located 40 m away from the initial point towards the tower the height of the tower is
    a. $-20\sqrt{3}$
    b. $\frac{\sqrt{3}}{20}$
    c. $\frac{\sqrt{3}}{-20}$
    d. $20\sqrt{3}$
54. The summation of two unit vectors is a third unit vector, then the modulus of the difference of the unit vectors is
    a. $\sqrt{3}$
    b. $1-\sqrt{3}$
    c. $1+\sqrt{3}$
    d. $-\sqrt{3}$
55. A body falls freely from a point A and passes through the point B and C given that AB =2BC. The ratio of the time taken by the body to cover the distances AB and BC is
    a. $(2+\sqrt{6})/1$
    b. $(2-\sqrt{6})/1$
    c. $1-\sqrt{6})/2$
    d. $1+\sqrt{6})/2$

56. There is a set of m parallel lines intersecting a set of other n parallel lines in a plane. The number of parallelograms formed is
    a. ${}_{m-1}C_2 \,.\, {}_{n-1}C_2$
    b. ${}_{m}C_2 \,.\, {}_{n}C_2$
    c. ${}_{m-1}C_2 \,.\, {}_{n}C_2$
    d. ${}_{m}C_2 \,.\, {}_{n-1}C_2$
57. If in a trial the probability of success is twice the probability of failure. In six trials the probability of at least four successes is
    a. 496/729
    b. 400/729
    c. 500/729
    d. 600/729
58. A force vector mi + nk are applied to a body at a point P (1, 2, and 3). If moment of the force is perpendicular to 3i + 5j +6k then relation between m and n is
    a. N+3m =0
    b. N+3m =1
    c. N +3m=2
    d. N+ 3m=3
59. Then greatest term in the expansion of $(1 +3x)^{54}$ where x =1/3 is
    a. T_{28}
    b. T_{25}
    c. T_{26}
    d. T_{24}
60. The equation of family of a curve is $y^2 = 4a(X +a)$ then differential equation of the family is a. Y =y' + x
    b. Y = y'' + x
    c. $Y =2y' x +y^2y'^2$
    d. $y'' +y' + y^2 = 0$
61. if A.M of two numbers twice of their G.M then the ratio of greatest number to smallest number is
    a. $7 - 4\sqrt{3}$
    b. $7 + 4\sqrt{3}$
    c. 21
    d. 5
62. Let $X^2 + y^2 - 2x – 6y +6 =0$ and $X^2 + y^2 - 6x – 4y +12 = 0$ are two circles, then equation of the circle having diameter as their common chord is
    a. $5X^2 + 5y^2 + 26x – 22y + 54 =0$

b. $5X^2 + 5y^2 + 26x + 22y + 54 = 0$

c. $5X^2 + 5y^2 - 26x - 22y + 54 = 0$

d. $5X^2 + 5y^2 - 26x - 22y - 54 = 0$

63. For what value of a, $f(x) = -x^3 + 4ax^2 + 2x - 5$ is decreasing x .

a. (1,2)

b. (3,4)

c. R

d. No value of a

64. The common tangent of the parabolas $y^2 = 4x$ $x^2 = -8y$ is

a. Y = x+2

b. Y= x-2

c. Y =2x + 3

d. None

65. If the projectile motion range R is max then relation between H and R is

a. H =R/2

b. H =R/4

c. H =2R

d. H = R/8

66. The foci of the conic section $25x^2 + 16y^2 - 150x = 175$ are

a. $(0 , \pm 3)$

b. $(0 , \pm 2)$

c. $(3 , \pm 3)$

d. $(0 , \pm 1)$

67. A line passes through the point of intersection of the lines 3x + y +1 = 0 and 2xs – y +3 = 0 and makes equal intercepts with axes. Then equation of the line is

