

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

**MATHEMATICS**

1. What is the L.C.M and H.C.F. of 17, 23 and 29
 1. 1, 11339
 2. 11339, 1
 3. 17, 11339
 4. 11339, 17
2. Which of the following number is a composite number?
 1. $2 \times 5 \times 17 + 3$
 2. $2^3 \times 3^2 + 1$
 3. $2 \times 3^2 + 1$
 4. $7 \times 11 \times 13 + 13$
3. $\log_9 \sqrt{3\sqrt{3\sqrt{3}}} =$
 1. $\frac{7}{8}$
 2. $\frac{7}{16}$
 3. $\frac{1}{16}$
 4. $\frac{1}{8}$
4. If $x^2 + y^2 = 6xy$ then $2\log(x+y) =$ _____
 1. $\log x - \log y + 3\log 2$
 2. $\log x + \log y + 3\log 2$
 3. $\log x + \log y - 3\log 2$
 4. $\log x - \log y - 3\log 2$
5. let $A = \{x : x \text{ is a letter of the word "ASSASSINATION"}\}$
 $B = \{x : x \text{ is a letter of the word 'STATION'}\}$ then
 1. $A = B$
 2. $A \neq B$
 3. $A \subset B$
 4. $B \subset A$
6. The shaded part of

 1. $A \cap (B \cup C)$
 2. $(A - B) \cap (A - C)$
 3. $A - (B \cap C)$
 4. $(A - B) \cup (A - C)$
7. The graph of the polynomial $f(x) = 2x - 5$ is a straight line which intersects the X-axis at exactly one point namely
 1. $\left[0, \frac{-5}{2}\right]$
 2. $\left[\frac{5}{2}, \frac{-5}{2}\right]$
 3. $\left[\frac{5}{2}, 0\right]$
 4. $\left[\frac{-5}{2}, 0\right]$

21. The nearest point from the origin is

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

22. If (0, 0), (3, $\sqrt{3}$), (3, y) form an equilateral triangle then y =

1. $-\sqrt{3}$ 2. -4 3. -3 4. 2

23. If (0, 2) divides the line segment joining (0, 0), (t, 5) in the ratio 2 : 3 then t =

1. 3 2. 2 3. 1 4. 0

24. The line joining (-3, 4), (1, -2) is divided by y axis in the ratio

1. 1:3 2. 2:3 3. 3:1 4. 3:2

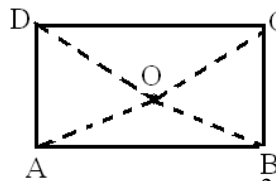
25. In ΔABC if A = (3, -5), B = (-7, 4) and centroid G = (2, -1) then C =

1. (10, 2) 2. (10, -2) 3. (-10, 2) 4. (-10, -2)

26. P(2,2) Q(-4,4) & R(5,-8) are the vertices of ΔPQR then length of the median through R is _____

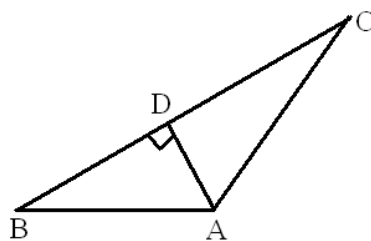
1. $\sqrt{147}$ 2. $\sqrt{157}$ 3. $4\sqrt{17}$ 4. $2\sqrt{13}$

27. 'O' is any point in a rectangle ABCD then $OA^2 + OC^2 =$ _____



1. $OB^2 + OD^2$ 2. $AB^2 + BC^2$
3. AC^2 4. BD^2

28. From adjacent diagram $AB^2 + CD^2 =$ _____

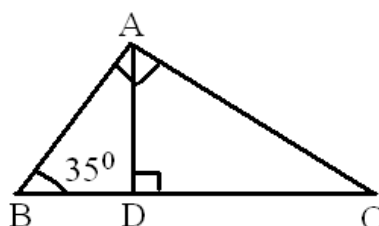


1. $BD^2 + AC^2$ 2. $BD^2 + CD^2$
3. $AC^2 + AD^2$ 4. $BD^2 + AB^2$

29. Two poles of heights 6m and 11m stand on a plane ground. If the distance between the feet of the poles is 12m then the distance between their tops is _____

