Do not open this Test Booklet until you are asked to do so

1. A seat marked with Reg. No. will be allotted to each student. The student should ensure that he/she occupies the correct seat only. If any student is found to have occupied the seat of another student, both the students shall be removed from the examination and shall have to accept any other penalty imposed upon them.

2. Duration of Test is 3½ Hours and Questions Paper Contains 200 Questions. The Max. Marks are 200.

3. Student can not use log tables and calculators or any other material in the examination hall.

4. Student must abide by the instructions issued during the examination, by the invigilators or the centre incharge.

5. Before attempting the question paper ensure that it contains all the pages and that no question is missing.

6. Each correct answer carries 1 marks, while one third mark will be deducted from the total of individual subject for each incorrect answer.

Note: In case of any Correction in the test paper, please mail to dlpcorrections@allen.ac.in within 2 days along with Paper code and Your Form No.

Your Target is to secure Good Rank in Pre-Medical 2016
1. A point source P moves counter clockwise on a circular path as shown in the figure. The movement of P is such that it sweeps out a length \( s = t^3 + 5 \), where \( s \) is in metre and \( t \) is in seconds. The radius of path is 20 m. The acceleration of P when \( t = 2 \) is nearly.

\[
\begin{align*}
1. & \quad (1) \quad 14 \text{ m/s}^2 \\
2. & \quad (2) \quad 13 \text{ m/s}^2 \\
3. & \quad (3) \quad 12 \text{ m/s}^2 \\
4. & \quad (4) \quad 7.2 \text{ m/s}^2
\end{align*}
\]

2. Adjoining figure shows two blocks A and B pushed against the wall with the force F. The wall is smooth but the surface in contact of A and B are rough. Which of the following is true for the system of blocks to be at rest against the wall?

\[
\begin{align*}
1. & \quad (1) \quad \text{F should be more than the weight of A and B} \\
2. & \quad (2) \quad \text{F should be equal to the weight of A and B} \\
3. & \quad (3) \quad \text{F should be less than the weight of A and B} \\
4. & \quad (4) \quad \text{System cannot be in equilibrium}
\end{align*}
\]

3. A particle moves in a straight line so that its displacement \( x \) in metres at time \( t \) seconds is given by \( t = \sqrt{x^2 - 1} \). Its acceleration in ms\(^{-2}\) at \( t \) seconds is :-

\[
\begin{align*}
1. & \quad \frac{1}{x} \\
2. & \quad \frac{t^2}{x} \\
3. & \quad \frac{1}{x} - \frac{t^2}{x^3} \\
4. & \quad \frac{t^2}{x} - \frac{1}{x^3}
\end{align*}
\]
4. An engine pumps water continuously through a hose. Water leaves the hose pipe with velocity \( v \) and \( m \) is the mass per unit length of water jet. If this jet hits a surface and comes to rest instantaneously, the force on the surface is:

\( (1) \quad mv^2 \]
\( (2) \quad \frac{1}{2}mv^2 \]
\( (3) \quad mv^3 \]
\( (4) \quad \frac{1}{2}mv^3 \]

5. A wire, which passes through the hole in a small bead is bent in the form of a circle. The wire is fixed vertically on the ground as shown in the figure. The bead is released from the top of the wire and it slides along the wire without friction. As the bead moves from A to B the force it applies on the wire is:

\( (1) \) Always radially outward
\( (2) \) Always radially inward
\( (3) \) Radially outward initially and radially inward later
\( (4) \) Radially inward initially and radially outward later

6. An ideal gas is taken through the cycle \( A \rightarrow B \rightarrow C \rightarrow A \), as shown in the figure. If the net heat supplied to the gas in the cycle is 5J, the work done by the gas in the process \( C \rightarrow A \) is:

\( (1) \ -5 \text{ J} \]
\( (2) \ -10 \text{ J} \]
\( (3) \ -15 \text{ J} \]
\( (4) \ -20 \text{ J} \)
7. In an $\alpha$-decay the kinetic energy of $\alpha$-particle is 48 MeV and $Q$-value of the reaction is 50 MeV. The mass number of the parents nucleus is (Assume that daughter nucleus is in ground state):

(1) 96  (2) 100  
(3) 104  (4) None

8. In the arrangement shown in figure, the spring has spring constant $2 \text{ Nm}^{-1}$. The mass $M = 3 \text{ kg}$ and $m = 1 \text{ kg}$. Mass $M$ is in contact with a smooth surface. The coefficient of friction between two blocks is 0.1. The time period of S.H.M. executed by two block system is :-

(1) $\pi\sqrt{6} \text{ s}$  (2) $\pi\sqrt{2} \text{ s}$ 
(3) $2\pi\sqrt{2} \text{ s}$  (4) $2\pi \text{ s}$

9. An object is moving with a speed of 6.25 m/s and is decelerated at a rate given by $\frac{dv}{dt} = -2.5v^{1/2}$ where $v$ is the instantaneous speed. The time taken by the object to come to rest would be.

(1) 4 s  (2) 8 s  
(3) 1 s  (4) 2 s

10. For a normal eye, the cornea of eye provides a converging power of 40 D and the least converging power of the eye lens behind the cornea is 20 D. Using this information, the distance between the retina and the cornea-eye lens can be estimated to be :-

(1) 1.5 cm  (2) 5 cm  
(3) 2.5 cm  (4) 1.67 cm

11. The angular momentum of an electron in hydrogen atom is $\frac{3h}{2\pi}$. Here $h$ is the Planck's constant. The kinetic energy of this electron is :-

(1) 4.53 eV  (2) 1.51 eV  
(3) 3.4 eV  (4) 6.8 eV
12. When monochromatic red light is used instead of blue light in a convex lens. Its focal length will:
   (1) Does not depend on colour of light
   (2) Increase
   (3) Decrease
   (4) Remain same

13. A coil of $10^{-2}$ H inductance carries a current $I = 2 \sin (100 \ t) A$. When current is half of its peak value at that instant the induced emf in the coil is:
   (1) 1 V
   (2) $\sqrt{2}$ V
   (3) $\sqrt{3}$ V
   (4) 2 V

14. A point object is placed at a distance of 20 cm from a thin plano-convex lens of focal length 15 cm. If the plane surface is silvered, the image will form at:
   (1) 60 cm left of AB
   (2) 30 cm left of AB
   (3) 12 cm left of AB
   (4) 60 cm right of AB

15. A ball of mass m moving with velocity $u$ collides head on with another ball of mass m initially at rest. If the coefficient of restitution be $e$ then the ratio of the final and initial velocities of the first ball is:
   (1) $\frac{1-e}{1+e}$
   (2) $\frac{1+e}{1-e}$
   (3) $\frac{1+e}{2}$
   (4) $\frac{1-e}{2}$
16. In the circuit shown, if a conducting wire is connected between points A and B, the current in this wire will:

(1) Flow from A to B
(2) Flow in the direction which will be decided by the value of V
(3) Be zero
(4) From B to A

17. A long straight wire of radius \(a\) carries a steady current \(I\). The current is uniformly distributed across its cross-section. The ratio of magnetic fields at \(a/2\) and \(2a\) distance from the axis of wire is:

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

18. A uniform electric field and uniform magnetic field are acting along the same direction in a certain region. If a proton is projected in the region such that its velocity is pointed along the direction of fields, then the proton:

(1) will turn towards right of direction motion
(2) will speed down
(3) will speed up
(4) will turn towards left direction of motion

19. The area of cross-section of the wider tube shown in the figure is 800 cm\(^2\). If a mass of 12 kg is placed on the massless piston, the difference in the heights \(h\) in the level of water in two tubes.

