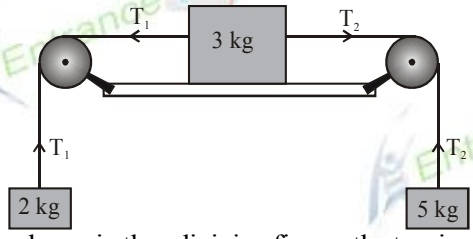
# PHYSICS

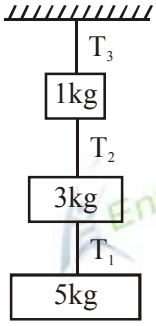
1. Passengers standing in a bus are thrown outwards when the bus takes a sudden turn. This happens because of
   (1) Outward pull on them
   (2) Inertia
   (3) Change in momentum
   (4) Change in acceleration

2. Three masses of 1 kg, 6 kg and 3 kg are connected to each other with threads and are placed on a frictionless table as shown in figure. What is the acceleration with which the system is moving ?(Take g =10 m $s^{-2}$)




   (1) Zero
   (2) 1 m $s^{-2}$
   (3) 2 m $s^{-2}$
   (4) 3 m $s^{-2}$

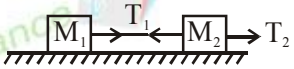
3. In the system shown in the adjoining figure, the tension $T_2$ is:




   (1) g
   (2) 2g
   (3) 8g
   (4) 6g

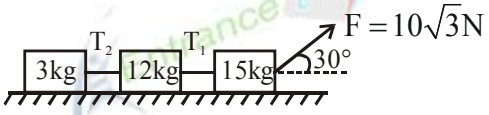
4. Newton's second law of motion gives the measure of:
   (1) Acceleration (2) Momentum
   (3) Force (4) Angular momentum

5. The masses $M_1$ and $M_2$ are accelerated uniformly on a frictionless surface as shown in figure. The ratio of the tensions $T_1/T_2$ is:



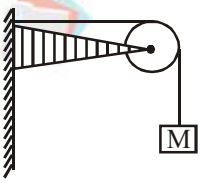

   (1) $\frac{M_1}{M_2}$ (2) $\frac{M_2}{M_1}$
   (3) $\frac{(M_1+M_2)}{M_2}$ (4) $\frac{M_1}{(M_1+M_2)}$

6. The surfaces are frictionless, the tension $T_1$ is




   (1) 6N (2) 5N
   (3) 10N (4) 7.5N

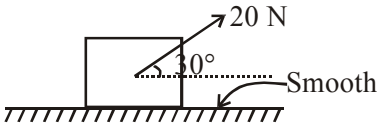
7. A string of negligible mass going over the clamped pulley (pulley is massless) as shown in figure. The force on the pulley by the clamp is




   (1) Mg
   (2) $\sqrt{2}$Mg
   (3) 2 Mg
   (4) Zero

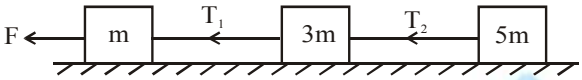
8. If an elevator is moving vertically up with an acceleration 'a', force exerted on the floor by a passenger of mass M travelling in the elevator is
   (1) Ma (2) Mg
   (3) Mg – Ma (4) Mg + Ma

9. The normal force N and the acceleration of the block of mass 2 kg when acted upon by 20 N force are




   (1) 10 N, Zero (2) 10 N, $5\sqrt{3}\,m/s^2$
   (3) $5\sqrt{3}$ N, $10\,m/s^2$ (4) Zero, $10\,m/s^2$

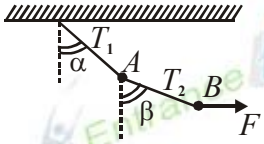
10. Fig shows a system of three masses being pulled with a force F. The masses are connected to each other by strings.