a. 5x + 5y -3 = 0

b. x + 5y -3 = 0

c. 5x - y -3 = 0

d. 5x + 5y +3 = 0

68. In r cos ɵ + risinϴ r and ɵ represents _____ respectively

a. Absolute value of modulus

b. Argument and modulus

c. Modulus and argument

d. Absolute value modulus and argument

69. The value of limit $x \to 0 \frac{(4x-1)3}{\sin\frac{x2}{4}\log(1+3)}$ is

a. 4/3 (in 4)^2

b. 4/3 (in 4)^3

c. 3/2 (in 4)^2

d. 3/2 (in 4)^3

70. $\int_0^3$ |x3 + x2 3x|dx is equal to

a. 171/2

b. 171/4

c. 170/4

d. 170/3

71. Let a $\begin{matrix} 1 & 5 \\ -5 & 1 \end{matrix}$ = and A^{-1} = xA +yI, then the value of x and y are

a. X=-1 ,y =2

b. X=-1 ,y =-2

c. X=1 ,y =2

d. X=1 ,y =-2

72. A plane x + y +z =- $\sqrt[\alpha]{3}$ touches the sphere 2x^2 +2y^2 +2z^2 -2x + 4y - 4z + 3 = 0

a. $\pm 1/\sqrt{3}$

b. $1/2\sqrt{3}$

c. $1-\frac{1}{\sqrt{3}}$

d. $1+\frac{1}{\sqrt{3}}$

73. The solution of the differential equation dy /dx + (2x /1 +x2) y = 1 /(1 +x2)^2 is

a. Y(1-x^2) =tan^{-1}x +c

b. Y(1+x^2) =tan^{-1}x +c

c. Y(1+x^2)^2 =tan^{-1}x +c

d. Y(1-x^2)^2 =tan^{-1}x +c

74. $\sum_{r=3}^{00} \frac{rc3-3r}{r!}$ is equal to

a. 6e2/2

b. 6e3/2

c. 9e2/2

d. 9e3/2

75. Let cos (2 tan^{-1} x = ½ then the value of x is

a. $\sqrt{3}$ 1

b. $\overline{\sqrt{3}}$

c. $1-\sqrt{3}$

d. $1-\frac{1}{\sqrt{3}}$

76. If $\sin^{-1}$ a is the acute angle between the curves $x^2+y^2 = 4x$ and $x^2+y^2 = 8$ at (2,2) , then a =

a. 1

0

b. 1

c. $\overline{\sqrt{2}}$

d. $\frac{\sqrt{3}}{2}$

77. The max area of rectangle that can be inscribed in a circle of radius 2 units is a. 8π sq . unit

b. 4 sq . unit

c. 5 sq . unit

d. 8 sq . unit

78. If the length of the subtangent at any point to the curve $x\,y^n = a$ proportional to the abscissa, then 'n' us

a. Any non-zero real number

b. 2

c. -2

d. 1

79. $\int \frac{cosn-1x}{\sin n+1x} cotnx dx$, n≠ 0 is

a. $\frac{}{\frac{n}{-cotn-1x}}$

b. $\frac{}{n-1}$

c. $-\frac{cot4x}{n}$

d. $\frac{cotn-1x}{n-1}$

80. The value of $\int_{-1}^{2} |x|/x\, dx$ is

a. 0

b. 1

c. 2

d. 3

1. If $\sin^{-1}x + \sin^{-1} y + \sin^{-1}z = 3\pi/2$ then the value of $x^9 + y^9 + z^9 – 1/ x^9 y^9 z^9$ is equal to
    a. 0
    b. 1
    c. 2
    d. 3
2. Let p, q, r be the sides opposite to the angle P,Q.R respectively in a triangle PQR. If r^2 sin P sin Q = pq then the triangle is
    a. Equilateral
    b. Acute angled but not equilateral
    c. Obtuse angled if sin
    d. Right angled
3. Let p, q, and r be sides opposite to the angles P, Q, R respectively in a triangle PQR. Then

    2 prsin (P-Q+R/2) equals
    a. $p^2 + q^2 + r^2$
    b. $p^2 + r^2 - q^2$
    c. $q^2 + r^2 - p^2$
    d. $p^2 + q^2 - r^2$
4. Let P (2,-3), Q (-2, 1) be the vertices of the triangle PQR. If the centroid of ΔPQR lies on the line 2x +3y = 1, then the locus of R is
    a. 2x + 3y = 9
    b. 2x - 3y = 9
    c. 3x + 2y = 5
    d. 3x - 2y = 5
5. If n(A) = m, then nP(A) =
    a. 2^n
    b. 2n
    c. 2^m
    d. 2m
6. If f is a real-valued differentiable function such that f(x) f'(x) < 0 for all real x, then
    a. F(x) must be an increasing function
    b. F(x) must be an decreasing function
    c. |F(x)| must be an increasing function
    d. |F(x)| must be an decreasing function

7. Role's theorem is applicable in the interval [-2,2] for the function

a. $F(x) = x^3$
b. $F(x) = 4x^4$
c. $F(x) = 2x^3 + 3$
d. $F(x) = \pi|x|$

8. The solution of $25\, d^2y/dx^2 - 10dy/dx + y = 0$, $y(0) = 1 y(1) = 2e^{1/5}$ is
   a. $y = e^{5x} + e^{-5x}$
   b. $y = (1 + x)\, e^{5x}$
   c. $y = (1 + x)\, e^{x/5}$
   d. $y = (1 + x)\, e^{-x/5}$
9. Let P be the midpoint of a chord joining the vertex of the parabola $y^2 = 8x$ to another point on it. then the locus of P is
   a. $= 2x$
   b. $y^2 = 4x$
   c. $x^2/4 + y^2 = 1$
   d. $x^2 + y^2/4 = 1$
10. the line $x = 2y$ intersects the ellipse $x^2/4 + y^2 = 1$ at the point P and Q. the equation of the circle with PQ as diameter is
    a. $x^2 + y^2 = 1/2$
    b. $x^2 + y^2 = 1$
    c. $x^2 + y^2 = 2$
    d. $x^2 + y^2 = 5/2$
11. the eccentric angle in the first quadrant of a point on the ellipse $x^2/10 + y^2/8 = 1$ at a distance 3 units from the center of the ellipse is
    a. $\pi/6$
    b. $\pi/4$
    c. $\pi/3$
    d. $\pi/2$
12. The transverse axis of a hyperbola is along the x axis and its length is 2a. The vertex of the hyperbola bisects the line segment joining the center and the focus. The equation of the hyperbola is
    a. $6x^2 - y^2 = 3a^2$
    b. $x^2 - 3y^2 = 3a^2$
    c. $x^2 - 6y^2 = 3a^2$
    d. $3x^2 - y^2 = 3a^2$
13. A point moves in such a way that the difference of its distance from two point (8, 0) and (-8, 0) always remains 4. Then the locus of the point is
    a. A circle
    b. A parabola

c. An ellipse

d. A hyperbola

14. The number of integer values of m, for which the x coordinate of the point of intersection of the lines 3x + 4y = 9 and y=mx +1 is also an integer is

a. 0

b. 2

c. 4

d. 1

15. If a straight line passes through the point (α,β) and the portion of the line intercepted between the axes is divided equally at the point, then x/ α + y/ β is

a. 0

b. 1

c. 2

d. 4

16. The maximum value of |z| when the Complex number z satisfies the condition |z + $\overline{2}$/z| is a. $\sqrt{3}$

b. $\sqrt{\overline{3}} + \sqrt{\overline{2}}$

c. $\sqrt{\overline{3+1}}$

d. $\sqrt{3-1}$

17. If $\overline{(3}/2 + i\sqrt{3}/2)^{56}$ =3 ^{25} (x +iy) , where x and y are real, then the ordered pair (x,y) is a. (-3,0)

b. (0,3)

c. (0,-3)

d. (½) ($\sqrt{\overline{3}}$/2)