(1) 10 cm
(2) 6 cm
(3) 15 cm
(4) 2 cm
20. A capacitor of capacitance 100 µF and a resistance of 100 Ω is connected in series with A.C. supply of 220 V, 50 Hz. The current leads the voltage by:-

(1) \( \tan^{-1}(1/2\pi) \)  
(2) \( \tan^{-1}(1/\pi) \)  
(3) \( \tan^{-1}(2/\pi) \)  
(4) \( \tan^{-1}(4/\pi) \)

21. A particle is dropped from a height \( H \). The de-Broglie wavelength of the particle as a function of height is proportional to:-

(1) \( H \)  
(2) \( H^{1/2} \)  
(3) \( H^{0} \)  
(4) \( H^{-1/2} \)

22. A telescope has an objective lens of focal length 200 cm and eye piece with focal length 2 cm. If the telescope is used to see a 50 m tall building at a distance 2 km, what is the height of the image of the building formed by the objective lens.

(1) 5 cm  
(2) 10 cm  
(3) 1 cm  
(4) 2 cm

23. A particle of mass \( m \) is moving in a circular path of constant radius \( r \) such that its centripetal acceleration \( a_c \) is varying with time \( t \) as \( a_c = k^2 rt^2 \). The power delivered to particle is :-

(1) \( 2p mk^2 r^2 t \)  
(2) \( mk^2 r^2 t \)  
(3) \( \frac{mk^4 r^4 t^4}{3} \)  
(4) Zero

24. When the angle of incidence on a material is 60° the reflected light is completely polarised. The velocity of refracted ray inside the material is :-

(1) \( 3 \times 10^8 \) m/s  
(2) \( \frac{3}{\sqrt{2}} \times 10^8 \) m/s  
(3) \( \sqrt{3} \times 10^8 \) m/s  
(4) 0.5 \( \times 10^8 \) m/s

25. A speech signal of 3 kHz is used to modulate a carrier signal of frequency 1 MHz, using amplitude modulation. The frequency of the side bands will be :-

(1) 1.003 MHz and 0.997 MHz  
(2) 3001 kHz and 2997 kHz  
(3) 1003 kHz and 1000 kHz  
(4) 1 MHz and 0.997 MHz
26. A charged particle with charge q enters a region of constant, uniform and mutually orthogonal field \( \mathbf{E} \) and \( \mathbf{B} \) with a velocity \( \mathbf{v} \) perpendicular to both \( \mathbf{E} \) and \( \mathbf{B} \), and comes out without any change in magnitude or direction of \( \mathbf{v} \), then:

\[
\begin{align*}
(1) \quad \mathbf{v} &= \frac{\mathbf{B} \times \mathbf{E}}{B^2} \\
(2) \quad \mathbf{v} &= \frac{\mathbf{E} \times \mathbf{B}}{E^2} \\
(3) \quad \mathbf{v} &= \frac{\mathbf{B} \times \mathbf{E}}{E^2} \\
(4) \quad \mathbf{v} &= \frac{\mathbf{E} \times \mathbf{B}}{B^2}
\end{align*}
\]

27. Disturbance \( y(x, t) \) of a wave propagating in the positive x-direction is given by \( y = \frac{1}{1 + x^2} \) at time \( t = 0 \) and by \( y = \frac{1}{1 + (x - 1)^2} \) at \( t = 2 \) second where \( x \) and \( y \) are in metres. The speed of the wave in m/s is:-

(1) 0.5 (2) 1.0 (3) 4.0 (4) 2.0

28. A rope is used to lower vertically a block of mass \( M \) by a distance \( x \) at a constant downward acceleration \( g/2 \). The work done by the rope on the block is:

\[
\begin{align*}
(1) \quad Mgx & \quad (2) \quad \frac{1}{2} Mgx^2 \\
(3) \quad -\frac{Mgx}{2} & \quad (4) \quad Mgx^2
\end{align*}
\]

29. In the circuit shown in the figure, if the diode forward voltage drop is 0.3 V, the voltage difference between A and B is:

\[
\begin{align*}
(1) \quad 1.3 \text{ V} & \quad (2) \quad 2.3 \text{ V} \\
(3) \quad 0 \text{ V} & \quad (4) \quad 0.5 \text{ V}
\end{align*}
\]
30. A constant current is maintained in a solenoid. Which of the following quantities will increase if an iron rod is inserted in the solenoid along its axis?
(a) Magnetic field at centre
(b) Magnetic flux linked with the solenoid
(c) Self inductance of the solenoid
(d) Rate of joule heating
(1) a, b, c (2) c, d
(3) a, b (4) only b

31. A pipe of length 85 cm is closed from one end. Find the number of possible natural oscillations of air column in the pipe whose frequencies lie below 1250 Hz. The velocity of sound in air is 340 m/s.
(1) 6 (2) 4 (3) 12 (4) 8

32. The sun (diameter = D) subtends an angle of \( \theta \) radian at the pole of a concave mirror of focal length \( f \). The diameter of the image of the sun formed by the mirror is :-
(1) \( f \) \( \theta \) (2) \( 2f \) \( \theta \) (3) \( f^2 \) \( \theta \) (4) \( D \) \( \theta \)

33. Two hydrogen atoms in the ground state collides inelastically. The minimum amount by which their kinetic energy is reduced will be :-
(1) 10.20 eV (2) 20.40 eV (3) 13.6 eV (4) 27.2 eV

34. A particle moves along positive branch of curve 
\[ y = \frac{x^2}{2}, \] where \( x = \frac{t^2}{2} \), \( x \) and \( y \) are measured in metres and \( t \) in seconds. Velocity of the particle at \( t = 2s \) is :-
(1) \( 4\hat{i} + 4\hat{j} \) m/s (2) \( 2\hat{i} + 4\hat{j} \) m/s
(3) \( 2\hat{i} + 2\hat{j} \) m/s (4) \( 4\hat{i} + 2\hat{j} \) m/s

35. Two fixed frictionless inclined planes making angles 30° and 60° with the vertical are shown in the figure. Two blocks A and B are placed on the two planes what is the relative vertical acceleration of A with respect to B ?

\[ \begin{array}{c}
\text{(1) 4.9 ms}^{-2} \text{ in vertical direction} \\
\text{(2) 4.9 ms}^{-2} \text{ in horizontal direction} \\
\text{(3) 9.8 ms}^{-2} \text{ in vertical direction} \\
\text{(4) Zero} 
\end{array} \]
36. Power applied to a particle varies with time as 
P = (3t^2 - 2t + 1) watt, where t is in second. Find the change in its kinetic energy between 
t = 2s to 
t = 4s.
(1) 32 J  (2) 46 J  (3) 61 J  (4) 102 J

37. Heavy stable nuclei have more neutrons than protons. This is because of the fact that :
(1) Neutrons are heavier than protons
(2) Electrostatic force between protons is repulsive
(3) Neutrons decay into protons through beta decay
(4) Protons decay into neutrons through beta decay

38. A particle is moving along a circular path. The angular velocity, linear velocity, angular acceleration and centripetal acceleration of the particle at any instant are \( \omega, v, \alpha \) and \( a_c \) respectively. Which of the following relation is/are correct ?
(a) \( \omega \perp v \)
(b) \( \omega \perp \alpha \)
(c) \( v \perp a_c \)
(d) \( \omega \perp a_c \)
(1) a, b, d  (2) b, c, d  (3) a, b, c  (4) a, c, d

39. Two simple pendulums of length 1 m and 16 metres respectively. Both are given small displacements in the same direction at the same instant. They will again be in phase after the shorter pendulum has completed n oscillations. Value of n is :-
(1) \( \frac{1}{4} \)  (2) \( \frac{4}{3} \)
(3) 5  (4) 4