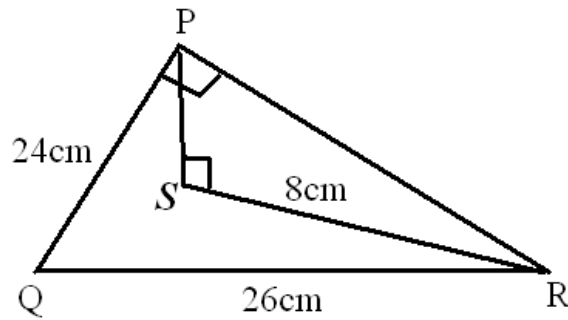
1. 16m 2. 15m 3. 13m 4. 14m

30. From the figure $\angle DAC =$ _____



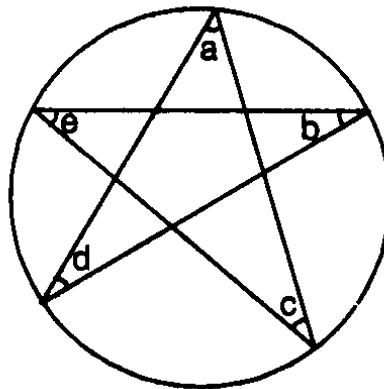
1. 35° 2. 55° 3. 45° 4. 60°

31. From diagram, $\angle P = 90^\circ$, $\angle S = 90^\circ$, $PS =$



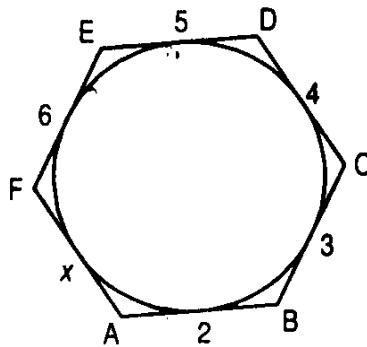
1. 10 2. 6 3. 19 4. 8

32. Find the sum of $a+b+c+d+e$ of the figure inscribed in the circle.



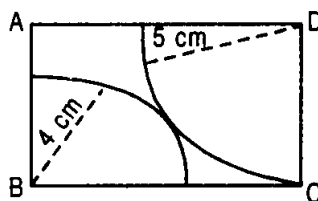
1. 160° 2. 120° 3. 180° 4. 190°

33. Hexagon ABCDEF circumscribes a circle. The sides of the hexagon are 2cm, 3cm, 4cm, 5cm, 6cm and x cm. Find x .



1. 2cm 2. 4cm 3. 8cm 4. 9cm

34. In the figure, ABCD is a rectangle. Circle with B as centre and radius 4cm touches the circle with D as centre and radius 5cm as shown in the figure. Length of AD = ____ cm.

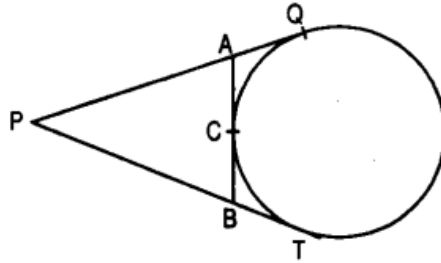


1. $9\sqrt{3}$ 2. $2\sqrt{14}$ 3. $9\sqrt{7}$ 4. $\sqrt{45}$

35. Three lines intersecting two by two are drawn in a plane. The number of circle touching all the three lines is:

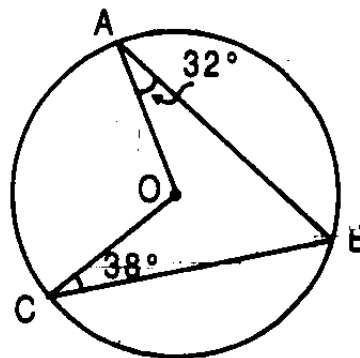
1. 2 2. 3 3. 4 4. 5

36. In the figure, PQ,PT are tangent. AB is a third tangent touching the circle at C. If PQ=35cm, then the perimeter of ΔPAB is:



1. 70cm 2. $35\sqrt{2}$ cm 3. $35\sqrt{3}$ cm 4. 35cm

37. In figure, $\angle AOC$ is equal to :



1. 140° 2. 160° 3. 120° 4. 130°

38. The length of equator on the globe is 88 cm, then $r = \dots\dots\dots$ cm.

1. 12 2. 10 3. 16 4. 14

39. The volume of cone is 462 cm^3 . Its base radius is 7 cm, then its height is $\dots\dots\dots$ cm.

1. 10.3 2. 7 3. 8 4. 9

40. If the diagonals of a rhombus are 10 cm and 24 cm, then area is $\dots\dots\dots$ cm^2 .

1. 20 2. 120 3. 240 4. 100

41. The area of regular hexagon is $54\sqrt{3} \text{ cm}^2$ then its side is

1. 8cm 2. 6 cm 3. 7 cm 4. 5 cm

42. Volume of the cylinder whose diameter is equal to its height is

1. $\pi r^2 h$ 2. $\frac{\pi h^3}{4}$ 3. $\frac{\pi r^3}{8}$ 4. $2\pi r$

43. $\tan 1^{\circ} \tan 2^{\circ} \dots\dots\dots \tan 89^{\circ} =$

1. 2 2. -1 3. 0 4. 1

44. $\tan \theta = \frac{p}{q}$, then $\frac{p \sin \theta - q \cos \theta}{p \sin \theta + q \cos \theta} =$
1. $\frac{p^2 - q^2}{pq}$ 2. $\frac{p^2 - q^2}{2pq}$ 3. $\frac{p^2 - q^2}{p^2 + q^2}$ 4. $\frac{p^2 + q^2}{p^2 - q^2}$
-
45. $\operatorname{cosec} \theta + \sin \theta = 1$; $\operatorname{cosec}^3 \theta + \sin^3 \theta =$
1. -2 2. 2 3. 1 4. -1
-
46. $a \cos A + b \sin A = 1$, $a \sin A - b \cos A = 1$ then
1. $a^2 + b^2 = 2$ 2. $a^2 + b^2 = 1$ 3. $a^2 - b^2 = 1$ 4. $a^2 b^2 = 0$
-
47. If $\cos \theta \cdot \sin \theta = \frac{1}{2}$, then $\theta =$
1. 0° 2. 30° 3. 45° 4. 90°
-
48. If $\tan(A+B) = \sqrt{3}$, $\tan A = 1$ then $B =$
1. 15° 2. 30° 3. 45° 4. 60°
-
49. If $\sin \theta = \frac{15}{17}$, $0 < \theta < 90^\circ$ then $\frac{15 \cot \theta + 17 \sin \theta}{8 \tan \theta + 16 \sec \theta} =$
1. $\frac{23}{49}$ 2. $\frac{49}{23}$ 3. $\frac{15}{49}$ 4. $\frac{17}{49}$
-
50. $\frac{1}{\sec^4 \alpha} + \frac{1}{\operatorname{cosec}^4 \alpha} + \frac{2}{\sec^2 \alpha \cdot \operatorname{cosec}^2 \alpha} =$
1. 0 2. -1 3. 1 4. None
-
51. The angle of elevation of the sun when the length of the shadow of a pole is $\sqrt{3}$ times the height of the pole is
1. 30° 2. 45° 3. 60° 4. 15°
-
52. Number of points in the sample space of the experiment of tossing two coins are
1. 2 2. 4 3. 6 4. 8
-
53. One number is selected from the set - $\{1, 2, 3, \dots, 30\}$ then the probability that the number selected is less than 11 is ___
1. $\frac{1}{3}$ 2. $\frac{11}{30}$ 3. $\frac{1}{2}$ 4. $\frac{2}{3}$
-
54. The number of suits in the deck playing cards is
1. 2 2. 4 3. 18 4. 52
-
55. The probability of 2 students not having same birthday is 0.992. What is the probability that 2 students have the same birthday is ___
1. 0.992 2. 0.008 3. 0.08 4. 0.5
-
56. The numbers 4, 6 and 8 have the frequencies $x+2$, x and $x-1$ and if their Arithmetic mean is 8, the value of x is
1. 7 2. 9 3. 6 4. $-4/3$