18. If z-1/z+1 is purely imaginary, then

a. |z|= ½

b. |z|=1

c. |z|=2

d. |z|=3

19. Then inverse of q → p is ?

a. p → q

b. p → q

c. q→ p

d. q →p

20. a vehicle registration number consists of 2 letters of English alphabet followed by 4 digits, where the first digit is not zero. Then the total number of vehicles with distinct registration number is a. $26^2 \times 10^4$

b. ${}^{26}p_2 \times {}^{10}p_2$

c. ${}^{26}p_2 \times 9 \times {}^{10}p_3$

d. $26^2 \times 9 \times 10^3$

21. The number of the words that can be written using all the letter of the word "irrational" is a. $10! / (2!)^3$

b. $10! / (2!)^2$

c. $10! / 2!$

d. $10!$

22. Four speakers will address a meeting where speaker Q will always speak after speaker. Then the number of ways in which the order of speakers can be prepared is

a. 256

b. 128

c. 24

d. 12

23. The number of diagonals in a regular polygon of 100 sides is

a. 4950

b. 4850

c. 4750

d. 4650

24. Let the coefficients of powers of x in the 2^{nd}, 3^{rd} and 4th terms in the expansion of $(1+x)^n$ where is a +ive integer be in arithmetic progression. Then the sum of the coefficients of odd power of x in the expansion is

a. 23

b. 64

c. 128

d. 256

25. The sum $1 \times 1! + 2 \times 2! + \ldots\ldots\ldots 50 \times 50!$ Equal to

a. 51!

b. 51!-1

c. 51!+1

d. 51! X 2

26. Six numbers are in AP. Such that their sum is 3 the first term is 4 times the third term. Then the fifth term is

a. -15

b. -3

c. 9

d. -4

27. The sum of the infinite series 1 + 1/3 + 1.3/1.6 + 1.3.5/3.6.9 + 1.3.5.7/3.6.9.12 + ……. Is equal to

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

28. The equations $x^2 + x + a = 0$ and $x^2 + ax + 1 = 0$ have a common real root

a. For no value of a
b. For exactly one value of a
c. For exactly two value of a
d. For exactly three value of a

29. If 64, 27, 36, are the P^{th}, Q^{th} and the R^{th} terms of the G.P then P + 2Q is equal to a. R
b. 2R
c. 3R
d. 4R

30. The equation $y^2 + 4x + 4y + k = 0$ represents a parabola whose lotus rectum is a. 1
b. 2
c. 3
d. 4

31. If the circles $x^2 + y^2 + 2x + 2ky + 6 = 0$ and $x^2 + y^2 + 2ky + k = 0$ intersect orthogonally, then k is equal to

a. 2 or -3/2
b. -2 or-3/2
c. 2 or 3/2
d. -2 or 3/2

32. If four distinct points(2k,3k),(2,0),(0,3),(0,0) lie on a circle , then

a. K< 0
b. 0< K < 1
c. K = 1
d. K > 1

33. The line joining a(bcos α, bsin) and B(acos β, asin β) , where a ≠ b, is produced to the point

M(x,y) so that AM:MB = b:a. then x cos (α + β/2) +y sin (α + β/2)

a. 0
b. 1
c. -1
d. $a^2 + b^2$

34. let the foci of the ellipse $x^2/9 + y^2 = 1$ subtend right angle at a point P then the locus of P is a. $x^2 + y^2 = 1$

b. $x^2 + y^2 = 2$

c. $x^2 + y^2 = 4$

d. $x^2 + y^2 = 8$

35. the general solution of the differential equation dy /dx =(x+y+1/2x +2y +1) is

a. Log |3x +3y +2| +3x +6x =c

b. Log |3x +3y +2| -3x +6x =c

c. Log |3x +3y +2| -3x -6x =c

d. Log |3x +3y +2| +3x -6x =c

36. $A \subseteq B$

a. A ∩ B =A

b. A ∩ B' =A

c. A– B =A

d. A U B =A

37. The value of the integral $\int_0^{\pi/2}$ 1/1 +$(\tan x)^{101}$ dx is equal to

a. 1

b. π/6

c. π/8

d. π/4

38. the integrating factor of the differential equation 3x log x dy/dx +y = 2 log x is given by a. log x^3

b. log (log x)

c. log x

d. $(\log x)^{1/3}$

39. Number of solutions of the equation tan x + sec x = 2 cos x, $x \in [0,\pi]$ is

a. 0

b. 1

c. 2

d. 3

40. The value of the integral $\int_0^{\pi/4}$ sinx + cosx / 3 + sin2x dx is equal to

a. Log 2

b. Log 3

c. ¼ log 2

d. ¼ log 3

41. Let y= $(3^x – 1/3x+1)$sinx + log (2 +x) , x >-1 then at x = 0, dy /dx equals

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

42. Max value of the function f(x) = x/8 + 2/x on the interval [1,6] is

a. 1
b. 9/8
c. 13/12
d. 17/8

43. A non-empty set on which a binary operation can be defined is called

a. Group
b. Semi group
c. Groupoid
d. Ableian group
e. Monoid

44. The value of the integral $\int_{-2}^{2}$ $(1 + 2\sin x)e^{|x|}$ dx is equal to

a. 0
b. $e^2 - 1$
c. $2(e^2 - 1)$
d. 1

45. If $(\alpha + \sqrt{\beta})$ and $(\alpha - \sqrt{\beta})$ are the roots of the equation $x + px + q = 0$ where α, β, p, q are real then the roots of the equation $(p^2 - 4q)(p^2x^2 + 4px) - 16q = 0$ are

a. $(1/\alpha + 1/\sqrt{\beta})$ and $(1/\alpha - 1/\sqrt{\beta})$
b. $(1/\sqrt{\alpha} + 1/\beta)$ and $(1/\sqrt{\alpha} - 1/\beta$
c. $(1/\sqrt{\alpha} + 1/\sqrt{\beta})$ and $(1/\sqrt{\alpha} - 1/\sqrt{\beta})$
d. $(\sqrt{\alpha} + \sqrt{\beta})$ and $(\sqrt{\alpha} - \sqrt{\beta})$