40. A body is hinged about any point on the x-axis and its moment of inertia I is given as
I = 2x^2 - 12x + 27 value of x co-ordinate of centre of mass will be :-
(1) x = 2  (2) x = 3  (3) x = 0  (4) x = 1
41. 8 g of sulphur is burnt to form SO\textsubscript{2} which is oxidized by Cl\textsubscript{2} water. The solution is treated with excess BaCl\textsubscript{2} solution. The amount of BaSO\textsubscript{4} precipitate is :- (Ba = 137)
   (1) 1 mol  (2) 0.5 mol
   (3) 0.24 mol  (4) 0.25 mol
42. Graph between log k and (1/T) is linear of slope S (magnitude) Hence E\textsubscript{a} is, If k= rate constant, T= temperature :-
   (1) R \times S  (2) S/R
   (3) R/S  (4) 2.303 RS
43. Which of the following is linear polymer :-
   (1) Nylon
   (2) Bakelite
   (3) Low density polythene
   (4) Melamine-formaldehyde polymer
44. Which of the following order is not correct ?
   (1) LiF > LiCl > LiBr > LiI (Solubility)
   (2) NaCl < MgCl\textsubscript{2} < AlCl\textsubscript{3} (Lattice energy)
   (3) CH\textsubscript{3}OH > CH\textsubscript{2}OH > CH\textsubscript{OH} (Vapour pressure)
   (4) (CH\textsubscript{3})\textsubscript{2}NO > (CH\textsubscript{3})\textsubscript{3}PO (Dipole moment)
45. A certain gas diffuses from two different vessels A and B. The vessel A has a circular orifice while vessel B has a square orifice of length equal to the radius of the orifice of vessel A. Calculate the ratio of the rates of diffusion of the gas from vessel A to vessel B, assuming same temperature and pressure is :-
   (1) \pi  (2) 1 : \pi
   (3) 1 : 1  (4) 2 : 1
46. Which of the following electrolytes will have maximum flocculation value for Fe(OH)\textsubscript{3} Sol ?
   (1) NaCl  (2) Na\textsubscript{2}S
   (3) (NH\textsubscript{4})\textsubscript{3}PO\textsubscript{4}  (4) K\textsubscript{2}SO\textsubscript{4}

**Take it Easy and Make it Easy**
47. Systematic nomenclature of the given compound

(1) 2-formyl-4-methyl pent-2-ene nitrile
(2) 2-cyano-4-methyl pent-2-enol
(3) 4-formyl-2-methyl pent-3-ene-5-nitrile
(4) 2-cyano-2-formyl-4-methyl pent-2-ene

48. Which of the following species do not exist:

(1) NaOH + NaHCO₃
(2) NaOH + KOH
(3) H₂SO₄ + HNO₃
(4) SO₃ + Cl₂O₇

49. From the following data, calculate the enthalpy change for the combustion of cyclopropane at 298 K. The enthalpy of formation of CO₂(g), H₂O(l) and propene(g) are –393.5, –285.8 and 20.42 KJ mol⁻¹, respectively. The enthalpy of isomerization of cyclopropane to propene is –33.0 kJ mol⁻¹:

(1) –1021.32 kJ mol⁻¹
(2) –2091.32 kJ mol⁻¹
(3) –5021.32 kJ mol⁻¹
(4) –3141.32 kJ mol⁻¹

50. Equimolal solutions KCl and compound X in water show depression in freezing point in the ratio of 4 : 1. Assuming KCl to be completely ionized, the compound X in solution must:

(1) dissociate to the extent of 50%
(2) hydrolyze to the extent of 80%
(3) dimerize to the extent of 50%
(4) trimerize to the extent of 75%

51. Which of the following sequence of stability is correct:

(1) CH₃–O–CH₂ > H₂C=CH–CH₂ > CH₃–NH > CH₃–CH₂
(2) CH₃–NH > CH₂–O–CH₂ > H₂C=CH–CH₂ > CH₃–CH₂
(3) CH₃–O–CH₂ > CH₂–NH > H₂C=CH–CH₂ > CH₃–CH₂
(4) H₂C=CH–CH₂ > CH₃–NH > CH₂–O–CH₂ > CH₃–CH₂

57. दिये गये का बंजिक यौगिक का स्पष्ट यथासिद्धान्त तथा मूल्यांकन के लिए अहम रसायन कोष है

(1) 2-formyl-4-methyl pent-2-ene nitrile
(2) 2-cyano-4-methyl pent-2-enol
(3) 4-formyl-2-methyl pent-3-ene-5-nitrile
(4) 2-cyano-2-formyl-4-methyl pent-2-ene
52. A complex whose IUPAC name is not correctly written is :-

<table>
<thead>
<tr>
<th>Complex</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Fe(σ-C₅H₅)₂</td>
<td>Bis(η⁵-cyclopentadienyl) iron(0)</td>
</tr>
<tr>
<td>(2) Cr(C₆H₆)₂</td>
<td>Bis(η⁶-benzene) chromium (0)</td>
</tr>
<tr>
<td>(3) [CoCl₂(H₂O)₄]Cl·2H₂O</td>
<td>Tetraaquadichlorocobalt(III) chloride dihydrate</td>
</tr>
<tr>
<td>(4) [Zn(NCS)₄]²⁻</td>
<td>Tetrathiocynato–N–zincate(II)ion</td>
</tr>
</tbody>
</table>

53. Solid HgI₂ is added to 1 L of an aqueous solution containing 0.1 mol KI. Which of the following graphs represents the variation of freezing point of the resulting with the amount of HgI₂ added?

54. In a first order reaction the concentration of reactant decreases from 800 mol/dm³ to 50 mol/dm³ is 2 × 10² sec. The rate constant of reaction in sec⁻¹ is :-

(1) 2 × 10⁴  (2) 3.45 × 10⁻⁵  
(3) 1.386 × 10⁻²  (4) 2 × 10⁻⁴

55. Most stable phenoxide ion is :-

(1) O⁻  (2) O⁻  Cl⁻  
(3) Cl⁻  (4) Cl⁻  O⁻
56. \(H_4P_4O_{12}\) (tetrametaphosphoric acid) and \(H_2P_4O_3\) (tetrapolyphosphoric acid) have same :-
(1) No. of P–O–P bonds (2) No. of P–O–H bonds
(3) No. of P=O bonds (4) All of these

57. In a solid \(AB\) having the NaCl structure, A atoms occupy the corners of the cubic unit cell. If all the face centered atoms along one of the axes are removed, then the resultant stoichiometry of the solid is :-
(1) \(AB_2\) (2) \(A_2B\) (3) \(A_4B_3\) (4) \(A_3B_4\)

58. \(\text{CH}_3\text{NCH}_2\text{CH} = \text{CH}_2\)

59. \(\text{CH}_3\text{CH}_2\text{O} = \text{CH} = \text{CH} = \text{CH}_3\) \(\rightarrow\) Main products

60. In chromyl chloride test, oxidation state of Cr changes from :-
(1) +6 to 0 (2) +6 to +4
(3) +4 to +2 (4) Remains constant

61. By how much would the oxidation potential \(r\) of the \(\left[\text{MnO}_4^-\right]\) couple change if the \(H^+\) ions concentration is decreased 100 times at 25°C :-
(1) It will increase by 189 mV.
(2) It will decrease by 189 mV.
(3) It will increase by 19 mV.
(4) It will decrease by 19 mV.

62. Which of the following compound is non-aromatic :-
(1) \(\text{N}\text{H}\) \(\text{O}\)
(2) \(\text{N}\text{H}\text{O}\)
(3) \(\text{N}\text{H}\text{O}\)
(4) \(\text{N}\text{H}\text{O}\)

56. \(H_4P_4O_{12}\) (रोम ए ए य ए फू ए फू ए फू ए फू ए फू ए फू ए फू ए फू ए फू ए फू)

57. \(\text{NaCl}\) से रचना बाले \(AB\) मे' A परम पु र ना र एक बैंड के बाद नहीं प्रचलित तह्य है। \(\text{यदि} \text{एक} \text{में} \text{से} \text{एक} \text{फलक} \text{के} \text{र-} \text{ट} \text{पर} \text{मु} \text{प} \text{आ} \text{के} \text{हट} \text{य} \text{ए} \text{नो} \text{र} \text{व} \text{म} \text{र} \text{ल}

58. \(\text{CH}_3\text{NCH}_2\text{CH} = \text{CH}_2\)

59. \(\text{CH}_3\text{CH}_2\text{O} = \text{CH} = \text{CH} = \text{CH}_3\) \(\rightarrow\) मु ख़ा द ए प द उर दो’ के प्रचलन

