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

INTO10+1 STATE & CBSE

MATHEMATICS

1. Which of following is an irrational number.
   1) $\sqrt{16}$ 2) $3\sqrt{36}$ 3) $3+2\sqrt{5}$ 4) $\sqrt{25}+\sqrt{64}$

2. Diagonal of a square whose side is positive integer is
   1) Rational number 2) Irrational number 3) Natural number 4) Whole number

3. n^2-1 is divisible by 8, if n is
   1) An odd number 2) An even number 3) Prime number 4) Integer

4. A person walking 20 m towards a chimney in a horizontal line through its base observes that its angle of elevation changes from 30^0 *to* 45^0. The height of chimney is
   1) $\frac{20}{\sqrt{3}+1}m$ 2) $\frac{20}{\sqrt{3}-1}m$ 3) $20\left(\sqrt{3}-1\right)m$ 4) None of these

5. If n is a natural number, then which of the following expression ends in zero?
   1) $(3\times 2)^n$ 2) $(5\times 7)^n$ 3) $(9\times 3)^n$ 4) $(2\times 5)^n$

6. If the roots of the quadratic equation $ax^2+bx+c=0$ are sin α and cos α, then $1+2\frac{c}{a}=$ _____
   1) $\frac{a^2}{b^2}$ 2) $\frac{b^2}{a^2}$ 3) a^2 4) b^2

7. If sum of zeroes is $\sec 60^0$ and product is $\tan 45^0$ then quadratic polynomial
   1) $2x^2-4x+2$ 2) x^2+2x+1 3) x^2-2x+1 4) Both A & C

8. If the zeroes of the polynomial x^3-3x^2+x+1 *are* $a-b, a, a+b$ then the value of a
   1) 1 2) -1 3) 0 4) -3

9. If $ax+by=a^2-b^2$ *and* $bx+ay=0$ then the value of $x+y=$
   1) a^2-b^2 2) $b-a$ 3) $a-b$ 4) a^2+b^2

10. One equation of a pair of dependent linear equations is $-5x+7y=2$ the second equation can be

1) $10x+14y+4=0$ 2) $-10x-14y+4=0$

3) $-10x+14y+4=0$ 4) $15x-21y=-6$

11. If the equation $x^2+4x+k=0$ has real and distinct roots, then

1) $k<4$ 2) $k>4$ 3) $k\geq 4$ 4) $k\leq 4$

12. Let f(x) be a polynomial of degree 3 such that xf(x) + 2 = 0 for x = 2, 3, 4, 5. Then 10f(10) = _____

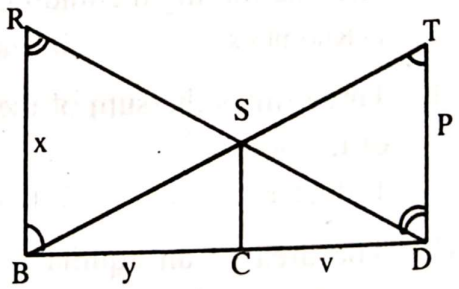
1) 26 2) 20 3) 14 4) 18

13. If $\frac{1}{x+2},\frac{1}{x+3},\frac{1}{x+5}$ are in A.P then $x=$

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

14. In the adjoining figure if RB , SC and TD are perpendicular to BD with the length indicated, the $\frac{x}{y}$ is equal to

1) $\frac{p}{v}$ 2) $\frac{p}{p+v}$ 3) $\frac{v}{p}$ 4) $\frac{v}{p+v}$



15. The centroid of the triangle formed by $(7,5),(3,-4),(-2,1)$ is

1) $(4,10/3)$ 2) $(8/3,2/3)$ 3) $(1/3,1/3)$ 4) $(8,7)$

16. L (3 ,0) and M (k , 0) and LM=7 then M=

1) $(10,0)$ 2) $(-4,0)$ 3) $(7,0)$ 4) Both A & B

17. In a rhombus ABCD, $AB=4cm$, *then* $AC^2+BD^2=$

1) 72 cm 2) 64 cm 3) 32 cm 4) 80 cm

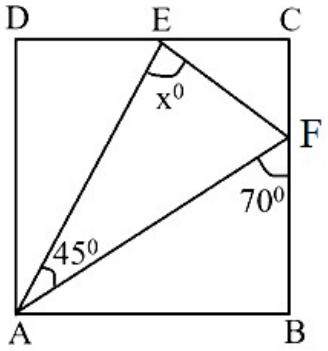
18. *In* ΔABC ,if $PQ \| BC$ then which of the following is false