46. The number of solutions of the equation $\log_2(x^2 + 2x - 1) = 1$ is

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

47. The sum of the series $1 + {}^{n}/_{2}C_1 + {}^{n}/_{3}C_2 + \ldots\ldots\ldots\ldots + {}^{n}/_{n+1}C_n$. a. $2^{n+1} - 1 / n+1$

b. $3(2^n - 1)/2n$
c. $2^n + 1/ n+1$

d. $2^n+1/2n$

48. The value of $\sum_{r=2}^{\infty} \frac{1+2+3+\cdots\ldots.(r-1)}{r!}$ I sequal to

a. e

b. 2e

c. e/2

d. 3e/2

49. If $\begin{vmatrix} 1 & 2 \\ & 1 \\ 1 & 3 & 1 \end{vmatrix}$ P = Q=PP^t , then the value of the determinant of Q is equal to a. 2

b. -2

c. 1

d. 0

50. The remainder obtained when 1! +2! +…….. +95! Is divided by 15 is

a. 14

b. 3

c. 1

d. 0

51. If P, Q R, are angles of triangle PQR then the value of $\begin{vmatrix} -1 & \cos R \\ \cos Q & \\ \cos R & -1 & \cos P \\ \cos Q & \cos P & -1 \end{vmatrix}$ is equal to

a. -1

b. 0

c. ½

d. 1

52. The number of real values of α for which the system of equations x +3y +5z =αx, 5x +y+3z =αy,

3x + 5y + z = αz has infinite number of solutions is

a. 1

b. 2

c. 4

d. 6

53. The total number of injections(one –one into mappings) from {a1,a2,a3,a4} to {b1,b2,b3,b4,b5,b6,b7} is

a. 400

b. 420

c. 800

d. 840

54. It the set G = {1, ω, ω2} is an abelian group w.r.t multiplication then inverse of ω is? a. 1
    b. ω
    c. ω^2
    d. does not contain an inverse

55. Two decks of playing cards are well shuffled and 26 cards are randomly distributed to a player.

Then the probability that the player gets all distinct cards o s

    a. $52C_{26} / 104C_{26}$
    b. $2 \times 52C_{26} / 104C_{26}$
    c. $2^{13} \times 52C_{26} / 104C_{26}$
    d. $2^{26} \times 52C_{26} / 104C_{26}$

56. An urn contains * red 5 white balls. Three balls are drawn at random. Then the probability that balls of both colors are drawn is
    a. 40/143
    b. 70/143
    c. 3/13
    d. 10/13

57. Two coin are available, one fair and the other two headed .choose a coin unbiased coin is chosen with probability ¾ given that the outcome is head the probability that the two headed coin was chosen is
    a. 3/5
    b. 2/5
    c. 1/5
    d. 2/7

58. Let R be the set of real numbers and the functions f:R→R and g : R→ R be defined f(x) = $X^2 + 2x$

-3 and g(x) =x +1 then the value of x for which f(g(x)) g(f(x)) is
    a. -1
    b. 0
    c. 1
    d. 2

59. If a ,b,c are in arithmetic progression, then the roots of the equation $ax^2-2bx + c =0$ are a. 1 and c/a
    b. -1/a and –c
    c. -1 and –c/a
    d. -2 and –c/2a

60. Let γ be the solution of the differential equation x dy/dx = y^2/1-logx satisfying y(1) =1 then γ satisfies

a. Y =x^{y-1}
b. Y =x^{y}
c. Y=x^{y+1}
d. Y=x^{y+2}

61. The area of the region bounded by the curves y = sin -1x + x(1-x) and y = sin -1x –(1-x) in the first quadrant is

a. 1
b. ½
c. 1/3
d. ¼

62. The value of the integral $\int_1^5$ [|x-3| +1-x|]dx is equal to

a. 4
b. 8
c. 12
d. 16

63. If f (x) and g(X) are twice differentiable functions on (0,3) satisfying f"(x) =g"(x), f(1) =4 g(1)=6 f(2) =3 g(2) =9 then f(1)-g(1) is

a. 4
b. -4
c. 0
d. -2

64. Let (x) denote the greater integer less than or equal to x, then the value of the integral $\int_{-1}^{1}$ [|x| -2[x]]dx is equal to

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

65. The points representing the complex number z for which arg(z-2/z+2) =π/3 lies on a. A circle
b. A straight line
c. An ellipse
d. A parabola

66. Let a, b, c, p, q, r be positive real numbers such that a, b ,c are in G.P and a^p =b^q =c^r then A,B,C a. p, q rare in G.P
b. p, q rare in A.P

c. p, q rare in H.P

d. p^2,q^2 and r^2 rare in A.P

67. a compound statement at the form "If p then q " is called

a. implication

b. hypothesis

c. tautology

d. contingency

68. The quadratic equation $2x^2(a^3 +8a -1) x a^2 -4a =0$ possesses roots of opposite sign. then

a. $a \leq 0$

b. 0<a<4

c. $4 \leq a < 8$

d. $a \geq 8$

69. if log (x2 -16) $\leq \log(4x - 11)$, $then$

a. $4<x\leq 5$

b. X< -4 0r x>4

c. $-1\leq x \leq 5$

d. X<-1 0r x>5

70. The coefficient of x^{10} in the expansion of 1+ (1+x) +……+$(1+x)^{10}$ is a. $_{19}C_9$

b. $_{20}C_{10}$

c. $_{21}C_{11}$

d. $_{22}C_{12}$

71. The system of linear equation λx+ y+ z =3, x-y-2z=6, -x + y +z =μ

a. Infinite number of solutions for λ ≠-1 and all μ

b. Infinite number of solutions for λ =-1 and all μ =3

c. No solution for λ ≠-1

d. Unique solution for λ =-1 and all μ =3

72. Let A and B be two events with $P(A^c)$ =0.3, P (B)=0.4 and P(A ∩B') =0.5 Then P(B/(AUB')) is equal to

a. ¼

b. 1/3

c. ½

d. 2/3

73. The set of real number is a subset of

a. Set at natural number

b. Set of whole number

c. Set of…….