57. The median of the data $\frac{3}{4}, \frac{1}{2}, \frac{2}{3}, \frac{1}{6}, \frac{7}{12}$ is

1. $\frac{3}{4}$

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

3. $\frac{7}{12}$

4. $\frac{1}{6}$

58. $l = 40, F = 25, f = 24, C = 20, n = 70$ then median =

1. 48.3

2. 49.5

3. 50.5

4. 40.7

59. If an arranged data containing 20 items can be arranged in ascending order, then _____ item is the median

1. 9th

2. 10th

3. 11th

4. Average of 10th & 11th

60. The mean age of combined group of man and woman is 35 years. If the mean age of man is 36 years and that of woman is 32 years. The percentage of man and woman in the group is respectively given by

1. Men=75%, Women = 25%

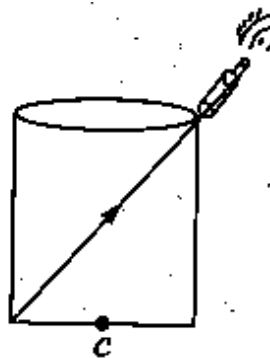
2. Men=70%, Women = 30%

3. Men=50%, Women = 50%

4. Men=25%, Women = 75%

PHYSICS

61. A telescope is focused from rim to the opposite side of the bottom of an empty cylinder of equal diameter and height. When the cylinder is completely filled with a transparent liquid, the centre of base is visible through telescope, without any change in its position. Refractive index of the liquid is



1. $\sqrt{5/2}$

2. $\sqrt{5/3}$

3. $\sqrt{3/2}$

4. $\sqrt{4/3}$

62. Two liquids A and B are at 32^oC and 24^oC. When mixed in equal masses the temperature of the mixture is found to be 28^oC. Their specific heats are in the ratio of

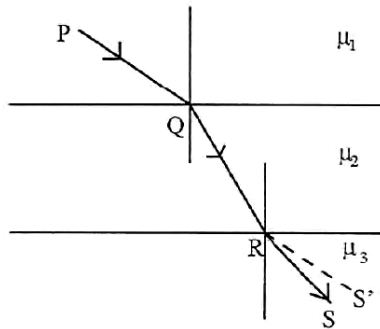
1. 3 : 2

2. 2 : 3

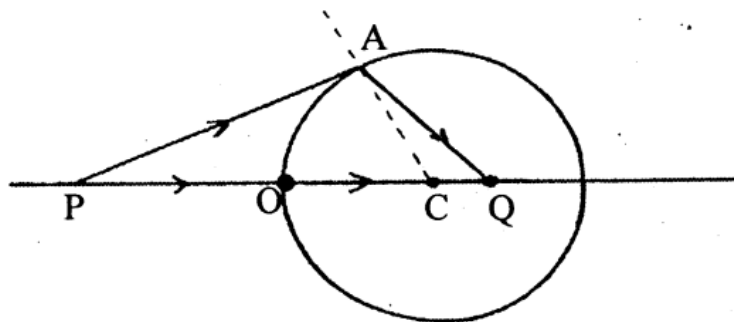
3. 1 : 1

4. 4 : 3

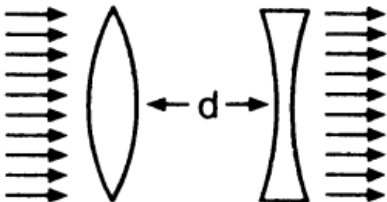
63. In the figure below, PQRS denotes the path followed by a ray of light as it travels through three media in succession. The absolute refractive indices of the media are μ_1 , μ_2 and μ_3 respectively. (the line segment RS' in the figure is parallel to PQ). Then