The horizontal surface is frictionless. The tension T1 in the first string is 16 N. The acceleration of the system is

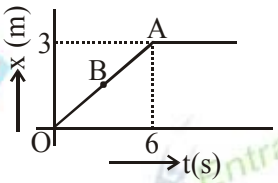
   (1) $\frac{1}{m}$ (2) $\frac{2}{m}$
   (3) $\frac{3}{m}$ (4) $\frac{4}{m}$

11. Two particles *A* and *B*, each of mass *m*, are kept stationary by applying a horizontal force *F* = mg on particle *B* is shown in the figure. Then



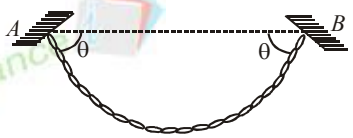

   (1) $\tan\alpha = 2\tan\beta$ (2) $\tan\alpha = \sqrt{2}\tan\beta$
   (3) $\tan\alpha = \tan\beta$ (4) None of these

12. The x-t graph of a particle of mass 3 kg is shown in figure. Force acting on the particle at point 'B' is



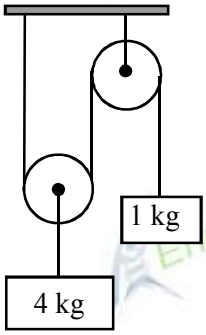

(1) 1.5 N
(2) 2.0 N
(3) Zero
(4) 9 N

13. A flexible chain of weight $W$ hangs between two fixed points $A$ and $B$ at the same level. The inclination of the chain with the horizontal at the two points of support is $\theta$. Tension in the chain at the end points is




(1) $W\cos\theta$
(2) $W\sin\theta$
(3) $\frac{W}{2}\text{cosec}\,\theta$
(4) $\frac{W}{2}\sec\theta$

14. In the system shown in the adjoining figure, the acceleration of the 1 kg mass is




(1) $\frac{g}{4}$ downwards
(2) $\frac{g}{4}$ upwards
(3) $\frac{g}{2}$ downwards
(4) $\frac{g}{2}$ upwards

15. If a bullet of mass 5 gm moving with velocity 100 m/sec, penetrates the wooden block upto 6 cm. Then the average force imposed by the bullet on the block is

(1) 8300N (2) 417N
(3) 830N (4) Zero

16. A person is standing in an elevator. In which situation he finds his weight less than actual when

(1) The elevator moves upward with constant acceleration
(2) The elevator moves downward with constant acceleration
(3) The elevator moves upward with uniform velocity
(4) The elevator moves downward with uniform velocity

17. A man is standing at a spring platform. Reading of spring balance is 60kg wt. If man jumps outside platform, then reading of spring balance

(1) First increases then decreases
(2) Decreases
(3) Increases (4) Remains same

18. N bullets each of mass m kg are fired with a velocity v $ms^{-1}$ at the rate of n bullets per second upon a wall. The reaction offered by the wall to the bullets is given by

(1) nmv (2) $\frac{Nmv}{n}$
(3) $n\frac{Nm}{v}$ (4) $n\frac{Nv}{m}$

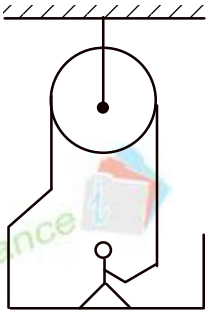
19. A lift is moving down the acceleration a. A man in the lift drops a ball inside the lift. The acceleration of the ball as observed by the man in the lift and a man standing stationary on the ground are respectively.

(1) g, g (2) g –a, g – a
(3) g – a, g (4) a, g

20. A block of mass m is placed on smooth wedge of inclination $\theta$. The whole system is accelerated horizontally so that the block does not slip on the wedge. The force exerted by the wedge on the block (g is acceleration due to gravity) will be

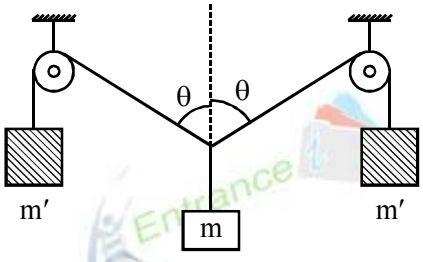
(1) $mg\cos\theta$ (2) $mg\sin\theta$
(3) mg (4) $mg\cos\theta$

21. A boy of mass 40 kg stands in a frame of mass 360 kg. He pulls on a light rope, which passes over a pulley. The other end of the rope is firmly attached to the frame. What force should be exerted by the body on the rope for the system to be in equilibrium?