d. Set of complex number

74. Let C_1 and C_2 denote the cents of the circles $x^2 + y^2 = 4$ and $(x-2)^2 + y^2 = 1$ respectively and let P and Q be their Points of intersection. The n the area of triangle C_1PQ and C_2PQ are in ration a. 3:1

b. 5:1

c. 7:1

d. 9:1

75. A Straight line through the point of intersection of the lines $x + 2y = 4$ and $2x + y = 4$ meet the coordinates axes at A and B the locus of the midpoint of AB is

a. $3(x + y) = 2xy$

b. $2(x + y) = 3xy$

c. $2(x + y) = xy$

d. $(x\ y) = 3xy$

76. Let P and Q be the points on the parabola $y^2 = 4x$ so that the line segment PQ subtends right angle at the vertex. If PQ intersects the axis of the parabola at R then the distance of the vertex from R is

a. 1

b. 2

c. 4

d. 6

77. The set {{a , b}} is called

a. Singleton set

b. Proper

c. Overlapping set

d. Improper set

78. The value of $\lim x \to \infty\ (n!)^{1/n}/n$ is

a. 1

b. $1/e^2$

c. 1/2e

d. 1/e

79. The area of the region bounded by the curve y =x3 ,y =(1/x) x=2 is

a. 2 –log2

b. ¼ - log2

c. 3 –log2

d. 15/4 –log 2

80. Let $f(x) = ax^2 + bx + c$, $g(x) = px^2 + qx + r$ such that $f(1) = g(2)$, $f(2) = g(2)$ and $f(3) - g(3) = 2$. then $f(4) - g(4)$ is

a. 4
b. 5
c. 6
d. 7

(3)

1. If V =[2,1,3] and W =[-1,4,0] then[V-2W]=
   a. $\sqrt{76}$
   b. $\sqrt{74}$
   c. $\sqrt{89}$
   d. 0
2. The projection of a = i-2j +k along b =4i -4j +7k is
   a. 19/8
   b. 9/19
   c. 8/19
   d. 19/9
3. 0 is a
   a. A Rational number
   b. An Irrational number
   c. Whole number
   d. A positive integer
4. If u =-1 +2j +4k and v =2i – j + 4k are two adjacent sides of a parallelogram then area of parallelogram is
   a. $\sqrt{290}$
   b. $\sqrt{279}$
   c. $\sqrt{297}$
   d. 0
5. The value of 3j(k + i) =
   a. 3
   b. 4

c. 6

d. 0

6. If z = (1, 2), then 1/z =?

a. 0.2 ,0.4

b. -0.2 ,0.4

c. 0.2 ,-0.4

d. -0.2 ,-0.4

7. a vector of magnitude 5 and perpendicular to a = I + 3j –k and b=3i –j is

a. $\frac{5}{\sqrt{110}}(-i-3j-10k)$

b. $\frac{5}{\sqrt{17}}(-i-3j-10k)$

c. $\frac{5}{\sqrt{110}}(-i+3j-10k)$

d. $\frac{5}{\sqrt{17}}(-i+3j-10k)$

8. The area enclosed by the triangle ABC whose vertices are A(1,2,-3) B(0,0,0) and c (2,7,4) is a. $\sqrt{676}$

b. $\sqrt{845}$ /2

c. $\sqrt{184}$

d. 27

9. [k-I , i-j , j-k] =

a. 1

b. -1

c. 1/2

d. 0

10. It Q , R. are any sets, then Q – R =

a. Q ∩ ($Q-R$)

b. Q–($Q \cup R$)

c. Q–($Q \cap R$)

d. Q ∪ ($Q-R$)

11. The equation| x + 4| = x has solution

a. X = -2

b. X = 2

c. X = -4

d. X = 4

12. Geometrically, the modulus of a complex number represents its distance from the a. Point (1 , 0)

b. Point (0 , 1)

c. Point (1 , 1)

d. Point (0 , 0)

13. Associative law of multiplication

a. ab = ba

b. a(bc) = (ab)c

c. a(a + b) = ab +bc

d. (a + b)c = ac + bc

14. a.a-1 = a-1.a =1 is a

a. Commutative law of multiplication

b. Multiplicative identity

c. Associative law of multiplication

d. Multiplicative inverse

15. (a +bi) – (c + di) =

a. (a + b) = (c + d)

b. (a + c) + i(b + d)

c. (a - c) + i(c - d)

d. (a - c) + i(b - d)

16. (a , b) +(-a , b) =

a. (0 , 0)

b. (a , b)

c. (-a , -b)

d. (1 , 1)

17. (a , 0) x(c , 0) =

a. (0 ,ac)

b. (ac,0)

c. (0,0)

d. (a , c)

18. (7 , 9) + (3 ,-5) =

a. (4 , 4)

b. (10 ,4)

c. (9 , -5)

d. (7 , 3)

19. If z1 =2 + 6i and z2 =3 + 7i, then which expression defines the products of z1 and z2? a. 36 + (-32)i

b. -36 + 32i

c. 6 + (-11)i

d. 0, + (-12)i

20. Which element is the additive inverse of (a, b) in complex numbers?

a. (a , 0)

b. (0 , b)

c. (a , b)

d. (-a , -b)

