

# ALLEN SHARP

ALLEN's Scholarship Test and Reward Program

## SAMPLE TEST PAPER

CLASS XI



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**BEWARE OF NEGATIVE MARKING**

**SECTION-A : MENTAL ABILITY**

This section contains **30 Multiple Choice Questions**. Each question has four choices (1), (2), (3) and (4) out of which **ONLY ONE** is correct

- Five friends A, B, C, D and E are standing in a row facing south but not necessarily in the same order. Only B is between A and E. C is immediate right to E and D is immediate left to A. On the basis of above information, which of the following statements is definitely true?
 

(1) B is the left of A	(2) B is to the right of E
(3) A is second to the left of C	(4) D is third to the left of E
- $4 : 19 :: 7 : ?$ 

(1) 52	(2) 49	(3) 28	(4) 68
--------	--------	--------	--------
- Using the total number of alphabets in your solution as a parameter, find the number that represents G is:  
A – 0, B – 0, C – 2, D – 2, E, – 1, F – 2, G – ?
 

(1) 2	(2) 3	(3) 4	(4) 5
-------	-------	-------	-------
- If FEED is coded as 47 and TREE is coded as 91, then MEET will be coded as :-
 

(1) 110	(2) 114	(3) 118	(4) 122
---------	---------	---------	---------
- The average age of a six member family is 22 years. If the youngest member of the family is 7 years old, then one hour before the birth of this member, what was the average age of the family?
 

(1) 18 years	(2) 20 years	(3) 16 years	(4) 19 years
--------------	--------------	--------------	--------------

**Directions (Questions 6 & 10)**

Read carefully the information given below and answer questions :

Eight person A, B, C, D, E, F, G and H are seated in a line and all of them are facing North, not necessarily in the same order. Each one of the above person lives in different floor of a eight floor building (e.g. 1, 2, 3, 4, 5, 6, 7 and 8) not necessarily in the same order.

The person living on the 3<sup>rd</sup> floor is sitting on the second place towards right of the person living on 2<sup>nd</sup> floor. C lives on 5<sup>th</sup> floor, A is sitting on the fourth place towards left of the person living on 8<sup>th</sup> floor. D is not sitting on either side of H. Neither A nor the person living on 8<sup>th</sup> floor are sitting on the extreme ends of the line, B is sitting on the third place towards left of F. There is only one person sitting between G who lives on 1<sup>st</sup> floor and the person living on 8<sup>th</sup> floor. In between G and the person living on 7<sup>th</sup> floor there are sitting 2 persons. H is sitting just left of the person living on 7<sup>th</sup> floor. Between H and F, who lives on 6<sup>th</sup> floor there are two persons sitting.

- B lives on which floor?
 

(1) 5 <sup>th</sup>	(2) 3 <sup>rd</sup>	(3) 2 <sup>nd</sup>	(4) 7 <sup>th</sup>
---------------------	---------------------	---------------------	---------------------
- How many persons are sitting between G and B?
 

(1) 1	(2) 2	(3) 3	(4) 4
-------	-------	-------	-------
- D lives on which floor?
 

(1) 3 <sup>rd</sup>	(2) 4 <sup>th</sup>	(3) 2 <sup>nd</sup>	(4) 7 <sup>th</sup>
---------------------	---------------------	---------------------	---------------------
- Who is sitting just left of the person living on 7<sup>th</sup> floor?
 

(1) H	(2) F	(3) A	(4) B
-------	-------	-------	-------

10. Who is sitting three places towards right of A?

- (1) B                                      (2) E                                      (3) F                                      (4) C

**Directions (Questions 11)**

In the following questions complete the given number series with the most suitable alternative in place of question (?).

11. 2, 10, 30, 68, ?

- (1) 125                                      (2) 130                                      (3) 138                                      (4) 204

**Directions (Questions 12)**

Consider the following statements :

There are six villages A, B, C, D, E and F.

F is 1 km to the west of D.

B is 1 km to the east of E.

A is 2 km to the south of E.

C is 1 km to the east of A.

D is 1 km to the south of A.

12. If '-' means division '÷' means multiplication. '+' means subtraction and 'x' means addition, then which of the following equation is correct?

- (1)  $20 + 8 - 7 \div 6 \times 4 = 25$                                       (2)  $20 - 5 \div 4 + 6 \times 5 = 15$   
 (3)  $20 \times 5 - 6 \div 7 + 4 = 28$                                       (4)  $20 \div 4 - 8 \times 10 + 6 = 36$

**Directions (Questions 13)**

Complete the given analogy :

13. CE : 70 :: DE : ?

- (1) 90                                      (2) 60                                      (3) 120                                      (4) 210

14. P is the brother of Q and R. S is R's mother. T is P's father. Which of the following statements cannot be true?

- (1) T is Q's father                      (2) S is P's mother                      (3) P is S's son                              (4) Q is Ts son

**Directions (Questions 15)**

Find the missing number :

15.

- (1) 320                                      (2) 274                                      (3) 262                                      (4) 132

**Directions (Questions 16)**

In each of the following sets of figures. Select the one figure that is different from the other figures from the given option :

16.