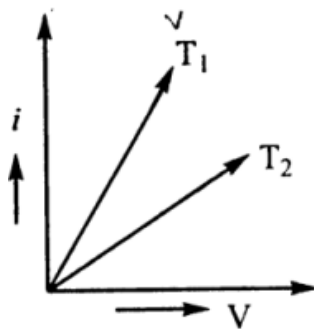
1. $\mu_1 > \mu_2 > \mu_3$ 2. $\mu_1 = \mu_3 > \mu_2$ 3. $\mu_1 < \mu_2 < \mu_3$ 4. $\mu_1 < \mu_3 < \mu_2$
64. If there are no heat losses, the heat released by the condensation of x g of steam at 100°C into water at 100°C can be used to convert y gm of ice at 0°C into water at 100°C . Then the ratio $y : x$ is nearly
1. 1 : 1 2. 2.5 : 1 3. 2 : 1 4. 3 : 1
65. A spherical surface of radius of curvature R separates air from glass of refractive index $\frac{3}{2}$. When a point object P placed in air is found to have its real image is formed at Q inside glass such that $PO = QO$ as shown. The distance of the object from the spherical surface is



1. $3R$ 2. R 3. $5R$ 4. $2R$
66. A bird in air is at a height y from the surface of water. A fish is at a depth x below the surface of water. The refractive index of water is μ . The apparent distance of fish from the bird is
1. $x + \frac{y}{\mu}$ 2. $\mu x + y$ 3. $\frac{x}{\mu} + y$ 4. $\frac{x}{\mu} - y$
67. A ray of light is incident on the surface of separation of a medium with the velocity of light at an angle 45° and is refracted in the medium at an angle of 30° . What will be the velocity of light in the medium?
1. 1.96×10^8 m/s 2. 2.12×10^8 m/s 3. 3.18×10^8 m/s 4. 3.33×10^8 m/s

68. 10 g of ice at -20°C is dropped into a calorimeter containing 10 g of water at 10°C ; the specific heat of water is twice that of ice. When equilibrium is reached, the calorimeter will contain
1. 20 g of water
 2. 20 g of ice
 3. 10 g ice and 10 g water
 4. 5 g ice and 15 g water
-
69. A double convex lens of focal length f is cut into 4 equivalent parts. One cut is perpendicular to the axis and the other is parallel to the axis of the lens. The focal length of each part is
1. $f/2$
 2. f
 3. $2f$
 4. $4f$
-
70. Two lenses of power -15D and $+5\text{D}$ are in contact with each other. The focal length of the combination is
1. $+10\text{cm}$
 2. -20cm
 3. -10cm
 4. $+20\text{cm}$
-
71. A convex lens A of focal length 20cm and a concave lens B of focal length 5cm are kept along the same axis with a distance d between them as shown in figure. If a parallel beam, then d is equal to (in cm):
- 
1. 15
 2. 20
 3. 22.5
 4. 25
-
72. The power of a lens used to remove the myopic defect of eye is 0.66D . The far point of this eye is (nearly)
1. 25cm
 2. 150cm
 3. 100cm
 4. 75cm
-
73. _____ lie between aqueous humor and the lens of the eye.
1. Pupil
 2. Iris
 3. Cornea
 4. Retina
-
74. When one ampere current is flowing through a wire the number of electrons that are passing any point in the conductor in one second is
1. 1.6×10^{19}
 2. 6.25×10^{18}
 3. 6.25×10^{20}
 4. 1.6×10^{18}
-
75. Two resistances 500ohm and 1000ohm are connected in series with a battery of 1.5 volt. The voltage across 1000Ω resistance is measured by a volt meter of resistance 1000Ω . The reading of volt meter is
1. 1.5V
 2. 1V
 3. 0.75V
 4. 0.5V
-
76. If a copper wire is stretched to increase its length by 0.1% . Then percentage of increase in its resistance will be
1. 0.2%
 2. 2%
 3. 1%
 4. 0.1%