21. The set (Z , t) forms a group

a. Forms a group w.r.t addition

b. Non commutative group w.r.t multiplication

c. Forms a group w.r.t multiplication

d. Does not form group

22. Which of the following has the same value as i^{113}?

a. i

b. -1

c. –i

d. 1

23. P: Islamabad is a capital of Pakistan q: Lahore is not a city of Pakistan, the conjunction of p q

is

a. False

b. True

c. Not valid

d. Known

24. A disjunction of two statement p and q is true if

a. P is false

b. Both p and q is true

c. One of P and q is true

d. Q is false

25. The set of real number R is a subset of

a. The set of natural Numbers N

b. The set of inters Z

c. The set of complex numbers C
d. The set of even integer E

26. An element ‘b’ of a set B can be written as
a. b □ B
b. b < B
c. b □ B
d. B □ b

27. The set A is
a. Improper subset of A
b. Proper submit of A
c. Not a subset of A
d. Not superset of A

28. A set containing only one element is called the
a. Empty set
b. Singleton set
c. Null set
d. Solution set

29. To each element of a group there correspond how many inverse element
a. Only one
b. At least one
c. More than one
d. Two

30. The set of students of your class is
a. Infinite set
b. Finite set
c. Empty set
d. Null set

31. To draw general conclusions from accepted or well-known facts is called:
a. Induction
b. Proposition
c. Deduction
d. Aristotelian logic

32. The truth value of the proportion is a positive number or 2+2 = 4 is
a. True
b. False

c. Contingency
d. None

33. The draw general conclusions from a limited number of observation or experiences is called a. Proposition
b. Deduction
c. Induction
d. Knowledge

34. A declarative statement which may be3 true or false but not both is called
a. Proposition
b. Deduction
c. Induction
d. Knowledge

35. Which of the following is not mooned w.r.t addition?
a. Z
b. N
c. W
d. R

36. DEDUCTIVE LOGIC IN WHICH EVERY STATEMENT IS REGARDED AS TRUE OR FALSE AND THERE IS
SCOPE FOR A THIRD OR FOURTH POSSIBILITY IS CALLED
a. PROPOSITION
b. DEDUCTION
c. NON Aristotelian logic
d. Aristotelian logic

37. A disjunction of two statements p and q is true if
a. P IS FALSE
b. Both p and q are false
c. One of p and q is true
d. Q is false

38. The identity element of N, w.r.t addition is
a. 1
b. 0
c. 2
d. None

39. The set of the first element of the ordered pairs forming a relation is called ots:
a. Relation of A to B
b. Relation from B to A
c. Relation in A

d. Relation in B

40. A subset of B x A is called a

a. Relation of A to B

b. Relation from B to A

c. Relation in A

d. Relation in B

41. Cos [-150(□/2) =?

a. 0

b. 1

c. -1

d. □

42. 45^0 =?

a. 3□/2 radians

b. 2□/3 radians

c. □/4

d. 180□ radians

43. A circular wire of radius 3cm us cut straightened and then bent so as to lie along the circumference of a hoop of radius 24cm.the measure of the angle subs tended at the center of the hope is

a. 15^0

b. 30^0

c. 45^0

d. 60^0

44. The area of a sector with a central angle of 0.5 radians in a circular region whose radius is 2m is a. □/2 m^2

b. □/3 m^2

c. □/6 m^2

d. $1m^2$

45. The multiplicative inverse of – 1 in the set {-1,1}is:

a. 1

b. -1

c. ±1

d. 0

46. The values of cos 20+ sec 20 is always

a. Less than 1
b. Equal to 1
c. Greater then 1,but less than 2
d. Greater than or equal to 2.

47. The maximum value of sin x + Cos x is
a. 1
b. 2
c. $\sqrt{2}$
d. $1/\sqrt{2}$

48. In a school, there are 150 students. Out of these 80 students enrolled for mathematics class, 50 enrolled for English class, and 60 enrolled for physics class. The student enrolled for English cannot attend any other class, but the students of mathematics and physics can take two courses at a time. Find the number of students who have taken both physics and mathematics. a. 40
b. 30
c. 50
d. 20

49. The set { {a, b } } is
a. Infinite set
b. Singleton set
c. Two points set
d. None

50. Sin 500- sin700 + sin100 is equal to
a. 1
b. 2
c. ½
d. 2.

51. The graph of a quadratic function is
a. Circle
b. Ellipse
c. Parabola
d. hexagon

52. The set of complex number forms a group under the binary operation of
a. Addition
b. Multiplication

c. Division
d. Subtraction

53. The multiplicative inverse of – 1 in the {1,-1} is
a. 1
b. -1
c. ±1
d. 0
e. Does not exist

54. The set {1,- 1/,*i* ,*i*}, form a group under
a. Addition
b. Multiplication
c. Subtraction
d. None

55. The set of all positive even integers is
a. Not a group
b. A group w.r.t, subtraction
c. A group w.r.t, division
d. A group w.r.t, multiplication

56. The vector quantity in the following
a. Distance
b. Impulse
c. Energy
d. 1

57. The set (Q,)
a. Forms a group
b. Does not room a group
c. Contains no additive identity
d. Conations on additive inverse

58. The set (Z, +) forms a group
a. Forms a group w.r.t addition
b. Non commutative group w.r.t multiplication
c. Forms a group w.r.t Multiplication
d. Doesn't form a group

59. Total number of subsets that can be formed out of the set{a, b, c}is
a. 1

b. 4

c. 8

d. 12

60. Additive inverse of – a- b is

a. A

b. –a+ b

c. A-b

d. A+ b

61. If x = 1/x for x □R then the respect to subtraction is

a. 0

b. 1

c. 2

d. 4

62. The identity element with respect to subtraction is

a. 0

b. 1

c. ±1

d. Does not exist

63. Multiplicative inverse of 0 is

a. 0

b. 1

c. ±1

d. Does not exist

64. Decimal part of irrational number is

a. Terminating

b. Repeating only

c. Neither repeating nor terminating

d. Repeating and terminating

65. The trigonometric ratio change into co- ratio and vice versa if ϕ is added to or subtracted from a. Even – multiple of right angle

b. Odd of □/2 multiple

c. Both a and b

d. None of these

66. In a country, 55% of the male population has houses in cities while 30% have houses both in cities and in villages. Find the percentage of the population that has houses only in villages, a. 45

b. 30
c. 25
d. 50

67. If a function f: A→ B is such that fan f=B then f is a/ an?
a. Into function
b. Onto function
c. Bi-jective function
d. one – one function