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

**Directions (Questions 17-18)**

In each of the following questions two statements and two conclusion numbered I and II are given. You have to take the given two statements to be true even if they seem to be at variance from commonly known facts. Read the conclusions and then decide which of the given conclusions logically follows from the two given statements.

- 17. Statements :** (I) All dancers are singers.  
(II) All singers are teachers.
- Conclusions :** (I) All dancers are teachers.  
(II) Some singers are dancers.
- (1) Only conclusions I is true (2) Only conclusions II is true  
(3) Both conclusions I and II are true (4) Neither conclusion I nor conclusion II is true

- 18. Statements :** (I) No Horse is Dog.  
(II) All Dogs are Elephants.
- Conclusions :** (I) No Elephant is Horse.  
(II) Some Elephants are Dogs.
- (1) Only conclusions I is true (2) Only conclusions II is true  
(3) Both conclusions I and II are true (4) Neither conclusion I nor conclusion II is true

- 19.** Choose the alternative which is closely resembles the mirror image of the given combination :

**ANS43Q12**

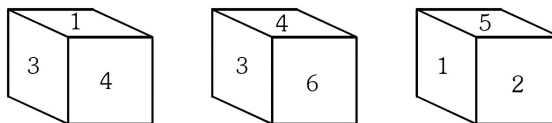
- (1) AN24E012 (2) 510E42NA (3) 2NAE4021 (4) 120E4AN2

- 20.** Graduate, Hard-working and honest rural people are indicated by :-

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

**Directions (Questions 21)**

A dice is thrown 3 times and its 3 positions are given in the picture below. Answer the following questions :

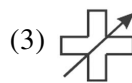
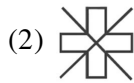
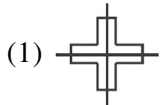
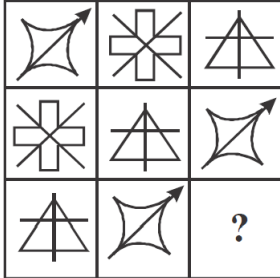


- 21.** Which number is opposite to 1?  
(1) 2 (2) 3 (3) 4 (4) 6

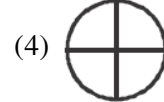
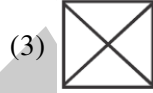
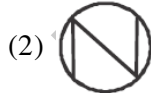
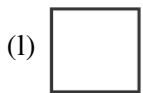
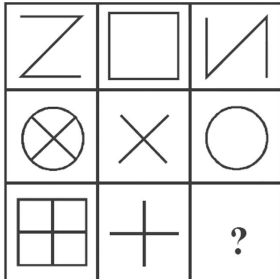
**Directions (Questions 22-23)**

Each of the items 56 to 59 consists of a square of 9 cells in three rows and three columns. The designs in each row or column follow the same rule. Choose the correct answer from among the given alternatives to suit the cell indicated by the question mark (?).

22.



23.



24. If Friday is the first day of a leap year, what day would be the last day of the same year?

- (1) Friday                      (2) Saturday                      (3) Thursday                      (4) Sunday

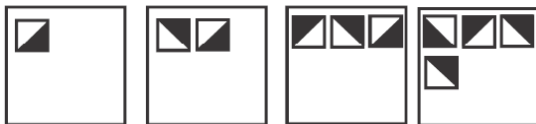
25. If blue means green; green means white; white means yellow; yellow means black and black means red, then what is the colour of milk?

- (1) White                      (2) Yellow                      (3) Black                      (4) Green

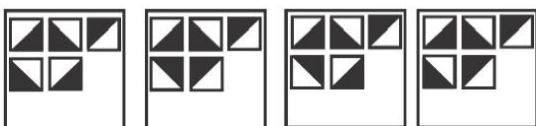
**Directions (Questions 26)**

In each of these questions, the four problem figures in each row make a series. Find out the one which would come next in the series from among the answer figures given.

26. Problem Figures :



Answer Figures :

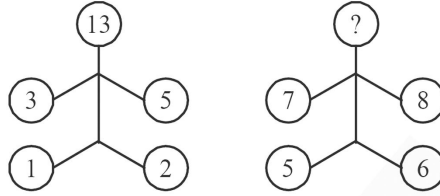


- (1)                      (2)                      (3)                      (4)

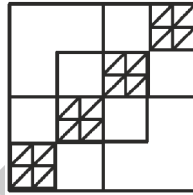
- (1) 1                      (2) 2                      (3) 3                      (4) 4

27. If all the letters of the word QUESTION are rearranged in alphabetical order and substituted by the letter immediately following it in the English alphabet, what will be the new arrangement of letters?  
 (1) FJOPRUVT      (2) FJOPRTUV      (3) FJOPRUTV      (4) FJOPRTVU

28. Find the missing number :



- (1) 20      (2) 22      (3) 24      (4) 26
29. If the first day of a non-leap year falls on Tuesday, then the 15th of August of the same year falls on :-  
 (1) Tuesday      (2) Thursday      (3) Friday      (4) Saturday
30. Find the number of triangle :