60. \(\text{CH}_3\text{CH}_2\text{I} + \text{CH}_2 = \text{CH} = \text{CH} = \text{OH}\)

61. \(\text{H}^+\) आम की से द ए \(0 \) ना कर के दे या प (\(\text{MnO}_4^-\)) के अर्ए ये बे कर बिंद तर्क वे किसा परिकल्प नहोँ

62. निम्न में से कौन से विनिमय ना त हृ छे मे ट कर हैः
63. Ozone layer is depleted by :-
   (1) CF\(_2\)Cl\(_2\)  (2) C\(_7\)F\(_{16}\)  (3) C\(_6\)H\(_6\)Cl\(_6\)  (4) C\(_6\)F\(_6\)

64. Which of the following is only \(\pi\) bonded complex
   (1) Tri methyl Aluminium
   (2) Di ethyl zinc
   (3) Nickel Tetral Carbonyl
   (4) None of the above

65. An energy of 24.6 eV is required to remove one of the electrons from helium atom. The energy required to remove both the electrons from helium atom is :-
   (1) 38.2 eV  (2) 49.2 eV
   (3) 51.8 eV  (4) 79.0 eV

66. Suppose the following acid base reaction -

\[
\begin{align*}
\text{NH}_2\text{NH}_2\text{NH}_2 + \text{HCl (1 mol)} & \rightarrow \text{Product ,} \\
\end{align*}
\]

the product will be :-

\[
\begin{align*}
(1) & \quad \text{NH}_2\text{NH}_2\text{NH}_2 \quad \text{NH}_2\text{Cl} \\
(2) & \quad \text{NH}_2\text{NH}_2\text{NH}_2 \quad \text{N} \text{H}_2 \quad \text{N} \text{Cl} \\
(3) & \quad \text{CPH} \quad \text{NH}_2 \quad \text{N} \text{H}_2 \quad \text{N} \text{Cl} \\
(4) & \quad \text{NH}_2 \quad \text{N} \text{H}_2 \quad \text{N} \text{Cl} \\
\end{align*}
\]
67. Most easily dehydration is possible for alcohol:
   (1) C₆H₅–CH₂–OH
   (2) C₆H₅–CH₂–CH₂–OH
   (3) C₆H₅–CH–CH₃
   (4) C₆H₅–CH–CH₂–C₆H₃

68. Nitrogen dioxide is dissolved in hydrogen oxide to produce:
   (1) per nitric acid & caro's acid
   (2) Nitric acid & per nitric acid
   (3) Picric acid, per nitric acid & nitrous acid
   (4) Nitric acid & nitrous acid

69. The number of moles of CaCl₂ needed to react with excess of AgNO₃ to produce 4.31 g of AgCl.
   (1) 0.030  (2) 0.015  (3) 0.045  (4) 0.060

70. In given example, how many amines are not prepared by Gabriel phthalimide Rxn.:

\[
\begin{align*}
\text{CH}_2\text{–NH}_3 \\
\text{CH}_2\text{=CH–NH}_2 \\
\text{Ph–CH–NH}_3 \\
\text{CH}_2\text{–CH}_{2}\text{–NH}_2
\end{align*}
\]
   (1) 3  (2) 5  (3) 6  (4) 2

71. Which of the following species is more reactive?
   (1) F₂  (2) IBr  (3) ICl  (4) ClF

72. How many gases are formed, on strongly heating of silver nitrate:
   (1) 6  (2) 3  (3) 2  (4) 1

73. The kinetic energy (in kcal) of 80 g of methane gas at 227°C is:
   (1) 15  (2) 2.5  (3) 25  (4) 7.5
74. Isoelectric point for an amino acid is refer for :-
(1) Basic strength of –NH₂ group
(2) Acidic strength of –COOH group
(3) pH value at which amino acid does not show movement in electric field
(4) Temperature at which protein get denatured
75. Which of the following order is not correct ?
(1) K > Sr > Y Size
(2) Ne > F > Ne Electron affinity
(3) Ne > Ne > F > F⁻ Ionisation energy
(4) None of these
76. Boric acid + NaOH ⇌ NaBO₂ + Na[B(OH)₄] + H₂O
How can this reaction is made to proceed in forward direction :-
(1) Addition of sodium meta borate
(2) Addition of Na[B(OH)₄]
(3) Addition of both NaBO₂ & Na[B(OH)₄]
(4) Addition of ethylene glycol
77. In the reaction 4I⁻ + Hg²⁺ → HgI₄²⁻ moles of HgI₄²⁻ made from 1 mol each of Hg²⁺ and I⁻ will be:-
(1) 1 mol
(2) 0.5 mol
(3) 0.25 mol
(4) 2 mol
78. Fructose → HCOOH + y HCHO + CO₂
the ratio of x and y is :-
(1) 3/2
(2) 2/3
(3) 5/1
(4) 1/5
79. Which of the following species gives colourless and odourless gas on thermal decomposition :
(1) (NH₄)₂Cr₂O₇
(2) Pb(NO₃)₂
(3) ZnSO₄.7H₂O
(4) (NH₄)₂SO₄
80. Co(CO)₄ follows EAN rule by:-
(1) Oxidizing character
(2) Reduction
(3) Both of the above
(4) None of the above
81. Which of the following is commonly present in Rust, Smut and Mushroom?
(1) Spermatization (2) Somatogamy (3) Ascospores (4) Basidiospores

82. Identify A to E in the following diagram?

83. Read the following four statements (A–D):
(A) In plant cells, vacuolar sap do not contribute to the solute potential of the cell.
(B) Molybdenum is required for cell elongation and cell differentiation.
(C) Living organisms have the capability of extracting energy from oxidisable substances and store this in the form of bond energy.
(D) There is no change in $K_m$ value in presence of non-competitive inhibitor.

How many of the following statements are incorrect?
(1) Four (2) Three (3) Two (4) One

84. Use of atomic bombs may lead to abnormalities even in coming generations because of:
(1) Evolution (2) Air pollution (3) Changed atoms in atmosphere (4) Genetic mutation
85. Photosynthetic gametophytes are not found in:
(1) Sphagnum  (2) Marchantia
(3) Lycopodium  (4) Cedrus

86. Following diagram represent which type of connective tissue?
(1) Adipose connective tissue
(2) Areolar connective tissue
(3) Dense regular connective tissue
(4) Specialized connective tissue

87. Read the following statements (A–D) carefully and select the correct option which includes all the correct one?
(A) Heart also plays role in control and regulation of kidney function
(B) ADH also affects the function of kidney through constrictory effects on blood vessels
(C) Small amount of urea diffuses in thick segment of LOH from interstitium for the maintenance of osmolarity of medullary interstitium
(D) Both Na⁺ and water are reabsorbed through distal part of renal tubule due to effect of aldosterone

Option:
(1) statements A, B and C
(2) statements B, C and D
(3) statements A, B and D
(4) All statements

88. Cranial capacity of Cro-magnon man was:
(1) 900 cc  (2) 1075 cc
(3) 1450 cc  (4) 1650 cc

89. Find out correct option?
(1) Platyhelminthes are pseudocoelomate.
(2) Sponges reproduce sexually by fragmentation
(3) In annelida, neural system consist of paired ganglia connected by lateral nerves to a double ventral nerve cord.
(4) In most of the birds copulatory organ is absent, so fertilization is external.
90. Identify the correct matching pair?