(1) 40 g
(2) 400 g
(3) 200 g
(4) 100 g

22. In the arrangement shown in figure, the ends of an unstretchable string are connected to masses $m'$. Pulleys A and B are fixed. Masses m and $m'$ at equilibrium are related as



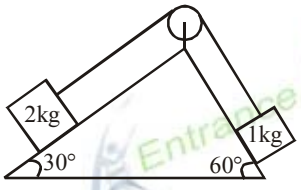

(1) $m' = m\sin\theta$ (2) $2m'\sin\theta = m$
(3) $m' = m\cos\theta$ (4) $2m'\cos\theta = m$

23. A smooth inclined plane of length L having inclination $\theta$ with the horizontal is inside a lift which is moving down with retardation a. The time taken by a body to slide down the inclined plane, from rest, will be

(1) $\sqrt{\frac{2L}{(g+a)\sin\theta}}$ (2) $\sqrt{\frac{2L}{(g-a)\sin\theta}}$

(3) $\sqrt{\frac{2L}{g\sin\theta}}$ (4) $\sqrt{\frac{2L}{a\sin\theta}}$

24. Which of the following regarding the diagram shown in **NOT TRUE** (consider all surface to be smooth)



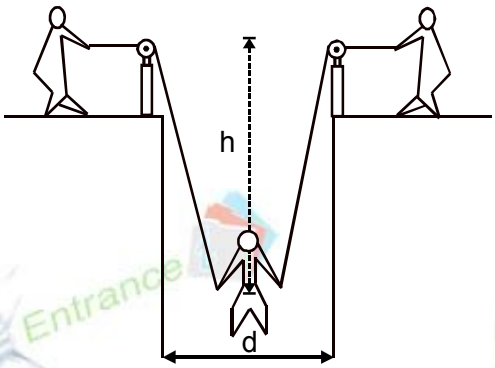

(1) System accelerates towards left

(2) If the blocks are interchanged tension in the string remains unchanged

(3) Force acting on pulley by the system of mass is $\sqrt{2}$ times the tension in the string

(4) None of these

25. A man of mass m has fallen into a ditch of width d. Two of his friends are slowly pulling him out using a light rope and two fixed pulleys as shown in figure. Both the friends exert forces of equal magnitude F. When the man is at a depth h, the value of F is




(1) $\frac{mg}{4h}\sqrt{d^2+4h^2}$ (2) hmg

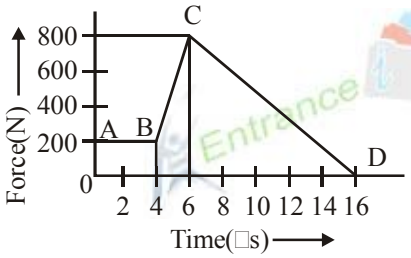
(3) dmg (4) infinite

26. A gun of mass 10kg fires 4 bullets per second. The mass of each bullet is 20g and the velocity of the bullet when it leaves the gun is 300 $ms^{-1}$. The force required to hold the gun while firing is:

(1) 6N (2) 8N

(3) 24N (4) 240N

27. The magnitude of force (in N) acting on a body varies with time t (in $\mu s$) as shown. AB, BC and CD are straight line segments. The magnitude of total impulse of force on the body from t = 4 $\mu s$ to t = 16 $\mu s$ is




(1) $6 \times 10^{-3}$ Ns (2) $3 \times 10^{-3}$ Ns

(3) $5 \times 10^{-3}$ Ns (4) $4 \times 10^{-3}$ Ns.