1) $\frac{AB}{PB}=\frac{AQ}{QC}$ 2) $\frac{AP}{PB}=\frac{AQ}{QC}$ 3) $\frac{AB}{PB}=\frac{AC}{QC}$ 4) $\frac{AB}{AP}=\frac{AC}{AQ}$

19. Find total surface area of Hemisphere of radius 7cm

1) $460cm^2$ 2) $462cm^2$ 3) $308cm^2$ 4) $304cm^2$

20. In the adjacent figure ABCD is a square, E, F are points on DC and BC if $\angle AFB=70^0$ and $\angle EAF=45^0$ *then* $\angle AEF$?

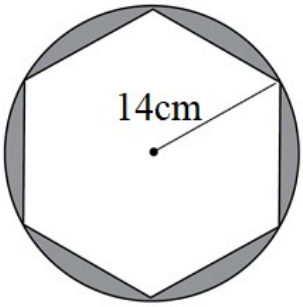


1) 70^0 2) 45^0 3) 30^0 4) 65^0

21. A wheel can travel 22km. in 100 rounds. Find the radius of that wheel

1) 42 mtr 2) 28 mtr 3) 35 mtr 4) 49 mtr

22. A round table top has six equal designs as shown in the figure. If the radius of the table top is 14cm, then the cost of making the designs with paint at the rate of ₹5 per cm^2 is.



1) ₹534 2) ₹645 3) ₹675 4) ₹750

23. Coefficient of x in $2x^2 - x + 1$ is

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

24. $\frac{1}{3^2-1} + \frac{1}{5^2-1} + \frac{1}{7^2-1} + \ldots\ldots + \frac{1}{(201)^2-1}$ is

1) $\frac{101}{404}$ 2) $\frac{25}{101}$ 3) $\frac{101}{408}$ 4) $\frac{99}{400}$

25. The value of $\sin^2 1^0 + \sin^2 89^0$ is

1) $\sin^2 0^0$ 2) $\cos^2 0^0$ 3) $\cos^2 90^0$ 4) $\sin^2 1^0$

26. The value of $\frac{1}{1+\cos\theta} + \frac{1}{1-\cos\theta} =$

1) $2\sec^2\theta$ 2) $2\sec\theta$ 3) $2co\sec^2\theta$ 4) $2\,co\sec\theta$

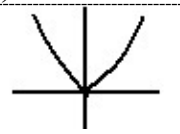
27. An equilateral triangle is inscribed in a circle of radius 6cm , then its side is

1) $6\sqrt{3}\,cm$ 2) $\frac{6}{\sqrt{3}}cm$ 3) $3\sqrt{3}\,cm$ 4) $4\sqrt{3}\,cm$

28. Degree of 2014 is ___

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

29. The adjacent figure represents



1) Degree 2) Circle 3) Straight line 4) Parabola

30. If H.C.F (26,169) =13,then LCM (26,169)=

1) 26 2) 52 3) 338 4) 13

31. If $\alpha + \beta = 0,\ \alpha\beta = -\sqrt{5}$ then quadratic polynomial is ____

1) $x^2 - \sqrt{5}$ 2) $x^2 - 1$ 3) $x^2 - 3$ 4) $x^2 - 5$

32. Which of the following is not an A.P.

1) 4, 10, 16, 22, …… 2) 1, –1, –3, –5, …… 3) x, 2x, 3x, 4x, …… 4) –2, 2, –2, 2, –2, …….