68. the set of the first elements of the orders pairs forming a relation is called its
a. relation in B
b. range
c. Domain
d. Relation in A

69. A function in which the second elements of the order pairs are distinct is called
a. Onto function
b. One-one function
c. Identity function
d. Inverse function

70. A function whose range is just one element is called
a. One –one function
b. Constant function
c. Onto function
d. Identity function

71. The graph of a quadratic function is
a. Circle
b. Straight line
c. Parabola
d. Triangle

72. To each element of a group there corresponds_____ inverse element
a. Two
b. One
c. No
d. Three

73. The set of integer is
a. Finite group
b. A group w.r.t addition
c. A group w.r.t multiplication

d. Not a group

74. The set of complex number forms

a. Commutative group w.r.t addition
b. Commutative group w.r.t multiplication
c. Commutative group w.r.t division
d. Non commutative group w.r.t addition

75. The set R is _____ w.r.t subtraction

a. Not a group
b. A group
c. No conclusion drawn
d. Non commutative group

76. Power set of x I.e. p(x)_____under the binary operation of union U

a. Forms a group
b. Does not form a group
c. Has no identity element
d. Infinite set although x is infinite

77. Any point, where f is neither increasing nor decreasing and f'' (x) =0 at that point, is called a a. Minimum

b. Maximum
c. Stationary point
d. Constant point

78. If A={1,2,3,4,5,6} and gives relation {(1,1),(2,2),(3,3),(4,4),(5,5),(6,6)} is called:

a. Binary relation
b. Inverse relation
c. Range at a relation
d. Identity relation

79. The transpose of a row matrix is a

a. Column matrix
b. Diagonal matrix
c. Zero matrix
d. Scalar matrix

80. Which of the following is unary operation:

a. Square root
b. Union of sets
c. Addition
d. Multiplication

(4)

1. The subset A of B which is different from the set of B itself, is called
    a. Proper subset
    b. Improper subset
    c. Subset
    d. Equal set
2. 0.12345678912345678912345678 9….
    a. An irrational number
    b. A rational number
    c. A whole number
    d. A –ive number
3. Every integer number is also
    a. Irrational number
    b. Whole number
    b. Natural number
    c. Rational number
4. The number $\sqrt{n}$, where n is a prime number is
    a. A Rational number
    b. An Irrational number
    c. A Natural number
    d. integer number
5. The additive inverse of real numbers
    a. 0
6. If z = a + b then?
    a. –(a + b)
    b. –a + b
    c. a – b
    d. none
7. The multiplicative inverse of 2 is
    a. 0
    b. 1
    c. -2
    d. ½

8. Conjugate of (-3 , 4) is
   a. (3 , 4)
   b. (3 ,-4)
   c. (-3 ,-4)
   d. (-3 , 4)
9. 1 > -1 -3 > -5, this property is called
   a. Additive property
   b. Transitive property
   c. Multiplicative property
   d. Closure property
10. It Q , R. are any sets, then Q – R =
   a. Q ∩ ($Q - R$)
   b. Q—($Q \cup R$)
   c. Q—($Q \cap R$)
   d. Q ∪ ($Q - R$)
11. The equation| x + 4| = x has solution
   a. X = -2
   b. X = 2
   c. X = -4
   d. X = 4
12. Geometrically, the modulus of a complex number represents its distance from the a. Point (1 , 0)
   b. Point (0 , 1)
   c. Point (1 , 1)
   d. Point (0 , 0)
13. Associative law of multiplication
   a. ab = ba
   b. a(bc) = (ab)c
   c. a(a + b) = ab +bc
   d. (a + b)c = ac + bc
14. a.a-1 = a-1.a =1 is a
   a. Commutative law of multiplication
   b. Multiplicative identity
   c. Associative law of multiplication
   d. Multiplicative inverse
15. (a +bi) – (c + di) =
   a. (a + b) = (c + d)
   b. (a + c) + i(b + d)

c. (a - c) + i(c - d)

d. (a - c) + i(b - d)

16. (a , b) +(-a , b) =

a. (0 , 0)

b. (a , b)

c. (-a , -b)

d. (1 , 1)

17. (a , 0) x(c , 0) =

a. (0 ,ac)

b. (ac,0)

c. (0,0)

d. (a , c)

18. (7 , 9) + (3 ,-5) =

a. (4 , 4)

b. (10 ,4)

c. (9 , -5)

d. (7 , 3)

19. If z1 =2 + 6i and z2 =3 + 7i, then which expression defines the products of z1 and z2? a. 36 + (-32)i

b. -36 + 32i

c. 6 + (-11)i

d. 0, + (-12)i

20. Which element is the additive inverse of (a, b) in complex numbers? a. (a , 0)

b. (0 , b)

c. (a , b)

d. (-a , -b)

21. The set (Z , t) forms a group

a. Forms a group w.r.t addition

b. Non commutative group w.r.t multiplication

c. Forms a group w.r.t multiplication

d. Does not form group

22. Which of the following has the same value as i^{113}?

a. i

b. -1

c. –i

d. 1

23. P: Islamabad is a capital of Pakistan q: Lahore is not a city of Pakistan, the conjunction of p q is a. False
    b. True
    c. Not valid
    d. Known

24. A disjunction of two statement p and q is true if
    a. P is false
    b. Both p and q is true
    c. One of P and q is true
    d. Q is false

25. The set of real number R is a subset of
    a. The set of natural Numbers N
    b. The set of inters Z
    c. The set of complex numbers C
    d. The set of even integer E

26. An element 'b' of a set B can be written as
    a. b □ B
    b. b < B
    c. b □ B
    d. B □ b

27. The set A is
    a. Improper subset of A
    b. Proper submit of A
    c. Not a subset of A
    d. Not superset of A

28. A set containing only one element is called the
    a. Empty set
    b. Singleton set
    c. Null set
    d. Solution set