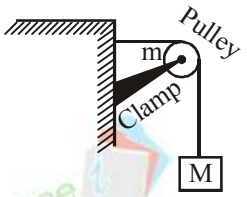
28. A massless string passes over a pulley of mass m to support a mass M. The force exerted on the pulley by its clamp per unit acceleration due to gravity is

(1) $((M+m)^2+m^2)$

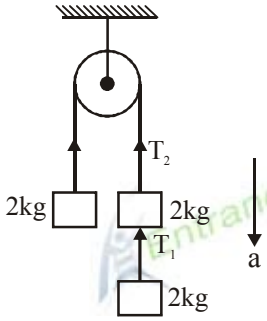
(2) $\sqrt{((M+m)^2-m^2}$

(3) $\left(\sqrt{(M+m)^2+m^2}\right)$

(4) $\sqrt{((M-m)^2+M^2)g}$




29. In figure, tension $T_1$ (when a be the acceleration of the masses) is




(1) Zero (2) 4 a

(3) 2 a (4) 3 a

30. Two blocks of masses 4 kg and 1 kg are in contact with each other on a frictionless table. When a horizontal force of 3.0 N is applied to the block of mass 4 kg, the value of the force of contact between the two blocks is

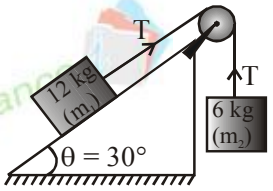
(1) 4 N

(2) 3 N

(3) 2 N

(4) 0.6 N

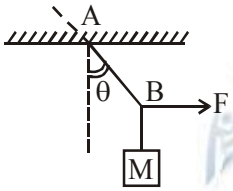
31. Two masses of 12 kg and 6 kg are connected by string as shown in the figure over a frictionless pulley. The acceleration of the block is




(1) 4 m $s^{-2}$ (2) 2 m $s^{-2}$
(3) Zero (4) 9.8 m $s^{-2}$

32. A mass M is suspended by a rope from a rigid support at A as shown in figure. Another rope is tied at the end B, and it is pulled horizontally with a force F. If the rope AB makes an angle θ with the vertical, then the tension in the string AB is :

(1) F sin θ
(2) F/sin θ
(3) F cos θ
(4) F/cos θ



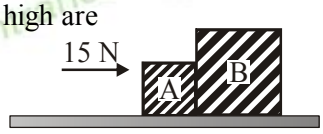

33. A block of mass M is pulled along a horizontal frictionless surface by a rope of mass *m*. Force P is applied at one end of the rope. The force which the rope exerts on the block is

(1) $\frac{P}{M-m}$ (2) $\frac{PM}{M+m}$
(3) $\frac{Pm}{M+m}$ (4) $Pm(M+m)$

34. A fireman wants to slide down a rope. The breaking load for rope is $\frac{3}{4}$th of the weight of the man. With what acceleration should the fireman slid down? (Acceleration due to gravity is *g*):

(1) *g*/4 (2) *g*/2
(3) 3*g*/4 (4) Zero

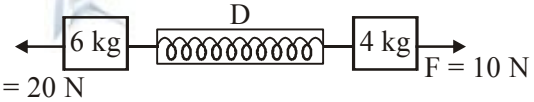
35. On a smooth plane surface two blocks A and B are accelerated up by applying a force 15 N on A as shown in high are




if mass of B is twice that of A, the force on B due to A

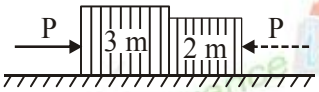
(1) 30 N (2) 15 N
(3) 10 N (4) 5 N

36. A dynamometer D is attached to two blocks of masses 6 kg and 4 kg. Forces of 20 N and 10 N are applied on the blocks as shown in figure. The dynamometer reads




(1) 10 N (2) 20 N
(3) 6 N (4) 14 N

37. Two blocks of masses 3 *m* and 2 *m* are in contact on a smooth table. A force P is first applied horizontally on block of mass 3 *m* and then on mass 2 *m*.



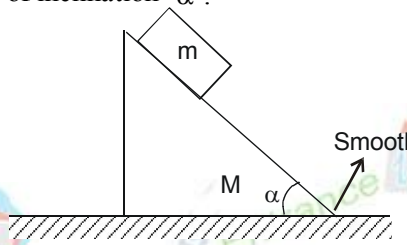

The contanct forces between the two blocks in the two cases are in the ratio

(1) 1 : 2 (2) 2 : 3
(3) 3 : 2 (4) 5 : 3

38. A ball of mass 0.05 kg travelling at 4ms$^{-1}$ hits a wall and rebounds without any change in its speed. If the ball remained in contact with the wall for 0.01 s, then the force exerted by the abll on the wall is

(1) 0.05 N (2) 0.01 N
(3) 50 N (4) 40 N

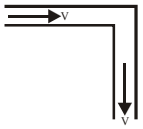
39. A block is kept on a frictionless inclined surface with angle of inclination '$\alpha$'.