33. The quadratic function in x such that,then it is divided by $x-1, x-2, x-3$ leaves remainder 1, 2, 4 respectively is

1) $x^2 - x + 1$ 2) $\frac{1}{2}(x^2 - x + 1)$ 3) $\frac{1}{2}(x^2 - x) + 1$ 4) $\frac{1}{2}(x^2 - x)$

34. If the pair of equations $2x+py=-5$ *and* $3x+3y=-6$ has a unique solution then

1) $p=1$ 2) $p=2$ 3) $p\neq 1$ 4) $p\neq 2$

35. The larger of two supplementary angles exceeds the smaller by 18^0 .the angles are

1) $80^0,100^0$ 2) $81^0,99^0$ 3) $82^0,98^0$ 4) $83^0,97^0$

36. The amount of money (in Rs.) in the money box of them a's daughter on 1st, 2nd, 3rd, 4th birthday ….. were 1000, 1500, 2000, 2500, …… then the total money on her 21st birthday is

1) 126000 2) 136000 3) 146000 4) 116000

37. Which term of the series 1+2+4+8…….is 256

1) 6 2) 9 3) 12 4) 15

38. In an A.P., if 7 times of 7th term is equal to 11 times of 11th term, then 18th term is

1) 0 2) 18 3) 7 4) 11

39. Distance between the points (–4, 0) and (6, 0) is

1) 2 2) 10 3) -10 4) 5

40. What is the smallest possible natural number n for which the equation $x^2 - nx + 2014 = 0$ has integer roots?

1) 89 2) 91 3) 75 4) 68

41. The sum of n terms in two A.P's are in the ratio 3n + 1 : n + 4, then the ratio of 4th terms is

1) 13 : 8 2) 2 : 1 3) 27 : 1 4) 13 : 22

42. Two ends of diameter of circle are $(3,2)$ *and* $(5,-4)$ then the centre is

1) $(-4,-1)$ 2) $(4,-1)$ 3) $(-4,1)$ 4) $(4,1)$

43. PQ is a chord of length 8 cm of circle of radius 5 cm. the tangents at P *and* Q intersect at apoint T. Then the length TP=

1) 5 cm 2) 8 cm 3) 13/2 cm 4) 20/3 cm

44. A right triangle whose base and height are 15cm and 20cm is made to revolve about its hypotenuse. The surface area of the double cone so formed is

1) $1320cm^2$ 2) $3771cm^2$ 3) $132cm^2$ 4) $377cm^2$

45. A right circular cylinder has base radius 14cm and height 21cm. the curved surface area is

1) $1848\ cm^2$ 2) $616\ cm^2$ 3) $3080\ cm^2$ 4) $12936\ cm^2$

46. If $\sec\theta+\tan\theta=5,$ then $\sin\theta=$

1) 12/13 2) 13/12 3) 1/5 4. 0

47. The length, breadth and height of a room are 10m, $10\sqrt{2}\,m$ *and* $10m$ respectively. The angel of elevation of a top corner of room from any point on a diagonal of the base of the room is

1) 45^0 2) 60^0 3) 30^0 4) 90^0

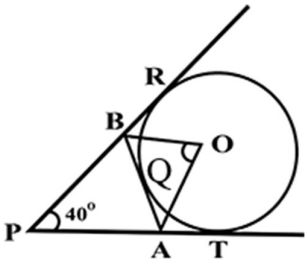
48. The point which divides the line segment joining the points (3, 5) and (8, 10) internally in the ratio 2 : 3 is

1) (7, 7) 2) $\left(\frac{21}{5},7\right)$ 3) (5, 7) 4) $\left(\frac{1}{5},7\right)$

49. The ratio in which (–4, 6) divide $\overline{AB}$ with A = (–6, 10) and B(3, –8) is

1) 2:5 2) 2:7 3) 7:2 4) 5:2

50. Triangle PAB is formed by three tangents to circle with centre O and $\angle APB = 40^0$, then angle AOB



1) 45^0 2) 50^0 3) 60^0 4) 70^0

ARITHMETIC AND LOGICAL REASONING QUESTIONS:

51. A is B's sister. C is B's mother. D is C's father. E is D's mother. Then, how is A related to D?
1) Grandmother 2) Grandfather 3) Daughter 4) Grand daughter

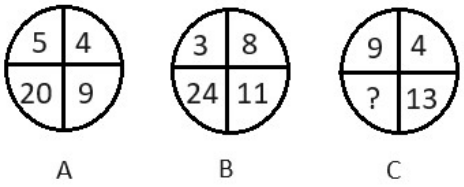
52. If + means - , - means ×, × means ÷ and ÷ means +, then
15 × 3 ÷ 15 + 5 – 2 = ?
1) 0 2) 6 3) 10 4) 20

53. Kunal walks 10 km towards North. From there he walks 6 km towards South. Then, he walks 3 km towards East. How far is he with reference to his starting point?
1) 8 km 2) $3\sqrt{5}km$ 3) $\sqrt{109}km$ 4) 5 km

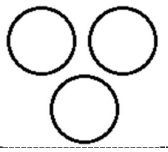
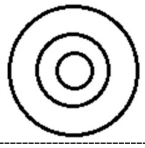
54. If the first and third letters in the word NECESSARY were interchanged, also the fourth and the sixth letters, and the seventh and the ninth letters which of the following would be the seventh letter from the left?
1) A 2) Y 3) R 4) E

55. Reena is twice as old as Sunita. Three years ago, she was three times as old as Sunita. How old is Reena now?
1) 6 years 2) 7 years 3) 8 years 4) 12 years

56. How many 6's are there in the following series of numbers which are preceded by 7 but not immediately followed by 9?
6 7 9 5 6 9 7 6 8 7 6 7 8 6 9 4 6 7 7 6 9 5 7 6 3
1) One 2) Two 3) Three 4) Four

57. 

1) 117 2) 36 3) 32 4) 26

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

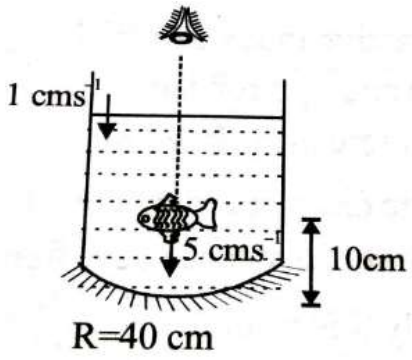
59. Find the odd one among the following
1) Wood 2) Stone 3) Cork 4) paper

60. Complete the series 3, 8, 15, 24, ?
1) 32 2) 33 3) 35 4) 40

61. A proton, a deuteron and an α-particle are accelerated through the same potential difference and then they enter a uniform normal magnetic field. If the time period of motion of proton is 1ns then time period of deutrun and α partical T_D *and* T_α will be respectively:

1) $1ns, 1ns$ 2) $2ns, 1ns$ 3) $2ns, 2ns$ 4) $1ns, 2ns$

62. Water level in the tank is decreasing at a constant rate of 1cm/s. A fish is moving downwards with a constant velocity 5cm/s. Base of the tank is a concave mirror of radius 40cm. Find the velocity of the image seen $\left[Take\ {}_a\mu_w = 4/3\right]$

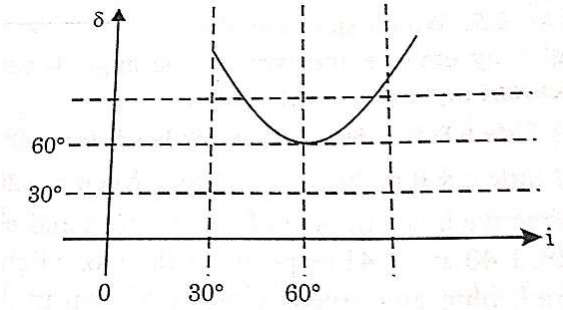


a) directly b) After reflection at the mirror respectively

1) 4cm/s downward, $\frac{59}{4}$ cm/s upwards 2) $\frac{59}{4}$ cm/s downward, 4cm/s upwards