<table>
<thead>
<tr>
<th></th>
<th>Tight junction</th>
<th>Perform cementing to keep neighbouring cells together</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Adhering junction</td>
<td>Stop substances from leaving across a tissue</td>
</tr>
<tr>
<td></td>
<td>Gap junction</td>
<td>Facilitate the cells to communicate with other by connecting the cytoplasm of adjoining cells</td>
</tr>
<tr>
<td></td>
<td>Inter digitation</td>
<td>Found in stratified squamous epithelium</td>
</tr>
</tbody>
</table>

91. Which one is correct factor for increase of normal value of $P_{50}$ in oxyhaemoglobin dissociation curve?

1. High pH  
2. High $H^+$ conc
3. Low $Pco_2$  
4. High $Po_2$

92. Greatest advantage of bipedal movement:

1. Fore arms becoming free for carrying out order of brain  
2. Provide protection  
3. Support the body properly  
4. Swimming become easier

93. Find the incorrect from the following:

1. (Stomatol aperture, guard cells and surrounding subsidiary cells are together called stomatal apparatus)  
2. Cuticle layer is found outside the epidermis of root in form of waxy layer  
3. Ground tissue of leaves is called mesophyll  
4. First formed primary phloem is called protophloem

94. In cockroach the sperms are stored in the seminal vesicles and are glued together in the form of bundles called?

1. Spermatogonia  
2. Spermatophores  
3. Mushroom gland  
4. Gonopophysis

95. Cornea is major part of eye for image formation. It is not related to:

1. It is multilayered epithelium with connective tissue.  
2. Antibody can reject during transplantation.  
3. Helps in maximum refraction of eye.  
4. It's central part is not covered by conjuctiva.

96. Match the following:

1. (1) Tight junction  
2. (2) Adhering junction  
3. (3) Gap junction  
4. (4) Inter digitation

Find the matching pair:

1. (1) Stomatal aperture, guard cells and surrounding subsidiary cells are together called stomatal apparatus  
2. (2) Cuticle layer is found outside the epidermis of root in form of waxy layer  
3. (3) Ground tissue of leaves is called mesophyll  
4. (4) First formed primary phloem is called protophloem

97. Identify the mushroom gland (1) Turbercle (2) Mushroom gland (3) Protuberance (4) Gonopophysis

98. Which one is correct factor for increase of normal value of $P_{50}$ in oxyhaemoglobin dissociation curve?

1. High pH  
2. High $H^+$ conc  
3. Low $Pco_2$  
4. High $Po_2$

99. Identify the matching pair:

1. (1) Mushroom gland  
2. (2) Proteobacterium  
3. (3) Protuberance  
4. (4) Gonopophysis

100. Which one is not related to:

1. (1) High pH  
2. (2) High $H^+$ conc  
3. Low $Pco_2$  
4. High $Po_2$
96. Which of the following is correct matching?

<table>
<thead>
<tr>
<th>Column-I</th>
<th>Column-II</th>
</tr>
</thead>
<tbody>
<tr>
<td>(A) Wuchereria bancrofti</td>
<td>(i) House fly</td>
</tr>
<tr>
<td>(B) Common round worm</td>
<td>(ii) Female anopheles</td>
</tr>
<tr>
<td>(C) Entamoeba histolytica</td>
<td>(iii) Female culax</td>
</tr>
<tr>
<td>(D) Plasmodium falciparum</td>
<td>(iv) Contaminated food and water</td>
</tr>
</tbody>
</table>

(A) (B) (C) (D)  
(1) i ii iii iv  
(2) iii iv i ii  
(3) iii iv i ii  
(4) iii ii iv i

97. Study the following statements and give the answer.

(A) The ring arrangement of vascular bundles is a characteristic of dicot stem.
(B) In dicot leaf both palisade and spongy parenchyma are found.
(C) Secondary medullary rays pass through the secondary xylem and the secondary phloem in radial direction.
(D) Soft bark and hard bark are formed in early and at the end of season respectively.

(1) Only 'A' is correct  
(2) Both 'A' & 'B' are correct  
(3) A, B and C are correct  
(4) A, B, C and D are correct.

98. Match the column I with column II:

<table>
<thead>
<tr>
<th>Column-I</th>
<th>Column-II</th>
</tr>
</thead>
<tbody>
<tr>
<td>(I) Primary constriction</td>
<td>(a) Gives the appearance of small fragment called satellite</td>
</tr>
<tr>
<td>(II) Secondary constriction</td>
<td>(b) Beads on string structure in chromatin</td>
</tr>
<tr>
<td>(III) Telomere</td>
<td>(c) Kinetochore is present</td>
</tr>
<tr>
<td>(IV) Nucleosome</td>
<td>(d) Related with ageing process</td>
</tr>
</tbody>
</table>

(I) 1-c, II-d, III-b, IV-a  
(II) 1-b, II-c, III-d, IV-a  
(III) I-c, II-a, III-d, IV-b  
(IV) I-c, II-b, IV-a, IV-d
99. Ovulation takes places in Rabbit :-
   (1) After coitus
   (2) Before coitus
   (3) On 14th day of menses cycle
   (4) On 17th day of menses cycle

100. Which of the following statements are correct about typhoid ?
   (a) Confirmed by widal test
   (b) Mary Mallon was carrier
   (c) Droplet infection
   (d) Sustained fever 39–40°C
   (e) Salmonella typhi is pathogenic virus

101. Identify the given figure and what are a & b ?
   (1) Radial vascular bundle, a-phloem, b-xylem
   (2) Conjoint vascular bundle a-phloem, b-xylem
   (3) Conjoint vascular bundle a-xylem, b-phloem
   (4) Radial vascular bundle, a-xylem, b-phloem

102. Read the following statements :-
   (i) Process of splicing represents the dominance of DNA world
   (ii) Dominance is not an autonomous feature of a gene.
   (iii) Semi dwarf varieties Jaya and Ratna were developed in India
   (iv) Agarose is a natural polymer extracted from sea weeds
   (v) The separated bands of DNA are cut out from the agarose gel and extracted from the gel piece, this step is known as spooling

   How many statement are correct ?
   (1) 5  (2) 4  (3) 2  (4) 3

103. Which one of following is a non-glanduler structure :-
   (1) Uterus  (2) Vagina
   (3) Fallopian tube  (4) Penis
104. Which one of the following options gives the correct categorisation of six drugs according to the plant from which they are obtained?

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Erythroxylum coca</td>
<td>Cannabis sativa</td>
<td>Papaver somniferum</td>
</tr>
<tr>
<td>(1) Cocaine</td>
<td>Heroin, Hashish, Morphine,</td>
<td>(1) A, B, C are correct</td>
</tr>
<tr>
<td>(2) Cocaine</td>
<td>Hashish, Charas, Heroin</td>
<td>(2) Any one of the above</td>
</tr>
<tr>
<td>(3) Cocaine</td>
<td>Hashish, Charas, Ganja</td>
<td>(3) B, C, D are correct</td>
</tr>
<tr>
<td>(4) Heroin</td>
<td>Cocaine, Morphine, Ganja</td>
<td>(4) C, D are correct</td>
</tr>
</tbody>
</table>

105. A lateral branch with short internodes and each node bearing a rosette of leaves and tuft of roots found in aquatic plants is called :-

(1) Runner (2) Stolon (3) Offset (4) Sucker

106. r-RNA play structural and _______role during translation :-

(1) Messenger (2) Functional (3) Catalytic (4) Adaptor

107. A female is suffering from the labour pain. The doctors want parturition to be done earlier. So the doctors decide to inject a hormone in mothers body that helps in :-

(1) Increases the activity of smooth muscles.
(2) Increases the metabolic rate.
(3) Increases the glucose level in blood.
(4) Increases the endometrium contraction.

108. Which is/are correct

(a) Endangered Facing a very high risk of extinction in the wild in immediate future
(b) Critically Endangered Facing a very high risk to extinction in the wild in the near future.
(c) Vulnerable Facing a high risk of extinction in the wild in the medium-term future
(d) Extinct There is no reasonable doubt that the last individual has died

(1) Only a & b are correct
(2) Only c & d are correct
(3) a, b, c, d all are correct
(4) Only a & c are correct
109. Identify the type of aestivation in the given diagrams A to D and select the plants in which they are found?