The incline is given an acceleration '*a*' to keep the block stationary. Then *a* is equal to

(1) $g\tan\alpha$ (2) $g$
(3) $g$ cosec $\alpha$ (4) $g/\tan\alpha$

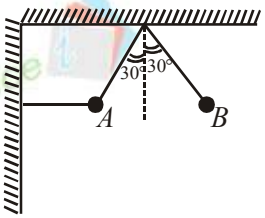
40. A liquid of density ρ is flowing inside a pipe of cross-sectional area A. The pipe is bent in the shape of a right angle as shown. What force should be exerted on the pipe at the corner to keep it fixed in the two cases shown ?



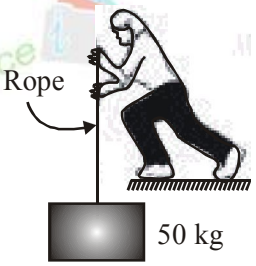

(1) $Av^2\rho$
(2) $\sqrt{2}Av^2\rho$
(3) $2Av^2\rho$ (4) $\sqrt{2}Av^2$

41. A ball is held at rest in position *A* by two light cords as shown in figure. The horizontal cord is now cut and the ball swings to the position *B*. What is the ratio of the tension in the cord in position *B* to that in initial position *A*?

(1) 3/4
(2) 1/2
(3) 3
(4) 1



42. If breaking tension of string is 600 N. The maximum acceleration with which block can be pulled up by the string is (Take $g$ = 10 m/sec$^2$)




(1) 1 ms$^{-2}$ (2) 2 ms$^{-2}$
(3) 4 ms$^{-2}$ (4) 5 ms$^{-2}$

43. A man of mass 90 kg is standing in an elevator whose cable broke suddenly. If the elevator falls freely, the force exerted by the floor on the man is:
(1) 90 N (2) 90 g N
(3) zero N (4) any negative value

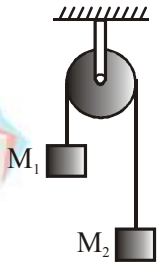
44. Three forces are acting on a particle of mass $m$ initially in equilibrium. If the first two forces ($R_1$ and $R_2$) are perpendicular to each other and suddenly the third force ($R_3$) is removed, then the acceleration of the particle is:

(1) $\frac{R_3}{m}$ (2) $\frac{R_1+R_2}{m}$

(3) $\frac{R_1-R_2}{m}$ (4) $\frac{R_1}{m}$

45. Two masses $M_1$ = 5 kg and $M_2$ = 10 kg are connected at the ends of an inextensible string passing over a frictionless pulley as shown. When the masses are released, then the acceleration of the masses will be:

(1) $g$
(2) $g/2$
(3) $g/3$
(4) $g/4$

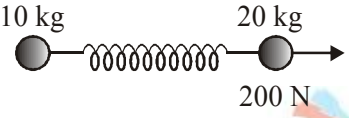



46. A balloon of mass $M$ is descending at a constant acceleration $\alpha$. When a mass $m$ is released from the balloon it starts rising with the same acceleration $a$. Assuming that its volume does not change, what is the value of $m$?

(1) $\frac{\alpha}{\alpha+g}M$ (2) $\frac{2\alpha}{\alpha+g}M$

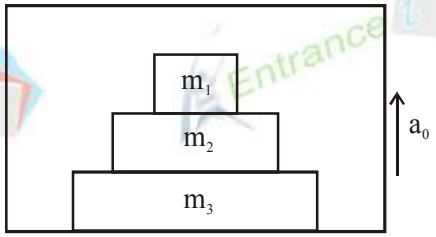
(3) $\frac{\alpha+g}{\alpha}M$ (4) $\frac{\alpha+g}{2\alpha}M$

