INSTRUCTIONS **NUMBER OF QUESTIONS : 100** **TIME : 2 Hrs**

1. ATTEMPT ALL QUESTIONS WITHIN THE TIME.
2. EACH QUESTION CARRIES 1 MARK
3. NO NEGATIVE MARKS.
4. DON'T DO ROUGH WORK ON QUESTION PAPER AND OMR.
5. USE BLACK (OR) BLUE PEN FOR BUBBLING ON OMR.

CORRECT METHOD OF BUBBLING

WRONG METHOD OF BUBBLING

INTO 10TH STATE & CBSE

MATHEMATICS

1. Which of the following is rational number

   1) $\sqrt{27}$ 2) $\sqrt{225}$ 3) $\sqrt{5}$ 4) $3\sqrt{2}$

2. Simplify: $\frac{23}{5}-\frac{17}{15}-\frac{25}{9}-\frac{2}{45}$

   1) $\frac{19}{60}$ 2) $\frac{29}{45}$ 3) $\frac{17}{60}$ 4) $\frac{8}{45}$

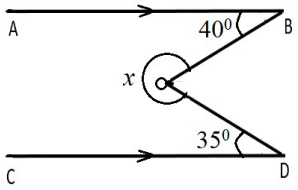
3. One of the linear factor of $3x^2+8x+5$ is

   1) $x+1$ 2) $x-2$ 3) $x+2$ 4) $x-4$

4. If $a^2-5a+1=0$ and $a\neq 0$, then $a+\frac{1}{a}=$

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

5. In the given figure, $AB \parallel CD$. Find the value of x



   1) 189^0 2) 215^0 3) 285^0 4) 280^0

6. It is know that if $x+y=10$ then $x+y+z=10+z$. Now Euclid's axiom that illustrates this statement is

   1) First axiom 2) Second axiom 3) Third axiom 4) Fourth axiom

7. If 15^3-8^3 is divisible by k, then find value of k

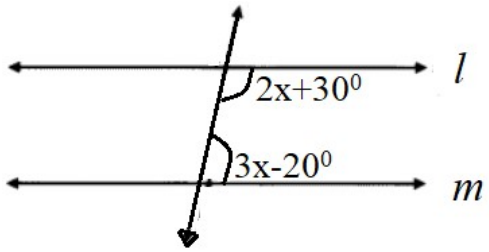
   1) 7 2) 2 3) 4 4) 8

8. The polynomial $f(x)=x^2+1$ has_____

1) two zeroes 2) one zero

3) three zeroes 4) no zeroes

9. In the given figure $l \| m$, then find measure of 'x'



1) 34^0 2) 36^0 3) 32^0 4) 33^0

10. Simplify: $\dfrac{\sqrt{18}}{5\sqrt{18}+3\sqrt{72}-2\sqrt{162}}$

1) $\dfrac{1}{5}$ 2) $\dfrac{1}{3}$ 3) $\dfrac{1}{2}$ 4) $\dfrac{2}{3}$

11. Which of the following is true

1) Every rational number is a natural number

2) Every rational number is a whole number

3) Every integer is a rational number

4) Every integer is a whole number

12. If $a=b^{2x}, b=c^{2y}$, *and* $c=a^{2z}$ *then* $8xyz=$

1) 1 2) 2 3) 3 4) 4

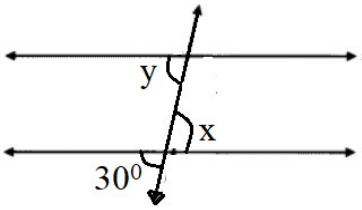
13. Find the value of $\dfrac{1}{\sqrt{2}+1}+\dfrac{1}{\sqrt{3}+\sqrt{2}}+\dfrac{1}{2+\sqrt{3}}=$