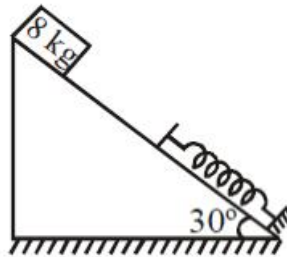


- (1) 38      (2) 48      (3) 44      (4) 40

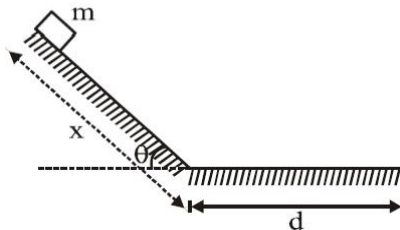
**SECTION-B : PHYSICS**

This section contains **30 Multiple Choice Questions**. Each question has four choices (1), (2), (3) and (4) out of which **ONLY ONE** is correct

31. A block of mass 8 kg is released from the top of an inclined smooth surface as shown in figure. If spring constant of spring is 200 N/m and block comes to rest after compressing spring by 1 m then find the distance travelled by block before it comes to rest :-

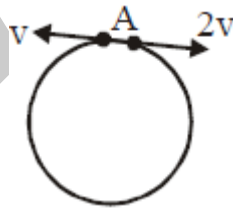


- (1) 2.5 m      (2) 3.5 m      (3) 2.0 m      (4) None
32. A block of mass  $m$  is released on the top of a smooth inclined plane of length  $x$  and inclination  $\theta$  as shown in figure. Horizontal surface is rough. If block comes to rest after moving a distance  $d$  on the horizontal surface, then coefficient of friction between block and surface is :-

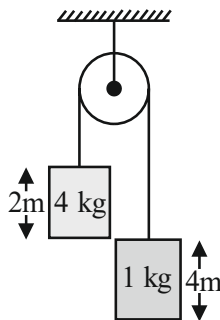


- (1)  $\frac{x \sin \theta}{2d}$       (2)  $\frac{x \cos \theta}{2d}$       (3)  $\frac{x \sin \theta}{d}$       (4)  $\frac{x \cos \theta}{d}$

33. The potential energy of a particle of mass 1 kg moving along x-axis given by  $U(x) = \left[ \frac{x^2}{2} - x \right]$  J. If total mechanical energy of particle is 2J then find its maximum speed (in m/s) :-  
 (1)  $\sqrt{5}$                       (2)  $\sqrt{7}$                       (3)  $\sqrt{3}$                       (4) None
34. A cart of mass M is tied to one end of a massless rope of length 10m. The other end of the rope is in the hands of a man of mass  $\frac{M}{2}$ . The entire system is on a smooth horizontal surface. If the man pulls the cart by the rope then find the distance the man will slip on the horizontal surface before the man and the cart will meet each other.  
 (1)  $\frac{20}{3}$  m                      (2)  $\frac{10}{3}$  m                      (3) 0                      (4) None
35. A body of mass 2 kg moving with a velocity of 3 m/s collides head on with a body of mass 1 kg moving with a velocity of 4 m/s in opposite direction. After collision the two bodies stick together and move with a common velocity :-  
 (1) (1/4) m/s                      (2) (1/3) m/s                      (3) (2/3) m/s                      (4) (3/4) m/s
36. A disc of radius r is cut from a larger disc of radius 4r in such a way that the edge of the hole touches the edge of the disc. The centre of mass of the residual disc will be a distance from centre of larger disc :-  
 (1)  $\frac{r}{5}$                       (2)  $\frac{r}{4}$                       (3)  $\frac{r}{2}$                       (4)  $\frac{r}{3}$
37. A mass of M kg is suspended by a weightless string, the horizontal force that is required to displace it until the string makes an angle of  $45^\circ$  with the initial vertical direction is :-  
 (1)  $Mg\sqrt{2}$                       (2)  $\frac{Mg}{\sqrt{2}}$                       (3)  $Mg(\sqrt{2}-1)$                       (4)  $Mg(\sqrt{2}+1)$
38. Two small particles of equal masses start moving in opposite directions from a point A in a horizontal circular orbit. Their tangential velocities are v and 2v, respectively, as shown in the figure. Between collisions, the particles move with constant speeds. After making how many elastic collisions, other than that at A, these two particles will again reach the point A :-

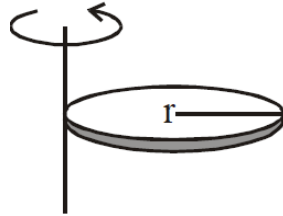


- (1) 4                      (2) 3                      (3) 2                      (4) 1
39. In the figure both the blocks are released from rest. The time taken by both the blocks to cross each other is :-



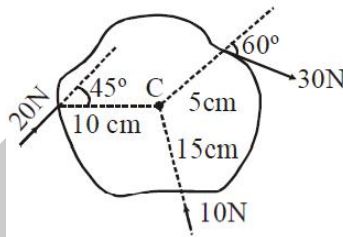
- (1) 2s                      (2) 3s                      (3) 1s                      (4) 4s

40. A body of mass  $M$  is placed on the top of a smooth hemisphere of radius  $5m$ . It is released to slide down the surface of the hemisphere. It leaves the sphere when its velocity is  $5m/s$ . At this instant the angle made by the radius vector of the body with the vertical is ( $g = 10m/s^2$ ) :-  
 (1)  $30^\circ$  (2)  $45^\circ$  (3)  $60^\circ$  (4)  $90^\circ$
41. A solid sphere of radius  $R$  has moment of inertia  $I$  about its diameter. It is melted into a disc of radius  $r$  and thickness  $t$ . If its moment of inertia about the tangential axis (which is perpendicular to plane of the disc), is also equal to  $I$ . then the value of  $r$  and  $t$  are (respectively):-