47. Two masses of 10 kg and 20 kg respectively are connected by a massless spring as shown in figure.



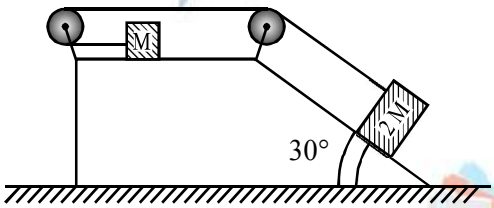

A force of 200 N acts on the 20 kg mass. At the instant when the 10 kg mass has an acceleration of 12 ms$^{-2}$, the acceleration of the 20 kg mass is:
(1) 2 ms$^{-2}$ (2) 4 ms$^{-2}$
(3) 10 ms$^{-2}$ (4) 20 ms$^{-2}$

48. The lift shown is moving upwards with an acceleration $a_0$. The contact force between $m_2$ & $m_3$ is



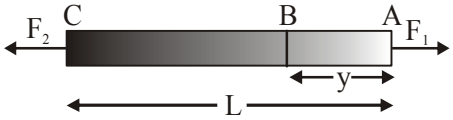

(1) $m_3[g + a_0]$ (2) $[m_1 + m_2][g - a_0]$
(3) $[m_1 + m_2][g + a_0]$ (4) $[m_2 + m_3][g + a_0]$

49. In the system shown, the acceleration of the masses is (there is no friction anywhere and pulleys and strings are ideal)




(1) g/2 (2) g/3
(3) g/4 (4) Zero

50. A rod of length $L$ and mass $M$ is acted on by two unequal forces $F_1$ and $F_2$ ($< F_1$) as shown in the following figure.




The tension in the rod at a distance $y$ from the end $A$ is given by:

(1) $F_1\left(1-\frac{y}{L}\right)+F_2\left(\frac{y}{L}\right)$ (2) $F_2\left(1-\frac{y}{L}\right)+F_1\left(\frac{y}{L}\right)$

(3) $(F_1-F_2)\frac{y}{L}$ (4) None of these

# CHEMISTRY

51. Decreasing order of electronegativies of F, Cl, Br and I is
(1) F < Cl < Br < I (2) I < Br < Cl < F
(3) Br < I > Cl > F (4) I < Br > Cl < F

52. Electronegativity of which of the following is high?
(1) $-CH_3$ ($sp^3$) (2) $H_2C = CH_2$ ($sp^2$)
(3) CH ≡ CH(sp) (4) Equal in all

53. Which of the following is the most polar bond
(1) N – H (2) Cl – H
(3) O – H (4) Br – H

54. Which of the following should be the order of increasing values of second ionisation potential of C, N, O and F
(1) C > N > F > O (2) C < F < N < O
(3) C < F < N < O (4) C < N < F < O

55. Which scientist gave periodic law on the basis of atomic volumes?
(1) Mendley (2) Bohr
(3) Lother Meyer (4) Moseley

56. Incorrect about element of atomic number 59 when placed in modern periodic table is?
(1) group 3
(2) period 7
(3) Lanthanoid series element
(4) inner–transition element

57. Which of the following will have covalent, ionic, and coordinate bond ?
(1) $NH_4Cl$ (2) HCl
(3) KCN (4) $O_3$

58. Which of the following has the highest magnetic moment?
(1) Cr (2) $Mn^{2+}$
(3) $Fe^{2+}$ (4) $Cu^{+}$

59. Which of the following is a pnicogen?
(1) P (2) S
(3) Se (4) Cl

60. Correct order of vanderwaal radii among the following is
(1) N > O > F > Ne (2) Ne > N > O > F
(3) N > Ne > O > F (4) F > Ne > O > N

61. In which of the following group a lower member has smaller atomic radius than than that of the element above it?
(1) group 13 (2) group 2
(3) group 14 (4) group 17

62. One which is mixed anhydride is
(1) $NO_2$ (2) $N_2O_5$
(3) $P_2O_5$ (4) $Cl_2O_7$

63. If we assume there are three electrons present in each orbital, then Na will be called as which block element?
(1) s–block (2) d–block
(3) f–block (4) p–block

64. Correct order of acidic strength among the following is
(1) $P_2O_5 > SO_3 > Cl_2O_7 > SO_2$
(2) $Cl_2O_7 > SO_3 > P_2O_5 > SO_2$
(3) $SO_3 > Cl_2O_7 > P_2O_5 > SO_2$
(4) $P_2O_5 > SO_2 > SO_3 > Cl_2O_7$