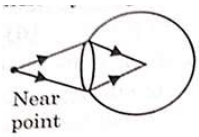
3) 4cm/s upwards, $\frac{59}{4}$ cm/s downward 4) 4cm/s downward, $\frac{59}{4}$ cm/s downwards

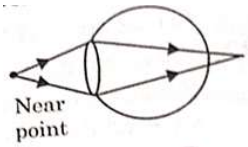
63. A light ray is incident at angle of incidence *i* on an isosceles prism and deviation δ is measured. When *i* versus δ graph is plotted, it is found as shown below. The value of refractive index of the prism material is:

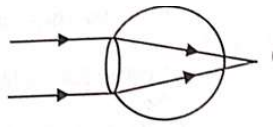


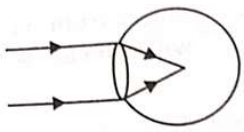
1) 1.5 2) 2 3) $\sqrt{3}$ 4) $\frac{5}{3}$

64. Which ray diagram is correct for a myopic eye?

1) 

2) 

3) 

4) 

65. **Assertion:** a double convex lens $(\mu = 1.5)$ has focal length 10cm. When the lens is immersed in water $(\mu = 4/3)$ its focal length becomes 40cm

Reason : $\frac{1}{f} = \frac{\mu_l - \mu_m}{\mu_m}\left(\frac{1}{R_1} - \frac{1}{R_2}\right)$

1) If both assertion and reason are true and reason is the correct explanation of assertion

2) If both assertion and reason are true but reason is not the correct explanation of assertion

3) If assertion is true but reason is false

4) If both assertion and reason are false

66. Consider a solid glass cube of edge length 10mm and refractive index $n = 1.5$. A black spot-lies at the geometrical centre of the cube. What fraction of the cube surface must be covered so as to prevent the spot from being seen?

1) 0.36 2) 0.96 3) 0.63 4) 0.72

67. Steam of 100^0C is passed into a container of mass 40g, containing a 110 g mixture of ice and water at 0^0C, until all the ice melted. The mass of the container and contents is then found to be 160g. The quantity of ice originally present in the mixture is (ignore container for heat consideration)

1) 20 g 2) 40 g 3) 60 g 4) 80 g

68. Which one of the following materials cannot be used to make a lens?

1) Water 2) Glass 3) Plastic 4) clay

69. Focal length of the plano-convex lens is ..... when its radius of curvature of the surface is R and n is the refractive index of the lens.

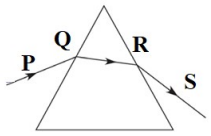
1) f = R 2) f = R/2 3) f = R/(n–1) 4) f = (n–1)/R

70. Which of the following is the lens maker's formula

1) $1/f = (n-1)(1/R_1 + 1/R_2)$ 2) $1/f = (n+1)(1/R_1 - 1/R_2)$

3) $1/f = (n-1)(1/R_1 - 1/R_2)$ 4) $1/f = (n+1)(1/R_1 + 1/R_2)$

71. A ray of light falls on one of the lateral surface of an equilateral glass prism placed on the horizontal surface of a table as shown in figure.For minimum deviation of ray, which of the following is true?



1)PQ is horizontal 2)QR is horizontal

3)RS is horizontal 4)either PQ or RS is horizontal

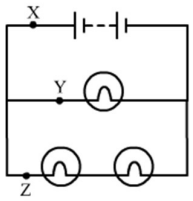
72. A converging lens is used to form an image on a screen. When the upper half of the lens is covered by an opaque screen

(a) half of the image will disappear (b)no part of image will disappear

(c) Intensity of the image will increase (d) Intensity of the image will decrease

1) a, c are true 2) a, d are true 3)b, c are true 4) b, d are true

73. A battery and three lamps are made up of same material connected as shown:



Which of the following statements about the currents at X, Y and Z is correct?