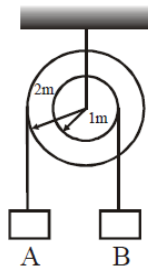


- (1)  $\frac{2}{\sqrt{15}} R, 5R$  (2)  $\frac{2}{\sqrt{5}} R, 2R$  (3)  $\frac{3}{\sqrt{15}} R, \frac{R}{2}$  (4)  $\sqrt{\frac{3}{15}} R, \frac{R}{5}$

42. Point  $C$  is the centre of the rigid body shown in Figure. Find the total torque acting on the body about point  $C$ . (CW-clockwise. ACW-anticlockwise) :-



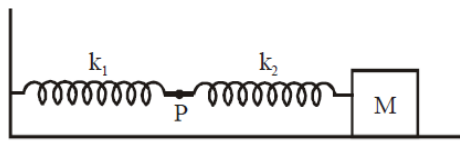
- (1)  $1.71 \text{ Nm CW}$  (2)  $2.71 \text{ Nm ACW}$  (3)  $270 \text{ Nm CW}$  (4)  $2.71 \text{ Nm CW}$
43. In the pulley system shown, if radii of the bigger and smaller pulley are  $2m$  and  $1m$  respectively and the acceleration of block  $A$  is  $5m/s^2$  in the downward direction, then the acceleration of block  $B$  will be :-



- (1)  $0 \text{ m/s}^2$  (2)  $5 \text{ m/s}^2$  (3)  $10 \text{ m/s}^2$  (4)  $5/2 \text{ m/s}^2$
44. A wire can be broken by applying a load of  $20 \text{ kg wt}$ . The force required to break the wire of twice the diameter is :  
 (1)  $20 \text{ kg wt}$ . (2)  $5 \text{ kg wt}$ . (3)  $80 \text{ kg wt}$ . (4)  $160 \text{ kg wt}$ .
45. A block of metal (density  $7 \text{ g/cc}$ ) of size  $5 \text{ cm} \times 5 \text{ cm} \times 5 \text{ cm}$  is weighed completely submerged in water. What will be its apparent weight (density of water =  $1 \text{ g/cc}$ ) ?  
 (1)  $(6 \times 5 \times 5 \times 5) \text{ g}$  (2)  $(4 \times 4 \times 4 \times 7) \text{ g}$  (3)  $(7 \times 5 \times 5 \times 5) \text{ g}$  (4)  $(4 \times 4 \times 4 \times 6) \text{ g}$
46. A hole is in the bottom of the tank having water. If total pressure at the bottom is  $3 \text{ atm}$  ( $1 \text{ atm} = 10^5 \text{ N m}^{-2}$ ), then velocity of water flowing from hole is :-  
 (1)  $\sqrt{400} \text{ ms}^{-1}$  (2)  $\sqrt{600} \text{ ms}^{-1}$  (3)  $\sqrt{60} \text{ ms}^{-1}$  (4) None of these

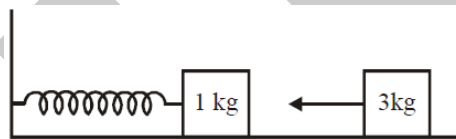


47. A cylindrical vessel filled with water upto the height  $H$  becomes empty in time  $t_0$  due to a small hole at the bottom of the vessel. If water is filled in the same vessel to a height  $4H$  it will flow out in time  
 (1)  $8t_0$  (2)  $4t_0$  (3)  $2t_0$  (4)  $t_0$
48. A ball of mass ' $m$ ' and radius ' $r$ ' is released in viscous liquid. The value of its terminal velocity is proportional to :-  
 (1)  $(1/r)$  only (2)  $m/r$  (3)  $(m/r)^{1/2}$  (4)  $m$  only
49. The amount of work done in forming a soap bubble (S.T. =  $30 \times 10^{-3} \text{N/m}$ ) of radius 5 cm is:-  
 (1)  $1.88 \times 10^{-3} \text{ J}$  (2)  $1.88 \times 10^1 \text{ J}$  (3)  $1.88 \times 10^{-1} \text{ J}$  (4)  $1.88 \times 10^3 \text{ J}$
50. Water rises in a capillary tube to a certain height such that the upward force due to surface tension is balanced by  $75 \times 10^{-4} \text{N}$ , force due to the weight of the liquid. If the surface tension of water is  $6 \times 10^{-2} \text{ N/m}$ , the inner circumference of the capillary must be:-  
 (1)  $1.25 \times 10^{-2} \text{ m}$  (2)  $0.50 \times 10^{-2} \text{ m}$  (3)  $6.5 \times 10^{-2} \text{ m}$  (4)  $12.5 \times 10^{-2} \text{ m}$
51. The mass  $M$  shown in the figure oscillates in simple harmonic motion with amplitude  $A$ . The amplitude of the point  $P$  is :