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

14. Which one of the following is not a polynomial?

1) x^3+4x^2+3 2) $x^3+7x+\sqrt{x}$ 3) y^5+6y 4) x^2+x+2

15. In the given figure $l_1 \| l_2$, then $\angle x+\angle y=$



1) 60^0 2) 30^0 3) 0^0 4) 150^0

16. If $f(x)=x+3$, then $f(x)+f(-x)=$

1) 3 2) x 3) 0 4) 6

17. If $x>0$ *and* $y<0$, then the point $(x,-y)$ lies in

1) 1st quadrant 2) 2nd quadrant 3) 3rd quadrant 4) 4th quadrant

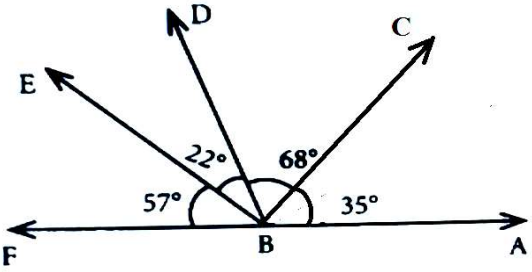
18. Find the product of coefficient of x^2 and degree in the polynomial $p(x)=x^3-5x^2+6x+7$.

1)-15 2) 6 3)7 4) -25

19. If $x^3+y^3+z^3=3xyz$ *and* $x+y+z=0$, then find the value of $\frac{(x+y)^2}{xy}+\frac{(y+z)^2}{yz}+\frac{(z+x)^2}{zx}$.

1)1 2) 2 3)3 4) 4

20. In the given figure, which angle is complementary to $\angle CBD$?



1) $\angle FBC$ 2) $\angle EBF$ 3) $\angle ABC$ 4) $\angle DBE$

21. If $x-1$ is a factor of polynomial $f(x)$ but not of g(x), then it must be a factor of

1) $f(x)g(x)$ 2) $-f(x)+g(x)$ 3) $f(x)-g(x)$ 4) $\big(f(x)+g(x)\big)g(x)$

22. $(x+1)$ is a factor of x^n+1 only if

1) n is an odd integer 2) n is an even integer
3) n is a negative integer 4) n is a positive integer

23. $\frac{3}{1^2 2^2}+\frac{5}{2^2 3^2}+\frac{7}{3^2 4^2}+.....+\frac{19}{9^2 10^2}$ then the relation between numerator(N) and denominator(D)?

1) $N=D$ 2) $N=D+1$ 3) $N+1=D$ 4) $N=2D$

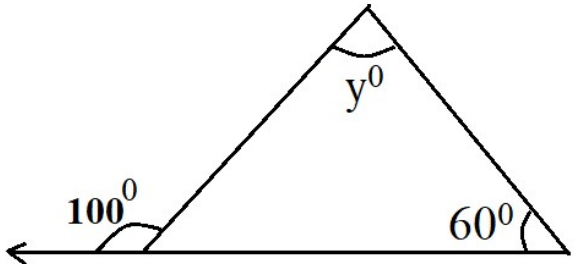
24. If 'x' represents the age of father and y represents the present age of his son, then the statement for 'present age of father is 5 more than 6 times the age of son' in terms of mathematical equation is

1) $6x+y=5$ 2) $x=6y+5$ 3) $x+6y=5$ 4) $x-y=5$

25. The total number of propositions in "The Elements" are

1)465 2) 460 3)13 4) 55

26. In the given figure, find the measure of y



1)20^0 2) 40^0 3)50^0 4) 160^0

27. Pythagoras was a student of_____

1) Thales 2) Euclid 3) Both 1 and 2 4) Archimedes

28. If $x = 2 + 2^{\frac{1}{3}} + 2^{\frac{2}{3}}$, then find the value of $x^3 - 6x^2 + 6x - 2$.

1) 1 2) 0 3) 12 4) 21

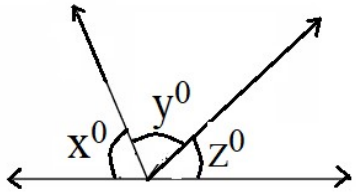
29. The point which lies on the y-axis at a distance of 5 units in the negative direction of the y-axis is

1) (5, 0) 2) (0, 5) 3) (-5, 0) 4) (0, -5)

