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 3 Hours and Questions Paper Contains 180 Questions. The Max. Marks are 720.

3. Student cannot 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 4 marks, while 1 mark will be deducted for every wrong answer. Guessing of answer is harmful.

7. Use Blue or Black Ball Point Pen Only to completely darken the appropriate circle.

8. If you want to attempt any question then circle should be properly darkened as shown below, otherwise leave blank.

   Correct Method (सही तरीका चिह्नित करें)

   Wrong Method (गलत तरीका चिह्नित करें)

9. Please do not fold the Answer Sheet and do not make any stray marks on it.

10. The candidate will not do any rough work on the Answer Sheet.

11. CHANGING AN ANSWER IS NOT ALLOWED.

12. Use of Pencil is strictly prohibited.

   Ensure that your OMR Answer Sheet has been signed by the Invigilator and the candidate himself/ herself.

Your Target is to secure Good Rank in Pre-Medical 2018
1. The two vectors have magnitudes 3 and 5. If angle between them is 60°, then the dot product of two vectors will be:
   (1) 7.5  (2) 6.5  (3) 8.4  (4) 7.9

2. The value of the resistance R in the figure is adjusted such that power dissipated in the 2 Ω resistor is maximum. Then the power dissipated in the 2 Ω will be:
   (1) 72 W  (2) 40 W  (3) 8 W  (4) 32 W

3. If the potential energy of a gas molecule is
   \[ U = \frac{M}{r^6} - \frac{N}{r^{12}} \]
   M and N being positive constants, then the potential energy at equilibrium must be:
   (1) Zero  (2) \( M^2/4N \)  (3) \( MN^2/4 \)  (4) \( MN^2/4 \)

4. A series R, L, C circuit is shown here. The source frequency \( f \) is varied, but the current is kept unchanged. Which of the curves showing changes of \( V_L \) and \( V_C \) with frequency would be valid for the circuit under consideration?

   ![Circuit Diagram]

   (1)  (2)  (3)  (4)
5. For visibility of diffraction pattern wave of light, size of slit or obstacle should be :-
(1) of any order
(2) of order of wavelength
(3) very less as compared to wave length
(4) very high as compared to wave length

6. Dimensional formula of universal gravitational constant :-
(1) \([M^1L^3T^{-2}]\) (2) \([M^{-1}L^{-3}T^2]\)
(3) \([M^{-1}L^3T^2]\) (4) \([M^{-1}L^3T^{-2}]\)

7. The charge (in \(\mu C\)) on any one of the 2\(\mu F\) capacitor and 1\(\mu F\) capacitor will be given respectively as :
(1) 1, 2 (2) 2, 1 (3) 1, 1 (4) 2, 2

8. An electron is travelling horizontally towards east. A magnetic field in vertically downward direction exerts a force on the electron along :-
(1) East (2) West (3) North (4) South

9. If the earth were to suddenly contract to \(\frac{1}{n}\) th of its present radius without any change in its mass then duration of the new day will be :-
(1) \(\frac{24}{n}\) hr (2) 24 n hr
(3) \(\frac{24}{n}\) hr (4) 24 n^2 hr

10. Two slits separated by 4 mm are illuminated by light of wavelength 6000Å. What will be fringe width on screen placed 2m away from slits :-
(1) 0.12 mm (2) 0.3 mm
(3) 3.0 mm (4) 4.0 mm

11. Variation in electric potential is maximum if one goes :-
(1) along the line of force
(2) perpendicular to the line of force
(3) in any direction
(4) no variation in any direction
12. The charge \( q \) on a capacitor varies with voltage as shown in figure. The area of the triangle AOB represents:

(1) electric field between the plates
(2) electric flux between the plates
(3) energy density
(4) energy stored by the capacitor.