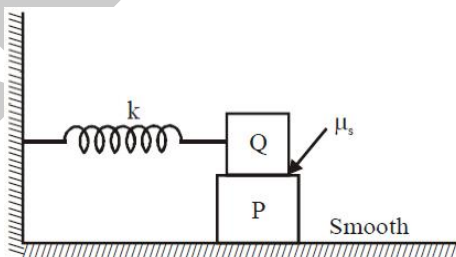
- (1)  $\frac{k_1 A}{k_2}$  (2)  $\frac{k_2 A}{k_1}$  (3)  $\frac{k_1 A}{k_1 + k_2}$  (4)  $\frac{k_2 A}{k_1 + k_2}$

52. One end of an ideal spring is fixed with a wall and the other end is fixed with a block of mass 1 kg. Force constant of spring is 100 N/m and block is performing S.H.M. with amplitude 3 cm. When the block is at left extreme position, another block of mass 3 kg moving directly towards 1 kg block with velocity 80/3 cm/s collides and gets stuck to it. The amplitude of oscillation of the combined body is :



- (1) 3 cm (2) 4 cm (3) 5 cm (4) 6 cm

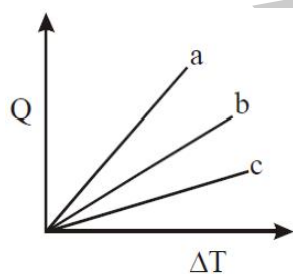
53. A block  $P$  of mass  $m$  is placed on a frictionless horizontal surface. Another block  $Q$  of same mass is kept on  $P$  and connected to the wall with the help of a spring of spring constant  $k$  as shown in the figure.  $\mu_s$  is the coefficient of friction between  $P$  and  $Q$ . The blocks move together performing simple harmonic motion with amplitude  $A$ . The maximum value of the friction force between  $P$  and  $Q$  is :



- (1)  $kA$  (2)  $\frac{kA}{2}$  (3) zero (4)  $\mu_s mg$

54. A body is executing simple harmonic motion. At a displacement  $x$ , its potential energy is  $E_1$  and at a displacement  $y$ , its potential energy is  $E_2$ . The potential energy  $E$  at a displacement  $(x + y)$  is :
- (1)  $E_1 + E_2$  (2)  $\sqrt{E_1^2 + E_2^2}$   
 (3)  $E_1 + E_2 + 2\sqrt{E_1 E_2}$  (4)  $\sqrt{E_1 E_2}$

55. For the pitch of a screw 0.1 cm and 200 divisions on the circular scale. The least count will be :-  
 (1) 0.5 mm                      (2) 0.05 mm                      (3) 0.005 mm                      (4) 0.0005 mm
56. If P, Q, R are physical quantities, having different dimensions, which of the following combinations can never be meaningful quantity :-  
 (a)  $\frac{(P-Q)}{R}$                       (b) PQ -R                      (c)  $\frac{PQ}{R}$                       (d)  $\frac{(R+Q)}{P}$   
 (1) (a) and (d)                      (2) (b) and (c)                      (3) (b) and (d)                      (4) (c) and (d)
57. Frequency 'f', velocity 'v' and density 'D' are considered as fundamental units the dimensional formula of momentum is :-  
 (1)  $Dv^4t^{-3}$                       (2)  $Dv^2t^{-1}$                       (3)  $Dvf^2$                       (4)  $D^2v^2f^2$
58. Figure shows the variation in temperature ( $\Delta T$ ) with the amount of heat supplied (Q) in an isobaric process corresponding to a monoatomic (M), diatomic (D) and a polyatomic (P) gas. The initial state of all the gases are the same and the scales for the two axes coincide. Ignoring vibrational degrees of freedom, the lines a, b and c respectively correspond to :



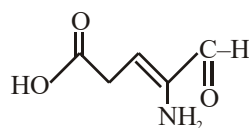
- (1) M, D and P                      (2) D, M and P                      (3) P, D and M                      (4) P, M and D
59. The following sets of values for  $C_v$  and  $C_p$  of a gas have been reported by different students. The units are cal/mole-K. Which of these sets is most reliable ?  
 (1)  $C_v = 3, C_p = 5$                       (2)  $C_v = 3, C_p = 6$                       (3)  $C_v = 3, C_p = 2$                       (4)  $C_v = 3, C_p = 4.2$
60. For a gas if  $\gamma = 1.4$ , then atomicity,  $C_p$  and  $C_v$  of the gas are respectively :-  
 (1) monoatomic,  $\frac{5}{2} R, \frac{3}{2} R$                       (2) monoatomic,  $\frac{7}{2} R, \frac{5}{2} R$   
 (3) diatomic,  $\frac{7}{2} R, \frac{5}{2} R$                       (4) triatomic, 7 R, 5 R

**SECTION-C : CHEMISTRY**

This section contains **30 Multiple Choice Questions**. Each question has four choices (1), (2), (3) and (4) out of which **ONLY ONE** is correct