65. Electron–affinity of Cl is larger than that of F because
(1) higher atomic radius of F
(2) weaker inter electronic repulsion in Cl
(3) more vacant p–subshell in Cl
(4) smaller electronegativity of Cl

66. Which of the following property remains unchanged on going down the group?
(1) atomic size (2) density
(3) valence electrons (4) metallic character

67. Which group has all metals ?
(1) III A (2) IV A
(3) II A (4) VI A

68. The values of $I.E_1$ , $I.E_2$ , $I.E_3$, $I.E_4$ and $I.E_5$ of an element are 8.1, 14.3, 34.5, 46.8 and 162.2 eV respectively. The element is likely to be
(1) Na (2) Si
(3) F (4) Ca

69. For the processes $K^+(g) \xrightarrow{I} K(g) \xrightarrow{II} K(s)$
(1) energy is released in (I) and absorbed in (II)
(2) Energy is absorbed in (I) and released in (II)
(3) Energy is absorbed in both the processes
(4) Energy is released in both the processes

70. False statement for periodic classification of elements is
(1) The properties of the elements are periodic function of their atomic numbers
(2) No. of nonmetallic elements is less than the number of metallic elements
(3) First ionization energy of elements is not change continuously with increasing of atomic number in a period
(4) d–subshell is filled by directional electron with increasing atomic number of transition elements.

71. The radius of $La^{3+}$ is 1.06 $A^o$. Which one of the following given values will be closest to the radius of $Lu^{3+}$ ?
(1) $0.85\,A^o$ (2) $1.60A^o$
(3) $1.40A^o$ (4) $1.06\,A^o$

72. Element A, B, C, D belong to the same group. The basis character of their oxides will be in which order if the atomic numhber of A, B, C, D are (Z – x) , (Z + 2x + 2), Z, (Z + x) respectively
(1) A < B < C < D (2) A > B > C > D
(3) B > D > C > A (4) B > C > D > A

73. If the E.N difference between A and B elements is 1.0 then according to Hanny-Smith, percentage ionic character is nearly
(1) 19.5 (2) 39
(3) 51 (4) 63

74. Relative arrangements of various elements according to decreasing values of electron affinity :
(1) Cl > F > O > S > N > P
(2) Cl > F > S > O > P > N
(3) Cl > F > O > N > S > P
(4) F > O > N > Cl > S > P

75. From the ground state electronic configura-tions of the elements given below, pick up the one with highest value of second ionisation energy
(1) $1s^2 2s^2 2p^6 3s^2$
(2) $1s^2 2s^2 2p^6 3s^1$
(3) $1s^2 2s^2 2p^6$
(4) $1s^2 2s^2 2p^5$

76. The elements which occupy the peaks of ionisation energy curve are
(1) Na, K, Rb, Cs
(2) Na, Mg, Cl, I
(3) Cl, Br, I, F
(4) He, Ne, Ar, Kr

77. Which of the following does not affect the ionisation potential of the atom?
(1) Nuclear charge
(2) Electron neutrality with protons
(3) Penetration effect
(4) Atomic size

78. $r_{(Vander\ Waal)}$ is
(1) half the bond length
(2) twice the bond length
(3) half the distance between centres of nuclei of two non bonded atoms of adjacent molecules is solid state
(4) none of these

79. The size of following species increases in the order
(1) $Mg^{2+} < Na+ < F^- < Al$
(2) $F^- < Al < Na^+ < Mg^{2+}$
(3) $Al < Mg^{2+} < F^- < Na^+$
(4) $Na^+ < Al < F^- < Mg^{2+}$

80. The general configuration for elements of group 9 is
(1) $(n-1)d^6ns^2$ (2) $nd^7ns^2$
(3) $(n-1)d^2ns^2np^2$ (4) $(n-1)d^7ns^2$