30. Find the value of $\frac{2x}{3x^2 - 6065x + 3}$ if $x + \frac{1}{x} = 2022$

1) 1 2) 2 3) 3 4) 4

31. In the given figure, if $\frac{y}{x} = 5$ *and* $\frac{z}{x} = 4$ then the value of x is



1) 8^0 2) 18^0 3) 12^0 4) 15^0

32. If $\frac{a^2 - 19a - 25}{a - 7} = a - 12 + \frac{R}{a - 7}$ *then* $R =$

1) -109 2) -88 3) -84 4) -64

33. If $(x + 7, 5y) = (-2x, 6 + y)$, then $3x + 4y =$

1) 1 2) -1 3) 3 4) -3

34. If (3, –2) is a solution of the equation $4px - 3y = 12$ then $p =$

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

35. The HCF of two numbers is 18. Which of the following cannot be their LCM?

1) 324 2) 260 3) 648 4) 360

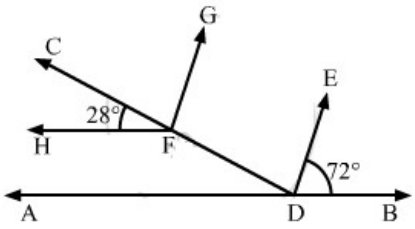
36. The equation of the x-axis is

1) $x = 0$ 2) $y = 0$ 3) $x = y$ 4) $x = -y$

37. How many linear equations in x and y can be satisfied by $x = 1$ and $y = 2$?

1) Only one 2) Only two 3) Infinitely many 4) Only three

38. In the given figure, if $AB \| HF$ *and* $DE \| FG$, then the measure of $\angle FDE$ is



1) 108^0 2) 80^0 3) 100^0 4) 90^0

39. The equation $2x+5y=7$ has unique solution if x, y are

1) Rational numbers 2) Real numbers

3) Natural numbers 4) Positive real numbers

40. The line segment has _____

1) One direction 2) Two directions 3) No direction 4) Many directions

41. Find the least rationalising factor of $\sqrt{27}$.

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

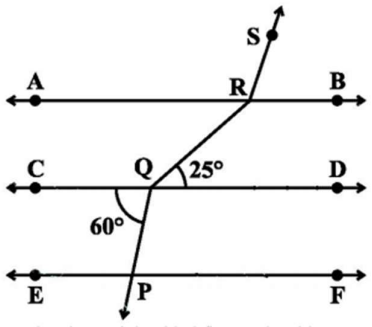
42. If $AB=x+3, BC=2x$ *and* $AC=4x-5$ then for what value of x, B lies on AC

1) 2 2) 3 3) 4 4) 8

43. If $m=\frac{(32)^{0.2}+(81)^{0.25}}{(121)^{0.5}-(256)^{0.5}}$, $n=1+\frac{1}{2+\frac{1}{8+\frac{1}{5}}}$ and $f(x)=5x^3+x^2-3x+6$ then find the value of $f(m)+87n$.

1) 25 2) 100 3) 133 4) 201

44. In the given figure, if $AB \| CD \| EF$, $PQ \| RS$, $\angle RQD = 25^0$ *and* $\angle CQP = 60^0$, then $\angle QRS =$



1) 85^0 2) 110^0 3) 135^0 4) 145^0

45. Zero of the zero polynomial is

1) 0 2) 1 3) Any real number 4) Not defined

46. *Find the value of* $\frac{1}{1+x^{b-a}+x^{c-a}}+\frac{1}{1+x^{a-b}+x^{c-b}}+\frac{1}{1+x^{b-c}+x^{a-c}}$.

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

47. Factorise $\frac{(5x^2+70x-160)(x-16)}{x^2-256}$

1) $5(x+2)$ 2) $(x+4)(x+16)$ 3) x^2-2 4) $5(x-2)$

48. What value of 'y' will make the given equation true?

$8-0.2(y+3)=3y+1$

1) 1 2) 2 3) 3 4) 4

49. If the coordinates of the two points are P(-7, 5) and Q(-6, 9) then (abscissa of P) – (abscissa of Q) =
1)3 2) 1 3)-2 4) -1

50. π is
1) Rational number 2) An irrational number
3) Natural number 4) any positive integer

ARITHMETIC LOGICAL AND REASONING QUESTIONS:

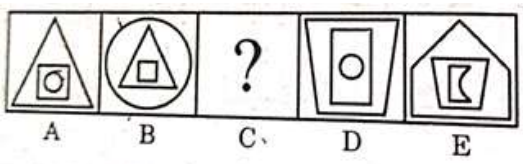
51. What will come in the place of question mark 1, 1, 4, 8, 9, 27, 16,?
1)32 2) 64 3)81 4) 256