77. V-i graph for a metal wire at temperature is as shown in figure



1. $T_1 = T_2$ 2. $T_1 < T_2$ 3. $T_1 > T_2$ 4. No relation

78. Orested demonstrate that

1. Electricity and magnetism were not related phenomena
2. Electricity and magnetism were related phenomena
3. Only electricity produced without influence of magnetism
4. Only magnetic field produced without influence of electricity

79. Inside the magnetic the lines of force are

1. from N – S 2. from S – N 3. Does not exists 4. None of the above

80. To measure the hotness and coldness of a body

1. Heat 2. Temperature 3. Specific heat 4. Humidity

CHEMISTRY

81. A solution turns red litmus to blue its pH is likely to be

1. 1 2. 4 3. 5 4. 10

82. The atomic number of an element whose differentiating electron enters in a d sub-shell

1. 13 2. 19 3. 32 4. 40

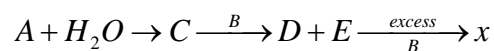
83. In the reaction of acids with metal carbonates the products formed are

1. $\text{CO}_2, \text{H}_2\text{O}$ 2. Salt, CO_2 3. Salt, CO_2 4. Salt, $\text{CO}_2, \text{H}_2\text{O}$

84. What is milk of magnesia?

- | | |
|----------------------|------------------------|
| 1. Calcium hydroxide | 2. Magnesium hydroxide |
| 3. Sodium hydroxide | 4. Barium hydroxide |

85. $\text{CaCO}_3 \xrightarrow{\Delta} \text{A} + \text{B} \uparrow$



1. $\text{Ca}(\text{OH})_2$ 2. CaO 3. CaCO_3 4. $\text{Ca}(\text{HCO}_3)_2$

86. Number of protons, neutrons and electrons in the element ${}_{89}^{231}\text{Y}$ is

1. 89, 231, 89 2. 89, 89, 242 3. 89, 142, 89 4. 89, 71, 89

87. The electronic configurations of A and B are $1s^2 2s^2 2p^6 3s^2$ and $1s^2 2s^2 2p^5$ respectively, the formula of the compound likely to be formed between them is

1. A_2B_6 2. AB_2 3. A_2B 4. AB

88. Which of the following may represent the ground state of nitrogen atom?

1. $\uparrow\downarrow\uparrow\downarrow\uparrow\downarrow\downarrow$ 2. $\uparrow\downarrow\uparrow\downarrow\uparrow\uparrow\uparrow$ 3. $\uparrow\downarrow\uparrow\downarrow\downarrow\downarrow\uparrow$ 4. $\downarrow\uparrow\uparrow\downarrow\uparrow\downarrow\downarrow$

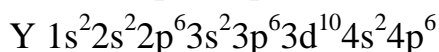
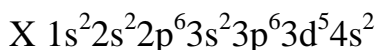
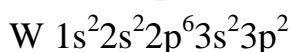
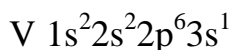
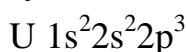
89. If the nitrogen had electronic configuration $1s^7$, it would have energy lower than that of the normal ground state configuration $1s^2 2s^2 2p^3$, because the electrons would be closer to the nucleus Yet $1s^7$ is not observed. It violates

1. Heisenberg's uncertainty principle
2. Hund's rule
3. Pauli's exclusion principle
4. Bohr postulate of stationary orbits

90. Which of the following is Dobereiner triad

1. Li, Na, K 2. Fe, Co, Ni 3. Ru, Rh, Pd 4. Os, Ir, Pt

91. The ground state electronic configurations of the elements, U, V, W, X, and Y (these symbols do not have any chemical significance) are as follows.