1) The current at Z, is greater than that at Y

2) The current at Y is greater than that at Z

3) The current at X equals the current at Y

4) The current at X equals the current at Z

74. An electric heater is rated at 2 kW. Electrical energy costs ₹4 per kWh. What is the cost of using the heater for 3 hours?

1)₹12 2) ₹24 3)₹36 4) ₹48

75. The stars twinkle but the planets do not twinkle at night because

1) The stars are small but the planets are large

2) The stars are very large but planets are small

3) The stars are much nearer but planets are far off

4) The stars are far off but planets are nearer to earth

76. After testing the eyes of a child, the optician has prescribed the following lenses for his spectacles:

Left eye: +2.00 D

Right eye: +2.25D

The child is suffering from the defect of vision called

1) Short sightedness 2) Long sightedness 3) Cataract 4) Presbyopia

77. A spherical mirror and a thin spherical lens have each a focal length of -15cm. The mirror and the lens are likely to be

1) Both concave

2) Both convex

3) The mirror is concave and the lens is convex

4) The mirror is convex, but the lens is concave

78. Which of the following lenses would you prefer to use while reading small letters found in a dictionary?

1) A convex lens of focal length 50cm

2) A concave lens of focal length 50cm

3) A convex lens of focal length 5cm

4) A concave lens of focal length 5cm

79. The human eye can focus on objects at different distances by adjusting the focal length of the eye lens. This is due to

1) Presbyopia 2) Accommodation 3) Near-sightedness 4) Far-sightedness

80. Two conducting wires of the same material and of equal lengths and equal diameters are first connected in series and then parallel in a circuit across the same potential difference. The ratio of heat produced in series and parallel combinations would be-

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

CHEMISTRY

81. $Fe_2O_3 + 2Al_2O_3 + 2Fe$

The above reaction is an example of :

1) Combination reaction 2) Decomposition reaction

3) Displacement reaction 4) Double decomposition reaction

82. When aqueous solutions of potassium iodide and lead nitrate are mixed, an in soluble substance separates out . The chemical equation for the reaction involved is

1) $KI + PbNO_3 \rightarrow PbI + KNO_3$ 2) $2KI + Pb(NO_3)_2 \rightarrow PbI_2 + 2KNO_3$

3) $KI + Pb(NO_3)_2 \rightarrow PbI + KNO_3$ 4) $KI + PbNO_3 \rightarrow PbI_2 + KNO_3$

83. Balance the following equation : $Fe + O_2 \rightarrow Fe_2O_3$

1) $4Fe + 3O_2 \rightarrow 2Fe_2O_3$ 2) $Fe + 2O_2 \rightarrow 2Fe_2O_3$

3) $3Fe + 2O_2 \rightarrow Fe_2O_3$ 4) $2Fe + 3O_2 \rightarrow 2Fe_2O_3$

84. In the chemical equation : $C_6H_{12}O_6(aq) + 6O_2(aq) \rightarrow 6CO_2(aq) + 6H_2O(l) + energy$, what type of reaction is represented?

1) Combination reaction 2) Displacement reaction

3) Exothermic reaction 4) Decomposition reaction

85. What is the product formed when magnesium ribbon is burned?

1) Magnesium chloride 2) Magnesium sulphate

3) Magnesium oxide 4) Magnesium hydroxide

86. 10ml of a solution of NaOH is found to be completely neutralized by 8ml of a given solution of HC*l* if we take 20ml of the same solution of NaOH the amount of same HC*l* solution required to neutralize it will be

1) 4ml 2) 8ml 3) 12ml 4) 16ml

87. $Ca(OH)_2 + CO_2 \rightarrow$ white precipitate $\xrightarrow[CO_2]{Excess}$ soluble compound

(A) (B)

Here A and B are respectively

1) $CaCO_3, Ca(HCO_3)_2$ 2) $Ca(HCO_3)_2, CaCO_3$

3) $CaCO_3, CaO$ 4) $CaCO_3, Ca(OH)_2$

88. Sodium reaction with water form sodium hydroxide and hydrogen gas . The balanced equation which represents the above reaction is