61. Which of the following alkaline earth metal sulphates has hydration enthalpy higher than the lattice enthalpy:  
 (1)  $\text{SrSO}_4$                       (2)  $\text{CaSO}_4$                       (3)  $\text{BeSO}_4$                       (4)  $\text{BaSO}_4$
62. The pH of  $1 \times 10^{-3}$  M  $\text{CH}_3\text{COOH}$  solution is  
 ( $K_a$  of  $\text{CH}_3\text{COOH} = 2.2 \times 10^{-12}$ )  
 (1) 3                      (2) Slightly less than 7  
 (3) Slightly greater than 7                      (4) 7
63. Correct order of Ionic radii is :-  
 (1)  $\text{Ti}^{+4} < \text{Mn}^{+2}$                       (2)  $^{35}\text{Cl}^- < ^{37}\text{Cl}^-$                       (3)  $\text{K}^+ > \text{S}^{-2}$                       (4)  $\text{P}^{+3} > \text{P}^{+5}$
64. Temperature of system decreases in an  
 (1) adiabatic expansion                      (2) isothermal compression  
 (3) isothermal expansion                      (4) adiabatic compression

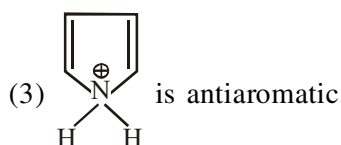
65. What is IUPAC name of following compound ?



- (1) 2-Amino-5-carboxypent-2-en-1-al                      (2) 4-Amino-5-oxopent-3-en-1-oic acid  
(3) 2-Amino-4-carboxypent-2-en-1al                      (4) 4-Amino-5-oxopentenoic acid

66. Select correct statement ?

- (1) Propene in presence of HBr and peroxide obeys Markonikoff addition of HBr  
(2) Benzyl cation is less stable than Tropylium ion.



- (4) Pyrrol is more basic than pyridene

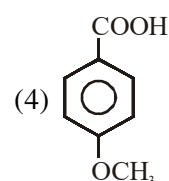
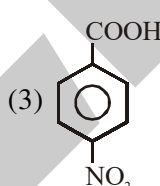
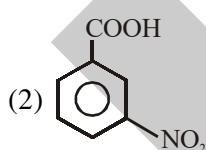
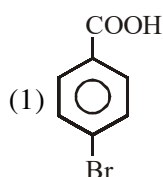
67. Which of the following overlapping doesn't produce any bond ?

- (1)  $s + p_z$                       (2)  $p_y + p_z$                       (3)  $d_{yz} + p_y$                       (4)  $p_z + p_z$

68. Which relation is correct :-

- (1)  $\Delta x \times \Delta p = \frac{h}{2\pi}$                       (2)  $\lambda = \frac{h}{mv}$                       (3)  $E_n = \frac{13.6 \times Z^2}{n^2}$                       (4) all of these

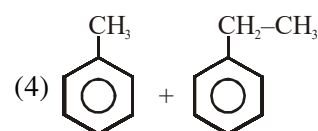
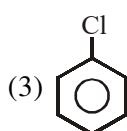
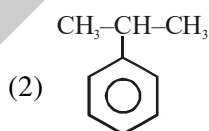
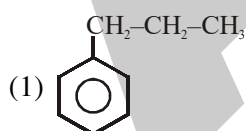
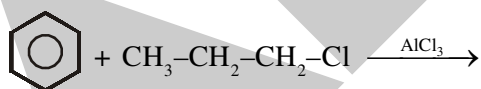
69. Which one is the strongest acid



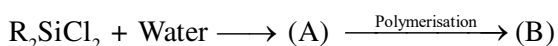
70. Which of the following hydrogen bonds is the strongest :-

- (1) F-H.....F                      (2) O-H.....O                      (3) O-H.....F                      (4) O-H.....N

71. Which of the following is major product of given reaction.



72. Consider the following route of reactions:



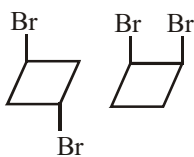
Compound (B) in above reaction is :

- (1) Dimer silicone                      (2) Linear/chain silicon  
(3) Cross linked silicone                      (4) Polymerisation of (A) does not occur

73. The number of N-atoms in 1.4g nitrogen is

- (1)  $6.02 \times 10^{23}$                       (2)  $6.02 \times 10^{22}$                       (3)  $3.01 \times 10^{22}$                       (4)  $3.01 \times 10^{21}$

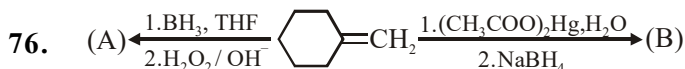
74. What is correct relation between following molecules?



- (1) Geometrical isomers (2) Positional isomers  
(3) Both (4) None

75. For Isothermal expansion of an ideal gas the correct relation is

- (1)  $\Delta G = \Delta S$  (2)  $\Delta G = \Delta H$  (3)  $\Delta G = -T\Delta S$  (4) None of these



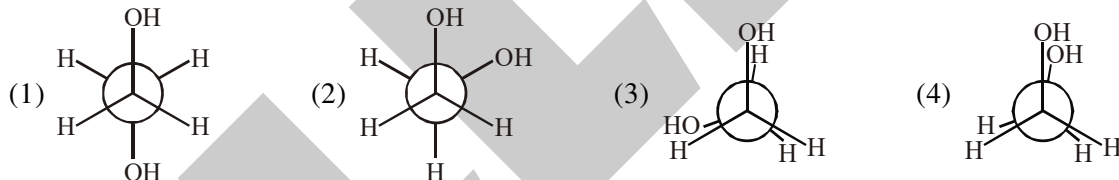
A and B are respectively :-



77. Most reactive towards EAR in the following compounds :-

- (1)  $CH_3-C(CH_3)=CH_2$  (2)  $CH_3-CH=CH_2$  (3)  $CCl_3-CH=CH_2$  (4)  $CH_2=CH-Cl$

78. Which is most stable conformer ?



79. The reaction of  $CH_3-CH=CH-$   $-CH_3$  with HBr gives .

- (1)  $CH_3-CHBrCH_2-$   $-CH_3$  (2)  $CH_3-CH_2-CHBr-$   $-CH_3$   
(3)  $CH_3-CHBrCH_2-$  (4)  $CH_3-CH_2-CHBr-$   $-Br$