52. In a certain code, BREAKTHROUGH is written as EAOUHRBRGHKT. How is DISTRIBUTION written in that code?
1)TISTBUONDIRI 2) STTIBUONRIDI 3)STTIBUDIONRI 4) RISTTIBUDION

53. If $AT = 20, BAT = 40,$ then CAT will be equal to
1)30 2) 60 3)70 4) 50

54. In a certain code language, '297' means 'tie clip button', '926' means 'clip your tie' and '175' means 'hole and button' then which number means 'button' in that language?
1)1 2) 7 3)6 4) 5

55. What will come in the place of question mark

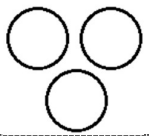
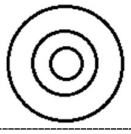


1)  2)  3)  4) 

56. 12 persons can do a price of work is 20 days. How many persons are required to do the same in 24 days?
1)20 2) 10 3)15 4) 18

57. Find the odd one among the following
1)Wood 2) Stone 3)Cork 4)paper

58. If the day before yesterday was Friday, what day will two days after the day after tomorrow be?
1)Saturday 2) Thursday 3)Friday 4) Sunday

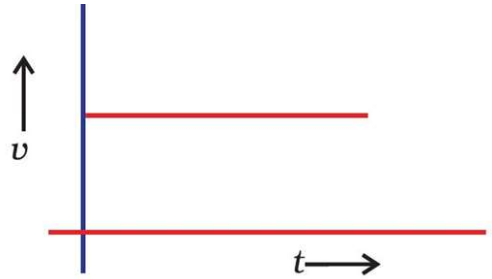
59. Which of the following figures represents village, district, state?
1)  2)  3)  4) 

60. Lakshmi is elder than Meenu. Leela is elder than Meenu but younger than Lakshmi. Latha is younger than both Meenu and Hari. But Hari is younger than Meenu. Who is the youngest?
1)Lakshmi 2) Meenu 3)Leela 4) Latha

61. A plate moves normally with a speed v_1 towards a horizontal jet of water of uniform area of cross section. The jet discharges water at the rate of volume V per second at a speed of v_2. The density of water is ρ. Assume that water splashes along the surface of the plate at right angles to the original motion. The magnitude of the force acting on the plate due to the jet of water is:

1) $\rho V v_1$ 2) $\rho V(v_1 + v_2)$ 3) $\frac{\rho V}{v_1 + v_2} v_1^2$ 4) $\rho\left[\frac{V}{v_2}\right](v_1 + v_2)^2$

62. From the given $v - t$ graph (see below Fig.), it can be inferred that the object is



1) in uniform motion 2) at rest

3) in non-uniform motion 4) moving with uniform acceleration

63. A particle is moving in a circular path of radius r. The displacement after half a circlewould be:

1) Zero 2) πr 3) $2r$ 4) $2\pi r$

64. A body is thrown vertically upward with velocity u, the greatest height h to which it will rise is,

1) u/g 2) $u^2/2g$ 3) u^2/g 4) $u/2g$

65. The forces of action and reaction are

1) always equal only 2) always equal and opposite

3) always equal but in same direction 4) always unequal and opposite.

66. An object of mass 2 kg is sliding with a constant velocity of 4 m s^{-1} on a frictionless horizontal table. The force required to keep the object moving with the same velocity is

1) 32 N 2) 0 N 3) 2 N 4) 8 N

67. What mass of a body can attain an acceleration of 5m/s^2 under a force of 250 N?

1) 5 kg 2) 250 kg 3) 50 kg 4) 10 kg

68. The value of acceleration due to gravity

1) is same on equator and poles
2) is least on poles
3) is least on equator
4) increases from pole to equator

69. The gravitational force between two objects is F. If masses of both objects are halved without changing distance between them, then the gravitational force would become

1) $F/4$ 2) $F/2$ 3) F 4) $2F$

70. Suppose a tunnel is dug along the diameter of the earth. A particle is dropped from a point directly above the tunnel. If the earth's density is assumed to be uniform and the friction is neglected, then