1) $Na(s) + 2H_2O(l) \rightarrow 2NaOH(aq) + 2H_2(g)$

2) $2Na(s) + 2H_2O(l) \rightarrow 2NaOH(aq) + H_2(g)$

3) $2Na(s) + 2H_2O(l) \rightarrow NaOH(aq) + 2H_2(g)$

4) $2Na(s) + H_2O(l) \rightarrow 2NaOH(aq) + 2H_2(g)$

89. Most reactive metal among the following is

1) K 2) Li 3) Na 4) Cs

90. The aqueous solution of one of the following salts will turn phenolphthalein indicator pink. This salt is

1) K_2CO_3 2) KCl 3) K_2SO_4 4) KNO_3

91. When sodium is heated in flame it gives

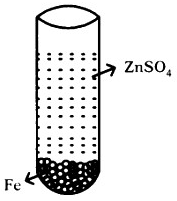
1. Golden yellow colour 2. Crimson red colour

3. Brick red colour 4. Violet colour

92. The daffodil plants grow best in a soil having a pH range 6.0 to 6.5. If the soil in a garden has a pH of 4.5, which substance needs to be added to the soil in order to grow daffodils

1) Salt 2) Lime 3) Sand 4) Compost

93. The correct observation made by the student after putting clean piece of iron in the test tube containing $ZnSO_4$ are as shown in figure



1) Solution becomes colorless and zinc gets deposited on iron

2) Solution becomes green and zinc gets deposited on Iron

3) Iron pieces get dissolved in the solution making it green

4) No reaction is observed

94. Here are some results of solutions tested with universal indicator paper:

Sulphuric acid	:	Red
Metal polish	:	Dark blue
Washing-up liquid	:	Yellow
Milk of magnesia	:	Light blue
Oven cleaner	:	Purple
Car battery acid	:	Pink

Arrange the solutions in order of their increasing pH values (starting with the one with the lowest pH)

1) H_2SO_4< Car battery acid < Washing –up liquid < Milk of magnesia < Metal polish < Oven cleaner

2) Washing –up liquid < Milk of magnesia < Metal polish < Oven cleaner < H_2SO_4< Car battery acid

3) Washing –up liquid < H_2SO_4< Car battery acid < Milk of magnesia < Metal polish < Oven cleaner

4) Milk of magnesia < H_2SO_4< Car battery acid < Washing –up liquid < Metal polish < Oven cleaner

95. The density is low for

1) Na 2) K 3) Rb 4) Cs

96. Four metals P, Q, R and S are all obtained by the reduction of their oxides with carbon. Metal P is used to form a thin layer over the sheets of metal S to prevent its corrosion. Metal Q is used for electroplating tiffin boxes made of metal S whereas metal R is used in making car batteries. Metals Q and R form an alloy called solder. What are metals P, Q, R and S?

	P	**Q**	**R**	**S**		**P**	**Q**	**R**	**S**
1)	Sn	Zn	Pb	Fe	2)	Zn	Sn	Pb	Fe
3)	Zn	Pb	Sn	Fe	4)	Zn	Sn	Fe	Pb

97. Cinnabar chemical formula

1) PbS 2) HgS 3) ZnS 4) CuS

98. NaOH is manufactured by the electrolysis of brine solution. The products of reaction are

1) $Na \& Cl_2$ 2) $Cl_2 \& O_2$ 3) $Cl_2 \& H_2$ 4) $Na \& O_2$

99. Two test tubes ‘A’ and ‘B contain iron nails. In ‘A’ test tube iron nail is half dipped in water and in ‘B test tube iron nail is completely dipped in water and some oil is also added. Then

1) Both nails A and B undergo rusting

2) Nail in Both A and B do not undergo rusting

3) Nail in ‘A’ rusts but not in ‘B’ 4) Nail in ‘B’ rusts but not in ‘A’

100. Which of the following example(s) is (are) Amphoteric oxide (s)

1) Al_2O_3 2) ZnO 3) PbO 4) All of these

THE END