80. Which compound is highly covalent compound?

- (1) LiF (2) LiCl (3) LiBr (4) LiI

81. Change in entropy for an ideal gas in reversible isothermal process is given by :-

- (1)  $2.303 nR \log \frac{V_2}{V_1}$  (2)  $nR \log \frac{V_2}{V_1}$  (3)  $nR \log \frac{P_1}{P_2}$  (4) All of these

82. Permanent Hardness of water is due to presence of:-

- (1)  $CaSO_4$  (2)  $CaBr_2$  (3)  $MgHCO_3$  (4)  $(CH_3COO)_2Ca$

83. Maximum N-O bond length is in :-

- (1)  $NO_2^+$  (2)  $NO_2^-$   
(3)  $NO_3^-$  (4) All has equal N-O bond length

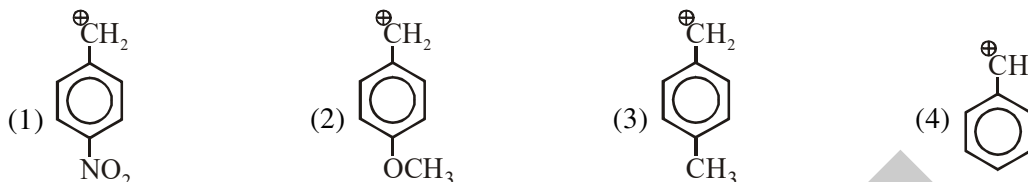
84. Which of the following is most basic compound in aqueous solution :-

- (1)  $CH_3-NH_2$  (2)  $(CH_3)_2NH$  (3)  $(CH_3)_3N$  (4)  $NH_3$

85. At 25°C,  $K_{sp}$  for  $PbBr_2$  is equal to  $8 \times 10^{-5}$ . If the salt is 80% dissociated, what is the solubility of  $PbBr_2$  in mol/litre?

- (1)  $\left[\frac{10^{-4}}{1.6 \times 1.6}\right]^{1/3}$       (2)  $\left[\frac{10^{-5}}{1.6 \times 1.6}\right]^{1/3}$       (3)  $\left[\frac{10^{-4}}{0.8 \times 0.8}\right]^{1/3}$       (4)  $\left[\frac{10^{-5}}{1.6 \times 1.6}\right]^{1/2}$

86. Least stable carbocation is :-



87. A(g) is 90% converted into B according to the reaction  $A(g) \rightleftharpoons 3B(g)$ , then the value of  $\left(\frac{D}{d}\right)$  at this point is :-

- (1) 1      (2) 2      (3) 2.8      (4) 2.5

88. Ratio of velocities of  $e^-$  of hydrogen atom in 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> orbit is :-

- (1) 1 : 2 : 3      (2) 1 : 1 : 1  
(3) 1 : 1/2 : 1/3      (4) 3 : 2 : 1

89. Which of the following is not correct for inorganic benzene :-

- (1) It is a planer molecule.      (2) It has  $p\pi-d\pi$  back bonding  
(3) It has  $p\pi-p\pi$  back bonding      (4) All of the above

90. The compound  $(SiH_3)_3\ddot{N}$  is

- (1) Pyramidal & more Basic than  $(CH_3)_3\ddot{N}$       (2) Planar & less Basic than  $(CH_3)_3\ddot{N}$   
(3) Pyramidal & less Basic than  $(CH_3)_3\ddot{N}$       (4) Planar & more basic than  $(CH_3)_3\ddot{N}$

### SECTION-D : BIOLOGY

This section contains **30 Multiple Choice Questions**. Each question has four choices (1), (2), (3) and (4) out of which **ONLY ONE** is correct

91. Which one of these is not a eukaryote?

- (1) Euglena      (2) Anabaena      (3) Spirogyra      (4) Agaricus

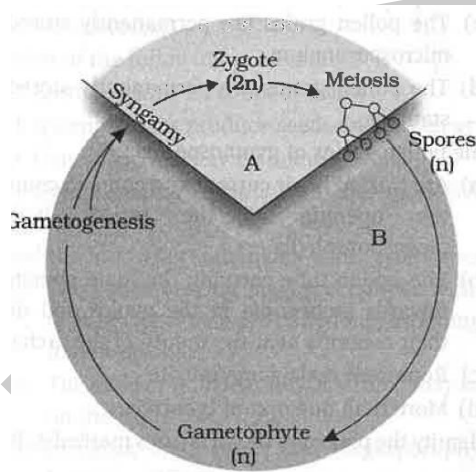
92. What is a tonoplast?