29. To each element of a group there correspond how many inverse element
    a. Only one
    b. At least one
    c. More than one
    d. Two

30. The set of students of your class is

a. Infinite set
b. Finite set
c. Empty set
d. Null set

31. To draw general conclusions from accepted or well-known facts is called:
a. Induction
b. Proposition
c. Deduction
d. Aristotelian logic

32. The truth value of the proportion is a positive number or 2+2 = 4 is
a. True
b. False
c. Contingency
d. None

33. The draw general conclusions from a limited number of observation or experiences is called a. Proposition
b. Deduction
c. Induction
d. Knowledge

34. A declarative statement which may be3 true or false but not both is called
a. Proposition
b. Deduction
c. Induction
d. Knowledge

35. Which of the following is not mooned w.r.t addition?
a. Z
b. N
c. W
d. R

36. DEDUCTIVE LOGIC IN WHICH EVERY STATEMENT IS REGARDED AS TRUE OR FALSE AND THERE IS
SCOPE FOR A THIRD OR FOURTH POSSIBILITY IS CALLED
a. PROPOSITION
b. DEDUCTION
c. NON Aristotelian logic
d. Aristotelian logic

37. A disjunction of two statements p and q is true if

a. P IS FALSE
b. Both p and q are false
c. One of p and q is true
d. Q is false

38. The identity element of N, w.r.t addition is

a. 1
b. 0
c. 2
d. None

39. The set of the first element of the ordered pairs forming a relation is called ots:

a. Relation of A to B
b. Relation from B to A
c. Relation in A
d. Relation in B

40. A subset of B x A is called a

a. Relation of A to B
b. Relation from B to A
c. Relation in A
d. Relation in B

41. Cos [-150(□/2) =?

a. 0 b. 1 c. -1

d. □

42. 45^0 =? a. 3□/2 radians b. 2□/3 radians c. □/4 d. 180□ radians

43. A circular wire of radius 3cm us cut straightened and then bent so as to lie along the circumference of a hoop of radius 24cm.the measure of the angle subs tended at the center of the hope is

a. 15^0
b. 30^0
c. 45^0
d. 60^0

44. The area of a sector with a central angle of 0.5 radians in a circular region whose radius is 2m is a. □/2 m^2

b. □/3 m^2

c. □/6 m^2

d. $1m^2$

45. The multiplicative inverse of – 1 in the set {-1,1}is:

a. 1

b. -1

c. ±1

d. 0

46. The values of cos 20+ sec 20 is always

a. Less than 1

b. Equal to 1

c. Greater then 1,but less than 2

d. Greater than or equal to 2.

47. The maximum value of sin x + Cos x is

a. 1

b. 2

c. $\sqrt{2}$

d. $1/\sqrt{2}$

48. In a school, there are 150 students. Out of these 80 students enrolled for mathematics class, 50 enrolled for English class, and 60 enrolled for physics class. The student enrolled for English cannot attend any other class, but the students of mathematics and physics can take two courses at a time. Find the number of students who have taken both physics and mathematics. a. 40

b. 30

c. 50

d. 20

49. The set { {a, b } } is

a. Infinite set

b. Singleton set

c. Two points set

d. None

50. Sin 500- sin700 + sin100 is equal to

a. 1

b. 2

c. ½

d. 2.

51. The graph of a quadratic function is

a. Circle
b. Ellipse
c. Parabola
d. hexagon

52. The set of complex number forms a group under the binary operation of
a. Addition
b. Multiplication
c. Division
d. Subtraction

53. The multiplicative inverse of – 1 in the {1,-1} is
a. 1
b. -1
c. ±1
d. 0
e. Does not exist

54. The set {1,- 1/,*i* ,*i*}, form a group under
a. Addition
b. Multiplication
c. Subtraction
d. None

55. The set of all positive even integers is
a. Not a group
b. A group w.r.t, subtraction
c. A group w.r.t, division
d. A group w.r.t, multiplication

56. The vector quantity in the following
a. Distance
b. Impulse
c. Energy
d. 1

57. The set (Q,)
a. Forms a group
b. Does not room a group
c. Contains no additive identity
d. Conations on additive inverse

58. The set (Z, +) forms a group

a. Forms a group w.r.t addition
b. Non commutative group w.r.t multiplication
c. Forms a group w.r.t Multiplication
d. Doesn't form a group

59. Total number of subsets that can be formed out of the set{a, b, c}is
a. 1
b. 4
c. 8
d. 12

60. Additive inverse of – a- b is
a. A
b. –a+ b
c. A-b
d. A+ b

61. If x = 1/x for x □R then the respect to subtraction is
a. 0
b. 1
c. 2
d. 4

62. The identity element with respect to subtraction is
a. 0
b. 1
c. ±1
d. Does not exist

63. Multiplicative inverse of 0 is
a. 0
b. 1
c. ±1
d. Does not exist

64. Decimal part of irrational number is
a. Terminating
b. Repeating only
c. Neither repeating nor terminating
d. Repeating and terminating

65. The trigonometric ratio change into co- ratio and vice versa if ϕ is added to or subtracted from a. Even – multiple of right angle

b. Odd of □/2 multiple
c. Both a and b
d. None of these

66. In a country, 55% of the male population has houses in cities while 30% have houses both in cities and in villages. Find the percentage of the population that has houses only in villages, a. 45

b. 30
c. 25
d. 50

67. If a function f: A→ B is such that fan f=B then f is a/ an?

a. Into function
b. Onto function
c. Bi-jective function
d. one – one function

68. the set of the first elements of the orders pairs forming a relation is called its

a. relation in B
b. range
c. Domain
d. Relation in A

69. A function in which the second elements of the order pairs are distinct is called

a. Onto function
b. One-one function
c. Identity function
d. Inverse function

70. A function whose range is just one element is called

a. One –one function
b. Constant function
c. Onto function
d. Identity function

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Do prepare them well if you want to Score good in Maths. ☺