1) Particle will have maximum speed when passing through the centre of the earth
2) Particle will have harmonic oscillation
3) Particle will drop to the centre of the earth
4) None of the above

71. A stone dropped from a building takes 4 s to reach the ground. The height of the building is

1) 19.6 m 2) 80.4 m 3) 78.4 m 4) 156.8 m

72. The force of attraction between two unit point masses separated by a unit distance is called

1) gravitational potential
2) acceleration due to gravity
3) gravitational field
4) universal gravitational constant

73. The weight of an object at the centre of the earth of radius R is

1) zero
2) infinite
3) R times the weight at the surface of the earth
4) $1/R^2$ times the weight at surface of the earth

74. Find the mass of the body which has 5 J of kinetic energy while moving at a speed of 2 m/s.

1) 10kg 2) 2kg 3) 5kg 4) 2.5kg

75. Two bodies of equal masses move with uniform velocities v and 3v respectively. Find theratio of their kinetic energies.

1) 1 : 3 2) 1 : 9 3) 9 : 1 4) 3 : 1

76. What should be the power of an engine required to lift 90 metric tons of coal per hour from a mine whose depth is 200m? $\left(g = 10m/s^2\right)$

1) 50,000W 2) 25,000W 3) 90,000W 4) 20,000W

77. Usha swims in a 90m long pool. She covers 180m in one minute by swimming from one end to the other and back along the same straight path. Find the average speed and average velocity of Usha.

1) 3 m/s, 0 m/s 2) 0 m/s, 3 m/s 3) 3 m/s, 3 m/s 4) 3 m/s, 2 m/s

78. The brakes applied to a car produce an acceleration of 6m s^{-2} in the opposite direction to the motion. If the car takes 2s to stop After the application of brakes. Calculate the distance it travels during this time.

1) 14m 2) 12m 3) 36m 4) 24m

79. A ball is gently dropped from a height of 20m. If its velocity increases uniformly at the rate of 10 ms^{-2}, with what velocity will it strike the ground? After what time will it strike the ground?

1) 20 m/s, 2s 2) 10 m/s, 1s 3) 10 m/s, 2s 4) 20 m/s, 1s

80. The position x of a particle varies with time t as $x = at^2 - bt^3$. The acceleration of the particle will be zero at time *t* equal to

1) $\frac{a}{b}$ 2) $\frac{2a}{3b}$ 3) $\frac{a}{3b}$ 4) Zero

CHEMISTRY

81. **Assertion (A):** Our palm feels cold when we put some petrol on it.

Reason (R): Petrol condensate on the palm due to more surface area.

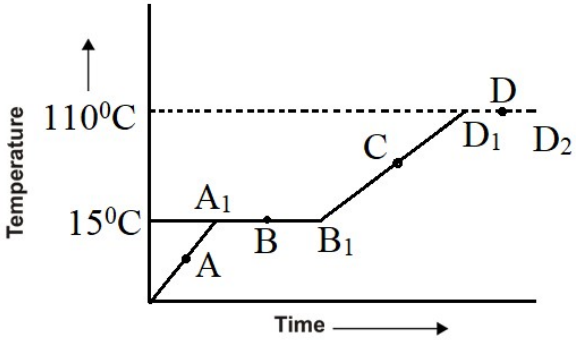
1) Both A and R are true R is the correct explanation of A

2) Both A and R are true and R is not the correct explanation of A

3) A is true, but R is false

4) A is false, but R is true

82. The melting point of a substance given in the graph are 15^0C and 110^0C, then at which point temperature is constant?



1) Point A and point C
2) Point B and point D
3) Point C and point D
4) No at any point

83.

Substance	A	B	C	D
Melting point	600^0C	273K	1000^0C	0^0C

Which substance has more strength of the force of attraction between its particles?