- (1) Outer membrane of mitochondria  
(2) Inner membrane of chloroplast  
(3) Membrane boundary of the vacuole of plant cells  
(4) Cell membrane of a plant cell

93. Which of the following is not true for a eukaryotic cell?

- (1) Cell wall is made up of peptidoglycans  
(2) It has 80S type of ribosome present in the cytoplasm  
(3) Mitochondria contain circular DNA  
(4) Membrane bound organelles are present

94. Plastids differ from mitochondria on the basis of which of the following features?  
 (1) Presence of two layers of membrane (2) Presence of ribosome  
 (3) Presence of thylakoids (4) Presence of DNA
95. At which stage of meiosis does the genetic constitution of gametes is finally decided?  
 (1) Metaphase-I (2) Anaphase-II (3) Metaphase-II (4) Anaphase-I
96. Mitosis is characterised by :-  
 (1) Reduction division (2) Equal division  
 (3) Both reduction and equal division (4) Pairing of homologous chromosomes
97. Fusion of two motile gametes which are dissimilar in size is termed as :-  
 (1) Oogamy (2) Isogamy (3) Anisogamy (4) Zoogamy
98. Identify the life cycle pattern :



- (1) Haplo-diplontic (2) Haplontic (3) Diplontic (4) Diplohaplontic
99. An gymnosperms, following fertilization :-  
 (1) Zygote develops into embryo and the ovules into seeds  
 (2) Zygote develops into embryo and the ovary into fruits  
 (3) Ovule develops into seed and ovary into fruit  
 (4) Ovule develops into fruit and seed into ovary
100. Nucleus is absent in :-  
 (1) Sieve tube cell (2) Mature RBC (3) Both 1 and 2 (4) Heart Cell
101. Who proposed biological concept of species :-  
 (1) Mayr (2) Linnaeus (3) Aristotle (4) Whittaker
102. Which bone is not a facial bone?  
 (1) Mandible (2) Zygomatic (3) Ulna (4) Nasal
103. Scales present on the skin of *Trygon* are –  
 (1) Placoid (2) Cycloid (3) Ctenoid (4) Scales absent
104. Which element is needed for splitting of water during photosynthesis –  
 (1) Nitrogen (2) Oxygen  
 (3) Manganese (4) Potassium

105. Mechanism of breathing vary among different groups of animals depends mainly on their :-  
 (1) Level of body organisation (2) Their habitat  
 (3) Their body plan (4) (1) and (2) both
106. White matter consists of  
 (1) Nerve fibres with myelinated sheath (2) Nerve fibres without myelinated sheath  
 (3) Scattered areolar tissue (4) Nerve fibres with blood vessels
107. The function of pleural fluid present between the parital and visceral pleura.  
 (1) It increase the friction on the lungs surface (2) It reduces the friction on the lungs surface  
 (3) It increase the surface area of alveoli (4) (2) and (3) both
108. The key product of glycolysis is :-  
 (1) Pyruvic acid (2) Glyceraldehyde  
 (3) Phosphoglyceraldehyde (4) Citric acid
109. Stroma lamellae lacks all except.  
 (1) PS-II (2) NADP reductase (3) PS-I (4) Water splitting complex
110. Which of the following vitamin also acts as a hormone.  
 (1) Vitamin-C (2) Vitamin-B (3) Vitamin-D (4) Vitamin-A
111. "Dub" sound in heart beat is produced when  
 (1) Mitral valve opens (2) Mitral valve close  
 (3) Tricuspid valve opens (4) Semilunar valves of the two arches close
112. Blood from glomerulus is carried away by ?  
 (1) Afferent arteriole (2) Efferent arteriole (3) Vasa recta (4) Collecting duct
113. Ear drum is known as  
 (1) Tympanic membrane (2) Stapes  
 (3) Scala tympani (4) Scala vestibuli
114. Plant factor affecting photosynthesis :-  
 (1) Sunlight (2) Temperature  
 (3) Internal CO<sub>2</sub> concentration (4) Water
115. Digestion is the breaking down of large food molecules into smaller ones. The main purpose of this is to -  
 (1) Make the food insoluble (2) Enable the digestive enzymes to be used up  
 (3) Provide smaller molecules for absorption (4) Make the passage of food along the gut easier
116. Respiration can occur in the absence of oxygen then which one is final e<sup>-</sup> acceptor in yeast cell during anaerobic respiration :-  
 (1) Pyruvic acid (2) Lactic acid (3) Acetaldehyde (4) Ethanol
117. Select incorrect statement for sponges -  
 (1) Ostia, osculum and spongocoel present (2) Tissue is absent  
 (3) All are aquatic, mostly in fresh water. (4) Internal fertilization and indirect development
118. Dental formula of adult human is  
 (1)  $\frac{1023}{1023}$  (2)  $\frac{3023}{3023}$  (3)  $\frac{1023}{2023}$  (4)  $\frac{2123}{2123}$
119. Which part of the internal ear receives sound waves ?  
 (1) Cochlea  
 (2) Utriculus  
 (3) Ampullae and utriculus  
 (4) Both (1) & (2)
120. The function of tongue is to  
 (1) Help in the act of swallowing (2) Help in mixing saliva with the food  
 (3) Help in speaking (4) All of the above