(A) Valvate, Cotton; B-Imbricate, Calotropis; C-Twisted, Cassia; D-Vexillary, Pea

110. Sex determination pattern in honey bee is called:–
(1) XX-XO method
(2) Haploid - diploid method
(3) Female haploidy
(4) Gene balance theory

111. Which of the following has been recently used for increasing productivity of super milch cow:–
(1) Artificial insemination by a pedigreed bull only
(2) Superovulation of a high production cow only
(3) Embryo transplantation only
(4) A combination of superovulation, artificial insemination and embryo transplantation into a 'carrier cow' (surrogate mother)

112. Arrange the following land in an ascending order of % are they occupy in india

(i) Scrub     (ii) Open forest
(iii) Mangroves (iv) Dense forest
(v) Non forest

113. Wind pollination is quite common in :-

(1) Zostera (Sea grasses)   (2) Grasses
(3) Water lily   (4) Banana

(1) A-Valvate, Cotton; B-Imbricate, Calotropis; C-Twisted, Cassia; D-Vexillary, Pea
(2) A-Valvate, Calotropis; B-Twisted, Cotton; C-Imbricate, Cassia; D-Vexillary, Pea
(3) A-Vexillary, Pea; B-Twisted, Cotton; C-Imbricate, Cassia; D-Valvate, Calotropis
(4) A-Twisted, Cotton; B-Valvate, Calotropis; C-Valvate, Cassia; D-Imbricate, Pea

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(2) A-Valvate, Calotropis; B-Twisted, Cotton; C-Imbricate, Cassia; D-Vexillary, Pea
(3) A-Vexillary, Pea; B-Twisted, Cotton; C-Imbricate, Cassia; D-Valvate, Calotropis
(4) A-Twisted, Cotton; B-Valvate, Calotropis; C-Valvate, Cassia; D-Imbricate, Pea
114. Incorrect match is :-
(1) ☐ - Mating
(2) ☐ - Sex specified
(3) ☐ - Female
(4) ☐ - Affected male

115. The sperms employed for artificial insemination of cattle are stored in :-
(1) Liquid oxygen
(2) Dry ice
(3) Liquid ammonia
(4) Liquid nitrogen

116. Match the column I with column II

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a)</td>
<td>Over exploitation</td>
</tr>
<tr>
<td>(b)</td>
<td>Co-extinction</td>
</tr>
<tr>
<td>(c)</td>
<td>Habitat loss</td>
</tr>
<tr>
<td>(d)</td>
<td>Alien species invasions</td>
</tr>
<tr>
<td>(i)</td>
<td>Amazon forest</td>
</tr>
<tr>
<td>(ii)</td>
<td>Lantana, Eichromia</td>
</tr>
<tr>
<td>(iii)</td>
<td>Plant-Pollinator</td>
</tr>
<tr>
<td>(iv)</td>
<td>Stellers sea cow, Passenger pigeon</td>
</tr>
</tbody>
</table>

Option
(1) a – iv, b – ii, c – i, d – iii
(2) a – ii, b – iv, c – i, d – iii
(3) a – iv, b – iii, c – i, d – ii
(4) a – i, b – ii, c – iii, d – iv

117. In which of the following plants both autogamy and geitonogamy are prevented ?
(1) Castor, Maize
(2) Maize, Papaya
(3) Date palm, Papaya
(4) Castor, Date palm

118. During respiration, the conversion of pyruvic acid into CO₂, and a two carbon organic compound in cytoplasm is catalysed by :-
(1) Pyruvate dehydrogenase complex
(2) Pyruvic acid decarboxylase and alcohol dehydrogenase
(3) Phosphofructokinase
(4) Both '1' and '2'

119. Technique of cryopreservation is used for :-
(1) Preservation of various fossils.
(2) Preservation of semen of good quality bulls
(3) Preservation of very young foetuses
(4) All of the above

114. कंगा मिला न है -
(1) ☐ - मैं 61 न
(2) ☐ - लिंग का उल्लेख खूँ मैं 3
(3) ☐ - मैं दा
(4) ☐ - मैं 61 निलेख नर

115. पूँ ओं के कृत्रिममयित धान के लिये उठाए गए हाओं ने चार से रिश्ता तहते 'हैं'
(1) तल आ' ' वे जा में (2) चुए एक बकरे में
(3) तल अमेरिका में (4) तल नाइट्रो जा में

116. व रणों के वर्णों से मिला इसी।

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a)</td>
<td>अत्यादि हन</td>
</tr>
<tr>
<td>(b)</td>
<td>क्षेत्र, लपता</td>
</tr>
<tr>
<td>(c)</td>
<td>आ वा साहा सं</td>
</tr>
<tr>
<td>(d)</td>
<td>चिड़ियों जिन लिए का पुरुष स्त्री पर्यावरण गाय या का तथ्य पत्र से ज चूँका है।</td>
</tr>
<tr>
<td>(i)</td>
<td>अंत्र र, प्रसूति त</td>
</tr>
<tr>
<td>(ii)</td>
<td>लेटा ना, ब्रज के निबंध</td>
</tr>
<tr>
<td>(iii)</td>
<td>प दफ़-फा गक्ता 'ग'</td>
</tr>
<tr>
<td>(iv)</td>
<td>स्टेल कर सूदूँ दृष्ट गाय य तथा । पे से 'ज कानू तर</td>
</tr>
</tbody>
</table>

बिक्रम प:-
(1) a – iv, b – ii, c – i, d – iii
(2) a – ii, b – iv, c – i, d – iii
(3) a – iv, b – iii, c – i, d – ii
(4) a – i, b – ii, c – iii, d – iv

117. निगम नलिख तथ दप्प' में किसी 'र' या गण तथा 'ख' हुआ गए दो नों अच्छा रिपोर्ट होता हैं
(1) ओं डो, मक बा       (2) मम बा, पम त       (3) ख मू र, पी मू      (4) ओं डो, ख मू र

118. संस्करण के स्थायि द् || जिम के द्वारा वो वह 'द् 9' वें थे ?
(1) प खचेट डी हाइडरो, वें जैन जबके 'प्रोटीक' वाले
(2) प खचेट अल्र डी 'को वों बड़े हलि हाइडरो, से जैन ज
(3) पफँ रफों 'डो बर्नें ज
(4) 'डों खचेट डो '2'

119. आ वा परिवर्तित य य के 'वित्तीय' तकने के लिये
(1) निघे 1 - न जैवि स्मृति के परिवर्तित तकने के लिये
(2) अवधि 4 गु व सम 'वाले खेड़े, के 'बी व वे परिवर्ति के लिये
(3) 'पु वा मै ला प वे परिवर्तित तकने के लिये
(4) 'उ फो व तकने के लिये
Match the Column-I with Column-II :-

<table>
<thead>
<tr>
<th>I</th>
<th>II</th>
</tr>
</thead>
<tbody>
<tr>
<td>a Kyoto protocol</td>
<td>i Biodiversity conservation</td>
</tr>
<tr>
<td>b Montreal protocol</td>
<td>ii Climate change</td>
</tr>
<tr>
<td>c Rio earth summit</td>
<td>iii Sustainable development</td>
</tr>
<tr>
<td>d World summit</td>
<td>iv Ozone protection</td>
</tr>
<tr>
<td>e Wetland conservation</td>
<td></td>
</tr>
</tbody>
</table>

1. A-ii, B-iv, C-iii, D-i
2. A-iv, B-ii, C-v, D-iii
3. A-iv, B-ii, C-v, D-i
4. A-ii, B-iv, C-i, D-iii

DIRECTIONS FOR Q. NO. 121 TO 180

These questions consist of two statements each, printed as Assertion and Reason. While answering these Questions you are required to choose any one of the following four responses.

A. If both Assertion & Reason are True & the Reason is a correct explanation of the Assertion.
B. If both Assertion & Reason are True but Reason is not a correct explanation of the Assertion.
C. If Assertion is True but the Reason is False.
D. If both Assertion & Reason are False.