13. The magnetic induction at the centre O (Fig) is:

(1) \( \frac{\mu_0 I}{2a} \hat{a} + \frac{\mu_0 I}{2b} \hat{b} \)
(2) \( \frac{3\mu_0 I}{8a} + \frac{\mu_0 I}{8b} \hat{b} \)
(3) \( 3\frac{\mu_0 I}{8a} - \frac{\mu_0 I}{8b} \hat{a} \)
(4) \( 3\frac{\mu_0 I}{8a} - \frac{\mu_0 I}{8b} \hat{b} \)

14. If a solid sphere is rolling the ratio of its rotational energy to the total kinetic energy is given by :-

(1) 7 : 10
(2) 2 : 5
(3) 10 : 7
(4) 2 : 7

15. Three identical bodies of equal mass \( M \) each are moving along a circle of radius \( R \) under the action of their mutual gravitational attraction. The speed of each body is :-

(1) \( \sqrt{\frac{GM}{R}} \)
(2) \( \sqrt{\frac{GM}{3R}} \)
(3) \( \sqrt{\frac{GM}{3R}} \)
(4) \( \sqrt{\frac{GM}{2R}} \)

16. The potential function of an electrostatic field is given by \( V = 2x^2 \). Determine the electric field strength at the point (2m, 0, 3m).

(1) \( \vec{E} = 4i \text{(NC)} \)
(2) \( \vec{E} = -4i \text{(NC)} \)
(3) \( \vec{E} = 8i \text{(NC)} \)
(4) \( \vec{E} = -8i \text{(NC)} \)
17. When the conductivity of a semiconductor is only due to breaking of covalent bonds, the semiconductor is called:

(1) intrinsic  (2) extrinsic  (3) p-type  (4) n-type

18. Two blocks A and B are joined together with a compressed spring. When the system is released, the two blocks appear to be moving with unequal speeds in opposite directions as shown in figure. Select the correct statement:

(1) The centre of mass of the system will remain stationary.
(2) Mass of block A is equal to that of block B.
(3) The centre of mass of the system will move towards right.
(4) It is an impossible physical situation.

19. P-V diagram of an ideal gas is as shown. Find work done by the gas in ABCD process:

(1) $4P_0V_0$  (2) $2P_0V_0$  (3) $3P_0V_0$  (4) $P_0V_0$

20. One end of a spring of force constant $k$ is fixed to a vertical wall and the other to a block of mass $m$ resting on a smooth horizontal surface. There is another wall at a distance $x_0$ from the block. The spring is then compressed by $2x_0$ and released. The time taken to strike the wall is:

(1) $\frac{1}{6}\pi\sqrt{\frac{k}{m}}$  (2) $\sqrt{\frac{k}{m}}$
(3) $\frac{2\pi}{3}\sqrt{\frac{m}{k}}$  (4) $\frac{\pi}{4}\sqrt{\frac{k}{m}}$
21. Two charges \(+q\) and \(-3q\) are placed on x-axis separated by a distance \(d\). (\(-3q\) is right of \(q\)) Where should a third charge \(2q\) be placed such that it will not experience any force?

1. \(\frac{d}{2}(1 + \sqrt{3})\) to the left of \(q\)
2. \(\frac{d}{2}(1 - \sqrt{3})\) to the left of \(q\)
3. \(\frac{d}{2}(1 - \sqrt{3})\) to the right of \(q\)
4. \(\frac{d}{2}(1 + \sqrt{3})\) to the right of \(q\)

22. Carbon, Silicon and Germanium atoms have four valence electrons each. Their valence and conduction bonds are separated by energy band gaps represented by \((E_g)_C\), \((E_g)_Si\) and \((E_g)_Ge\) respectively. Which one of the following relationships is true in their case:

1. \((E_g)_C < (E_g)_Ge\)
2. \((E_g)_C > (E_g)_Si\)
3. \((E_g)_C = (E_g)_Si\)
4. \((E_g)_C < (E_g)_Si\)

23. The bob A of simple pendulum is released when the string makes an angle of 45° with the vertical. It hits another bob B of the same material and same mass kept at rest on the table. If the collision is elastic, then

1. Both A and B rise to the same height
2. Both A and B come to rest at B
3. Both A and B move with the same velocity of A
4. A comes to rest and B moves with the velocity of A

24. One mole of a gas expands with temperature as \(V = KT^{2/3}\). What is the work done when temperature changes by 30°C?