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

84. Naphthalene balls disappear with time, without leaving any solid. The reason is

1) Evaporation 2) Sublimation 3) Condensation 4) Fusion

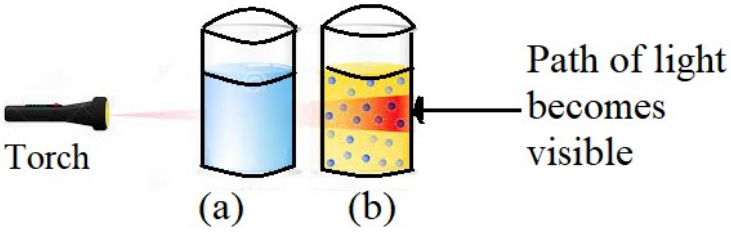
85. Evaporation is a _____ phenomenon and causes _____

1) Bulk, Cooling 2) Bulk, Heating 3) Surface, Cooling 4) Surface, Heating

86. Boiling points of diethyl ether, acetone and n-butyl alcohol are 35^0C, 56^0C and 118^0C respectively. Which of the following set correctly represented the boiling points on the Kelvin scale?

1) 306K, 329K, 391K
2) 308K, 329K, 392K
3) 308K, 329K, 391K
4) 329K, 392K, 308K

87. The mixtures a and b in the given picture are respectively



1) Colloid, solution
2) Solution, colloid
3) Colloid, suspension
4) Suspension, colloid

88.

i)	Hydrogen	p)	Suspension
ii)	Water	q)	Solution
iii)	Lemonade	r)	Element
iv)	Cough Syrup	s)	Compound

Choose the correct matching

1) i – r, ii – s, iii – q, iv – p
2) i – s, ii – q, iii – p, iv - r
3) i – q, ii – p, iii – r, iv – s
4) i – p, ii – r, iii – s, iv - q

89. If the amount of solute contained in a solution is less than the saturation level, it is called _____

1) Unsaturated solution
2) Saturated solution
3) Super saturated solution
4) Colloidal solution

90.

Dispersion medium	**Dispersed phase**	**Colloid type**
Gas	Liquid	Aerosol
Liquid	x	Sol
Solid	Liquid	Gel

In the above table 'x' can be replaced by

1) Liquid 2) Solid 3) Solid or liquid 4) Gas

91. An element is a basic form of matter that cannot be broken down into simple forms by chemical reaction. If any substance can be separated into two or more constituent parts by a chemical reaction it should be

1) Mixture
2) Heterogeneous mixture
3) Homogeneous mixture
4) Compound

92. A solution contains 40g of common salt in 320g of water. Calculate the concentration in terms of mass by mass percentage of the solution

1) 12.5% 2) 11.1% 3) 22.2% 4) 25%

93. Which of the following is not a mixture?

1) Soap solution 2) Blood 3) Carbon dioxide 4) Coal

94. Tincture of iodine has antiseptic properties. This solution is made by dissolving

1) Iodine in potassium iodide
2) Iodine in acetone
3) Iodine in water
4) Iodine in alcohol

95. Hydrogen and oxygen combine in the ratio 1 : 8 by mass to form water. What mass of oxygen gas would be required to react completely with 3g of hydrogen gas?

1) 16g 2) 32g 3) 12g 4) 24g

96. What is the difference between an anion and a cation?

1) An anion is positively charged and a cation is negatively charged

2) An anion is a group of atoms carrying a charge and a cation is a single charged atom

3) An anion is a negatively charged ion and a cation is a positively charged ion

4) An anion is formed by the combination of a metal and a non-metal and a cation is formed by the combination of two non-metals

97. Based on atomicity which one of following is correct matching of Set-A with Set-B:

	Set-A		**Set-B**
P)	Monoatomic	x)	Fluorine
Q)	Diatomic	y)	Helium
R)	Triatomic	z)	Ozone

1) P-y, Q-x, R-z 2) P-y, Q-z, R-x 3) P-z, Q-y, R-x 4) P-z, Q-x, R-y

98. Calculate the relative molecular mass of glucose($C_6H_{12}O_6$)

1) 120u 2) 140u 3) 160u 4) 180u

99. Out of ozone, phosphorus, sulphur and krypton, the elements having the lowest and highest atomicities are respectively

1) Sulphur and Krypton 2) Krypton and Ozone

3) Phosphorus and Sulphur 4) Krypton and Sulphur

100. The formula of the sulphate of an element X is $X_2(SO_4)_3$. The formula of nitride of element X will be

1) X_2N 2) XN_2 3) XN 4) X_2N_3

THE END