121. Assertion :- If a charged particle is moving in a perpendicular magnetic field its kinetic energy does not change.
Reason :- Velocity of charged particle is not changing in magnetic field.
(1) A (2) B (3) C (4) D

122. Assertion :- The tyres of aircrafts are slightly conducting.
Reason :- If a conductor is connected to ground the extra charge induced on the conductor will flow to ground.
(1) A (2) B (3) C (4) D

123. Assertion :- The D.C. and A.C. both currents can be measured by a hot wire instrument.
Reason :- The hot wire instrument is based on the principle of magnetic effect of current.
(1) A (2) B (3) C (4) D

120. Match the Column-I with Column-II :

<table>
<thead>
<tr>
<th>I</th>
<th>II</th>
</tr>
</thead>
<tbody>
<tr>
<td>a Kyoto protocol</td>
<td>i Biodiversity conservation</td>
</tr>
<tr>
<td>b Montreal protocol</td>
<td>ii Climate change</td>
</tr>
<tr>
<td>c Rio earth summit</td>
<td>iii Sustainable development</td>
</tr>
<tr>
<td>d World summit</td>
<td>iv Ozone protection</td>
</tr>
<tr>
<td>e Wetland conservation</td>
<td></td>
</tr>
</tbody>
</table>

(1) A-ii, B-iv, C-iii, D-i
(2) A-iv, B-ii, C-v, D-iii
(3) A-iv, B-ii, C-v, D-i
(4) A-ii, B-iv, C-i, D-iii

121. Assertion :- If a charged particle is moving in a perpendicular magnetic field its kinetic energy does not change.
Reason :- Velocity of charged particle is not changing in magnetic field.
(1) A (2) B (3) C (4) D

122. Assertion :- The tyres of aircrafts are slightly conducting.
Reason :- If a conductor is connected to ground the extra charge induced on the conductor will flow to ground.
(1) A (2) B (3) C (4) D

123. Assertion :- The D.C. and A.C. both currents can be measured by a hot wire instrument.
Reason :- The hot wire instrument is based on the principle of magnetic effect of current.
(1) A (2) B (3) C (4) D
124. **Assertion** :- The electric bulb glows immediately when switch is on.

**Reason** :- The drift velocity of electrons in a metallic wire is very high.

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

125. **Assertion** :- When light falls on two polaroid sheets having their axes mutually perpendicular, it is completely extinguished.

**Reason** :- When polyvinyl alcohol is subjected to a large strain, the molecules get oriented parallel to the direction of strain and the material becomes doubly refractive.

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

126. **Assertion** :- The images formed by total internal reflections are much brighter than those formed by mirrors or lenses.

**Reason** :- There is no loss of intensity in total internal reflection.

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

127. **Assertion** :- If earth suddenly stops rotating about its axis the value of acceleration due to gravity will become same at all the places.

**Reason** :- The value of acceleration due to gravity is independent of rotation of earth.

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

128. **Assertion** :- Simple harmonic motion is not a uniformly accelerated motion.

**Reason** :- Velocity is nonuniform in simple harmonic motion.

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

129. **Assertion** :- Cooking in a pressure cooker is faster.

**Reason** :- Because steam does not leak out.

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

130. **Assertion** :- Air pressure in a car tyre increases during driving.

**Reason** :- Absolute zero temperature is not zero energy temperature.

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

131. **Assertion** :- Improper banking of roads causes wear and tear of tyres.

**Reason** :- friction helps in providing the necessary centripetal acceleration.

(1) A (2) B (3) C (4) D
132. **Assertion:** Node of pressure wave is formed at open end of an organ pipe.  
**Reason:** Due to huge volume of atmosphere outside the tube, deformation in its volume is negligible.  
(1) A  (2) B  (3) C  (4) D

133. **Assertion:** In an elastic collision of two bodies, the momentum and energy of each body is conserved.  
**Reason:** If two bodies stick to each other, after colliding, the collision is said to be perfectly elastic.  
(1) A  (2) B  (3) C  (4) D

134. **Assertion:** In the inertial frame centrifugal force cannot appear.  
**Reason:** In uniform circular motion centripetal force will counterbalance the centrifugal force.  
(1) A  (2) B  (3) C  (4) D

135. **Assertion:** A sphere cannot roll on a smooth inclined plane.  
**Reason:** For smooth inclined surface force of friction is equal to zero.  
(1) A  (2) B  (3) C  (4) D

136. **Assertion:** Location of centre of mass is independent of the reference frame.  
**Reason:** Centre of mass is same as centre of gravity.  
(1) A  (2) B  (3) C  (4) D

137. **Assertion:** The graph between square of speed of sound in a gas and its temperature, is a straight line with positive slope.  
**Reason:** Square of speed of sound is proportional to temperature.  
(1) A  (2) B  (3) C  (4) D

138. **Assertion:** Stress is the internal force per unit area of a body.  
**Reason:** Rubber is more elastic than steel.  
(1) A  (2) B  (3) C  (4) D

139. **Assertion:** Air at some distance above the fire is hotter than the same distance below it.  
**Reason:** Air surrounding the fire carries heat upward.  
(1) A  (2) B  (3) C  (4) D

140. **Assertion:** Magnetic moment of toroid is zero.  
**Reason:** Magnetic field outside the volume of current carrying toroid is zero.  
(1) A  (2) B  (3) C  (4) D
### Question 141
**Assertion**: Lyophobic Sols are more stable than Lyophilic Sols.

**Reason**: Lyophilic contains more solvation energy.

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

### Question 142
**Assertion**: \( \text{CH}_3\text{C-CH}=\text{CH-CH}_3 \xrightarrow{\text{alk. KOH}} \text{CH}_3\text{C}=\text{CH-CH}_3 \ + \ \text{KCl + H}_2\text{O} \)

Dehydrohalogenation reaction of 2-Chlorobutane gives 2-butenes.

**Reason**: Elimination reaction takes place according to Saytzeff’s Rule.

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

### Question 143
**Assertion**: \( \text{C}_p - \text{C}_v = R \) for an ideal gas.

**Reason**: Temperature (T) and volume (V) are related for an ideal gas.

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

### Question 144
**Assertion**: Heating \( \text{C}_6\text{H}_5\text{CH}_2\text{COCH}_3 \) with HI results in \( \text{C}_6\text{H}_5\text{CH}_2\text{I} \) and \( \text{CH}_3\text{OH} \).

**Reason**: Benzyl cation is more stable than methyl cation.

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

### Question 145
**Assertion**: Dehydrohalogenation reaction of 2-Chlorobutane gives 2-butenes.

**Reason**: Elimination reaction takes place according to Saytzeff’s Rule.

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

### Question 146
**Assertion**: Total spin of \( 2p^4 \) electrons is \( \pm 1 \).

**Reason**: Total spin = \( \pm \frac{1}{2} \times \) no. of unpaired electrons.

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

### Question 147
**Assertion**: Placement of more electronegative atom at axial position decreases bond pair-bond pair repulsion.

1. A  
2. B  
3. C  
4. D
149. **Assertion**: pH of $10^{-3}$ M HCl is equal to 3

**Reason**: HCl being a strong acid is completely ionized.

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

150. **Assertion**: Out of XeF$_4$ and SF$_4$ XeF$_4$ is nonpolar but SF$_4$ is polar.

**Reason**: In SF$_4$ all F–S–F bonds are in between 90° and 180°.

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

151. **Assertion**: Absolute value of $E^0_{\text{red}}$ of an electrode cannot be determined.

**Reason**: Neither oxidation nor reduction can take place alone.

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

152. **Assertion**: Pb$^{+4}$ act as oxidising agent.

**Reason**: Oxidising power of +4 oxidation state of 14$^{\text{th}}$ group elements increase down the group.

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

153. **Assertion**: Tertiary butyl carbanion is more stable than methyl carbanion.

**Reason**: +I effect of the three methyl group is tertiary butyl carbanion tends to make it more stable than methyl carbanion.

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

154. **Assertion**: Square planar complex do not show geometrical isomerism.

**Reason**: All peripheral atoms are not present in same plane.

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

155. **Assertion**: Reduction of but-2-yne by Na/Liq. NH$_3$ gives 'trans' but-2-ene.

**Reason**: It is an example of anti addition.

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

156. **Assertion**: Pot. ferro cyanide contain covalent bond, ionic bond & dative bond.