Determine which sequence of elements satisfy the following statements

- i) Element forms a carbonate which is not decomposed by heating
- ii) Element is most likely to form coloured ionic compounds
- iii) Element has largest atomic radius
- iv) Element forms only acidic oxide

1. V W Y U 2. V X Y W 3. V W Y X 4. V X W U

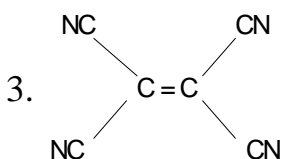
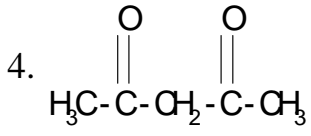
92. Which of the following is the correct order of energy levels

1. $1s < 2s < 2p < 3s < 3p < 3d < 4s < 4p$
2. $1s < 2s < 2p < 3s < 3p < 4s < 3d < 4p$
3. $1s < 2s < 2p < 3s < 4s < 3p < 3d < 4p$
4. $1s < 2s < 2p < 3s < 4s < 4p < 3p < 3d$

93. Match the following sets:

1)	Noble gas	a)	ns^1
2)	Alkali metals	b)	$ns^2 np^6$
3)	Halogens	c)	$ns^2 np^4$
4)	Chalcogens	d)	$ns^2 np^5$

1. 1 – b, 2 – a, 3 – d, 4 – c 2. 1 – a, 2 – b, 3 – c, 4 – d
3. 1 – b, 2 – d, 3 – a, 4 – c 4. 1 – c, 2 – a, 3 – d, 4 – b

94. Which of the following is not an oxide ore?
 1. Corundum 2. Zincite 3. Calamine 4. Chromite
-
95. Which of the following have covalent, coordinate and ionic all three types of bonds
 a) NH_4Cl b) KNO_3 c) $K_3[Fe(CN)_6]$ d) H_2CO_3
 1. only c 2. b and c only 3. a, b and c only 4. a, b, c and d
-
96. For ionic compounds correct statement is
 I) The higher the temperature, the more the solubility
 II) The higher the dielectric constant of the solvent, the more the solubility
 III) The higher the dipole moment of the solvent, the more the solubility
 IV) The higher the lattice energy, the more the solubility
 1. I, II & III 2. II, III, IV 3. I, IV & III 4. All the above
-
97. Which of the following is correct?
 1. the number of electrons present in the valence shell of S in SF_6 is 12
 2. The rates of ionic reactions are very slow
 3. In O_2 molecule there are two pi bonds
 4. correct order of ability to form ionic compounds is $Al^{3+} > Mg^{2+} > Na^+$
-
98. Among the following statements the incorrect one is
 1. Zincblende and iron pyrites are sulphides ore
 2. Haematite and zincite are oxide ore
 3. Epsomsalt & Gypsum are sulphate ore
 4. Lime stone & magnesite are carbonate ore
-
99. One mole of molecules of oxygen represents
 1. 6.02×10^{23} molecules of oxygen 2. 8 gms of oxygen
 3. 16g of O_2 4. 11.2L of O_2 at STP
-
100. The compound having same number of σ and Π bonds is
 1. $H_2C = CH - CN$ 2. $H_2C = CH - CH = CH_2$
 3.  4. 

THE END

KEY (SET-1)**MATHS**

1) 2	2) 4	3) 2	4) 2	5) 1	6) 2	7) 3	8) 3	9) 4	10) 1
11) 2	12) 2	13) 1	14) 3	15) 2	16) 1	17) 1	18) 4	19) 1	20) 2
21) 3	22) 1	23) 4	24) 3	25) 2	26) 2	27) 1	28) 1	29) 3	30) 1
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