81. Which among the following is not iso-electronic with CO?
(1) $NO^-$ (2) $CN^-$
(3) $N_2$ (4) $O_2^{2+}$

82. Diagonal relationship is shown by
(1) all elements with their diagonally opposite elements
(2) all elements of 3rd and 4th periods
(3) some of the elements of 2nd and 3rd periods
(4) elements of *d*-block

83. From the data given below for Nacl, the E.A of chlorine is
$\Delta H = -98$ K.cal/mol
$S_{Na} = 36$ K.cal/mol
$I_{Na} = 118.5$ K.cal/mol
$\frac{1}{2} D_{Cl_2} = 29$ K.cal/mol
$U_{Nacl} = -198.2$ K.cal/mol
(1) –83.4 K.cal/mol
(2) –108 K.cal/mol
(3) –75 K.cal/mol
(4) –128 K.cal/mol

84. A $\sigma$ bonded molecule $MX_3$ is T-shaped. The number of non-bonding pairs of electrons on the center atom is
(1) 0
(2) 2
(3) 1
(4) can be predicted only if atomic number of M is known

85. What is the correct order of Ist IE among the following
(1) Li < B < Be < C < O < N < F
(2) Li < Be < B < C < N < F
(3) Li < Be < B < C < N < O < F
(4) Li < B < Be < C < O < N < F

86. What will be the total number of elements in 2nd period if each orbital can contain three electrons
(1) 8 (2) 12
(3) 16 (4) 4

87. In which process the energy released is lowest
(1) $Cl + \bar{e} \rightarrow Cl^-$
(2) $F + \bar{e} \rightarrow F^-$
(3) $I + \bar{e} \rightarrow I^-$
(4) It will be same in all cases

88. An element (A) of alkalinetals which form nitride and oxide on reaction with air is
(1) Li (2) Cs
(3) Be (4) Mg

89. The polarity in covalent bond makes the bond
(1) More stable (2) Less stable
(3) Does not affect (4) Can be 1 or 2

90. Which of the following set of species has positive value of electron gain enthalpy
(1) $N^{2-}$, $O^-$, Ne (2) P, $O^-$, O
(3) F, Cl, Br (4) N, O, Be

91. Atomic radii of Cl and Ar in Å units is
(1) 0.99, 0.99 (2) 0.99, 1.91
(3) 1.91, 1.91 (4) 1.91, 0.99

92. The second ionisation energy of Cl, Ar, K & Ca are in the order
(1) K > Cl > Ar > Ca
(2) Ar > Cl > K > Ca
(3) K > Ar > Cl > Ca
(4) None of these

93. The size of the following species increases in the order
(1) $Mg^{+2} < Na^+ < F^- < Al^{3+}$
(2) $Mg^{+2} < Na^+ < Al^{3+} < F^-$
(3) $F^- < Na^+ < Mg^{++} < Al^{3+}$
(4) $Al^{3+} < Mg^{++} < Na^+ < F^-$

94. Identify the least stable
(1) $F^-$ (2) $C^-$
(3) $N^-$ (4) $B^-$

95. Mendeleef periodic law failed because it was
(1) based on electronic configuration of atom
(2) based on atomic weight
(3) discovery of isotope
(4) related to Octaws rule

96. The order of covalent, metallic & vanderwaal radii of Na are in order
(1) Vanderwaal > metallic > covalent
(2) Metallic > covalent > vanderwaal
(3) Vanderwaal > covalent > metallic
(4) None of these

97. Carbon atoms in $C_2(CN)_4$ are
(1) sp hybridised
(2) $sp^2$ hybridised
(3) sp and $sp^2$ hybridised
(4) sp, $sp^2$ & $sp^3$ hybridised

98. Among LiCl, RbCl, $BeCl_2$ and $MgCl_2$, the compound with the greatest and least ionic character respectively are
(1) LiCl and RbCl
(2) RbCl and $BeCl_2$
(3) RbCl and $MgCl_2$
(4) $MgCl_2$ & $BeCl_2$

99. The incorrect order of ionisation energy is
(1) $Cl^- < Ar < K^+$
(2) Ca < Mg < Be
(3) N < O < F
(4) Cs < Rb < K

100. Hypervalent compound is
(1) $SO_4^{-2}$
(2) $NH_3$
(3) $\overset{+}{N}H_4$
(4) $BeF_2$