**Reason**: It contain 6 types of atoms

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

157. **Assertion**: Addition of bromine to trans but-2-ene yields meso-2,3-dibromo butane.

**Reason**: Bromine addition to an alkene is an electrophilic addition.

(1) A (2) B (3) C (4) D
158. **Assertion**: Hydrogen fluoride is poly basic acid like H_2SO_4.
Reason: HF show symmetric H-bonding
(1) A  (2) B  (3) C  (4) D

159. **Assertion**: Friedel-crafts reaction is used to introduce on alkyl or acyl group in benzene nucleus.
Reason: Benzene is a solvent for the friedel crafts alkylation of bromo benzene.
(1) A  (2) B  (3) C  (4) D

160. **Assertion**: Zeolites are shape selective catalysts.
Reason: ZSM–5 is a zeolite used in petrochemical industries.
(1) A  (2) B  (3) C  (4) D

161. **Assertion**: Bacteria are the sole member of kingdom monera.
Reason: Only bacteria have prokaryotic cellular organization.
(1) A  (2) B  (3) C  (4) D

162. **Assertion**: Blood clotting factors less plasma is known as serum.
Reason: Clotting factors are found in blood plasma in active form.
(1) A  (2) B  (3) C  (4) D

163. **Assertion**: Respiration in birds takes place by lungs.
Reason: Air sacs, connected with lungs, do gaseous exchange.
(1) A  (2) B  (3) C  (4) D

164. **Assertion**: Destruction of parietal cells in gastric gland leads to megaloblastic anaemia.
Reason: Parietal cells in gastric gland secrete castle intrinsic factor.
(1) A  (2) B  (3) C  (4) D

165. **Assertion**: In roots the primary xylem is arranged in exarch condition.
Reason: The roots have protoxylem lies towards centre and metaxyles lies towards the periphery.
(1) A  (2) B  (3) C  (4) D

166. **Assertion**: Outer surface of cerebrum gives gray appearance.
Reason: Neuronal cell bodies and fibres of tract are concentrated here.
(1) A  (2) B  (3) C  (4) D
167. **Assertion**: In hypogynous flowers ovary is said to be superior.

**Reason**: Gynoecium occupies the highest position while the other parts are situated below.

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

168. **Assertion**: Partially oestrogen and mainly progesterone develop secondary sex characters in female.

**Reason**: Oestrogen and progesterone is a gonadotropic hormone release from ovary.

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

169. **Assertion**: Fusion process forming triploid primary endosperm nucleus is called triple fusion.

**Reason**: The formation of primary endosperm nucleus involves fusion of three haploid nuclei.

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

170. **Assertion**: Monozygotic twins are identical and their sex are same.

**Reason**: In monozygotic twins two sperm enters in one egg.

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

171. **Assertion**: Microspore is the first cell of male gametophyte.

**Reason**: Development of male gametophyte in angiosperm is only In-situ type.

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

172. **Assertion**: Fish meal is a rich source of protein for cattle and poultry.

**Reason**: Fish meal is produced from non-edible parts of fishes like fins, tail etc.

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

173. **Assertion**: Most of bones of body are cartilaginous bones.

**Reason**: Most of cartilages in vertebrate embryos are replaced by bones in adult.

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

174. **Assertion**: All mammals like whales, bats, cheetah and human etc. share similarities in the pattern of bones of forelimbs.

**Reason**: Eutherians shows good examples of divergent evolution.

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

175. **Assertion**: Biomolecules which are found in the acid insoluble fraction are called biomacromolecules.

**Reason**: Polysaccharides are long chains of sugars.

(1) A (2) B (3) C (4) D
176. **Assertion** :- Cancer cells show a property of contact inhibition.

**Reason** :- When these come in contact with other cells, inhibits their uncontrolled growth.

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

177. **Assertion** :- DNA fragments are separated by gel electrophoresis.

**Reason** :- Origin of replication in vector DNA is also responsible for controlling the copy number of the linked DNA.

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

178. **Assertion** :- Environment is the sum total of all biotic and abiotic factors that surround and Potentially influence an organism.

**Reason** :- The different components of the environment are interlinked and inter dependent.

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

179. **Assertion** :- Spring variety of wheat are normally planted in the spring and come to flower and produce grain before the end of growing season.

**Reason** :- Winter variety of wheat are planted in autumn and are harvested usually around mid-summer.

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

180. **Assertion** :- The efficiency of energy use and nutrient conservation generally increases as the community progresses towards the climax stage.

**Reason** :- The species composition at the climax stage is determined by the regional climate, as well as local conditions.

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

181. Which Indian Prime Minister was/is born after India attained independence?

(1) Rajiv Gandhi  (2) V. P. Singh
(3) Narendra Modi  (4) Manmohan Singh

182. In which of the following states, new All India Institute of Medical Sciences (AIIMS) will be set up?

(a) Andhra Pradesh  (b) Telanagana
(c) Maharashtra  (d) West Bengal
(e) Meghalaya

(1) a, b, c  (2) a, c, d
(3) b, c, d  (4) b, c, e

183. What method is used by the Bank to read code on Cheque :-

(1) MICR  (2) OCR
(3) OMR  (4) BCR
184. India's indigenous navigation system jointly developed by ISRO and Airport Authority of India (AAI) is :-
(1) GAGAN (2) SIMRAN (3) GPS (4) GLONASS

185. Which of the following is an indicator of air pollution?
(1) Cycas (2) Lichane (3) Algae (4) Bryophyta

186. Who won FIFA Ballon d'Or award 2015 ?
(1) Cristiano Ronaldo (2) Neymar (3) Thomas Muller (4) Lionel Messi

187. The book- "Envisioning an Empowered Nation" is written by :-
(1) Dr. A.P.J. Abdul Kalam (2) Atal Bihari Vajpayee (3) Amartya Sen (4) V.S. Naipaul

188. Standard cricket bats are made of :-
(1) Pine wood (2) Rose wood (3) Teak wood (4) Willow wood

189. What is 'Aeroponic'? 
(1) The process of designing aeroplane wings 
(2) A video game 
(3) The process of growing plants in an air or mist environment without the use of soil 
(4) None of the above

190. The 'Azad Hind Fauj' was formed in :-
(1) 1937 (2) 1942 (3) 1943 (4) 1945

191. India leads the world in the export of :-
(1) Coffee (2) Cotton (3) Manganese (4) Mica

192. World Health Day is celebrated on 7th April every year. The theme of World Health Day 2016 is :-
(1) Food Safety (2) Beat Diabetes (3) Ageing and Health (4) None of the above

193. Al-Biruni came to India with :-
(1) Mahmud of Ghazni (2) Alexander (3) Babur (4) Timur

194. Lakshadweep islands are formed by :-
(1) Wave Action (2) Volcano Activity (3) Sea floor expansion (4) Coral formation
195. What was the name of operation of the Indian Armed forces to evacuate Indian citizens and other foreign nationals from Yemen during 2015 military intervention by Saudi Arabia and allies during Yemeni crisis :-
(1) Operation Maitri (2) Operation Raahat (3) Operation Vijay (4) Operation Madad

196. Mrinalini Sarabhai was related to which field :-
(1) Painting (2) Sculpture (3) Classical dance (4) Poetry

197. 'Indira Point' which is the southernmost point of India is located in :-
(1) Andaman Islands (2) Nicobar Islands (3) Tamil Nadu (4) Lakshadweep

198. Sahitya Academy has recognized :-
(1) 20 languages (2) 24 languages including English (3) 24 languages excluding English (4) 28 languages

199. 'Chipko movement' is related to :-
(1) Forest protection (2) Wild life protection (3) Water protection (conservation) (4) Above all

200. Who was the first chairman of Rajya Sabha in Independent India ?
(1) Dr. Rajendra Prasad (2) Dr. S. Radhakrishnan (3) G.V. Mavalankar (4) V.V. Giri

Your moral duty is to prove that
\textit{Allen} is \textit{Allen}

Your Target is to secure Good Rank in Pre-Medical 2016
SPACE FOR ROUGH WORK / रफ का ये के लिए जाह