1. 10R
2. 20R
3. 30R
4. 40R

25. A particle is executing a simple harmonic motion. Its maximum acceleration is \(\alpha\) and maximum velocity is \(\beta\). Then, its time period of vibration will be:

1. \(\frac{2\pi\beta}{\alpha}\)
2. \(\frac{\beta^2}{\alpha^2}\)
3. \(\frac{\alpha}{\beta}\)
4. \(\frac{\beta^2}{\alpha}\)
26. A particle starts from rest. Its acceleration \( a \) versus time \( t \) is as shown in the figure. The maximum speed of the particle will be :-

\[
\begin{align*}
10 \text{m/s}^2 & \quad 11 \\
\end{align*}
\]

(1) 110 m/s  
(2) 55 m/s  
(3) 550 m/s  
(4) 660 m/s

27. Two masses of 5 kg and 3 kg are suspended with the help of massless inextensible strings as shown in figure. The whole system is going upwards with an acceleration of 2 m/s\(^2\). The tensions \( T_1 \) and \( T_2 \) are respectively (Take \( g = 10 \text{ m/s}^2 \)):-

\[
\begin{align*}
T_1 & \quad T_2 \\
5 \text{ kg} & \quad 3 \text{ kg} \\
\end{align*}
\]

(1) 96 N, 36 N  
(2) 36 N, 96 N  
(3) 96 N, 96 N  
(4) 36 N, 36 N

28. Two resistances 20\( \Omega \) and 50\( \Omega \) and a pure inductance of 50 H are connected to a 10 V battery through a key as shown in the figure. The key is tapped at \( t = 0 \). Find the final value of current in the 50\( \Omega \) resistor :-

\[
\begin{align*}
20\Omega & \quad 50\Omega \\
50 \text{ H} & \quad 50\Omega \\
10\text{ V} \\
\end{align*}
\]

(1) zero  
(2) \( \frac{1}{7} \) A  
(3) \( \frac{1}{10} \) A  
(4) 0.5 A

29. A light ray incident normally on one face of an equilateral prism and emerges out grazingly at the other face. The refractive index of the prism is :-

\[
\begin{align*}
(1) \sqrt{3} & \quad (2) \sqrt{2} & \quad (3) \frac{2\sqrt{3}}{5} & \quad (4) \frac{2}{\sqrt{3}} \\
\end{align*}
\]
30. The wavelength of the first line of Balmer series of hydrogen atom is \( \lambda \) Å. The wavelength of this line of a double ionised lithium atom (\( Z = 3 \)) is:-

(1) \( \lambda/3 \)
(2) \( \lambda/9 \)
(3) \( \lambda/8 \)
(4) \( \lambda/27 \)

31. A ball is dropped on the floor from a height of 10 m. It rebounds to a height of 2.5 m. If the ball is in contact with the floor for 0.01 sec, the average acceleration during contact is

(1) 2100 m/sec\(^2\) downwards
(2) 2100 m/sec\(^2\) upwards
(3) 1400 m/sec\(^2\)
(4) 700 m/sec\(^2\)

32. A block of mass 1 kg lies on a horizontal surface in a truck. The coefficient of static friction between the block and the surface is 0.6. If the acceleration of the truck is 5 ms\(^{-2}\). The frictional force acting on the block is:-

(1) 10 N
(2) 5 N
(3) 2.5 N
(4) 20 N

33. In the given circuit, switch is in position a, for what value of R will the circuit have a time constant of 10 µs.

(1) 2.0 KΩ
(2) 2.5 KΩ
(3) 1.0 KΩ
(4) None of these

34. A ray of light passes through equilateral prism (\( \mu = 1.5 \)) such that angle of incidence is equal to angle of emergence and the later is equal to 3/4th of prism angle. The angle of deviation is :-

(1) 30º
(2) 60º
(3) 45º
(4) 120º

35. Two radioactive substances X and Y initially contain equal number of nuclei. X has a half-life of 1 hour and Y has a half-life of 2 hours. After two hours, the ratio of the activity of X to the activity of Y is :-

(1) 1 : 4
(2) 1 : 2
(3) 1 : 1
(4) 2 : 1
36. A ring is made of a wire having a resistance \( R_0 = 12 \, \Omega \). Find the points A and B as shown in the figure at which a current carrying conductor should be connected so that the resistance \( R \) of the sub circuit between these points is equal to \( \frac{8}{3} \, \Omega \):

\[
\begin{align*}
(1) \frac{\ell_1}{\ell_2} &= \frac{3}{8} \\
(2) \frac{\ell_1}{\ell_2} &= \frac{1}{2} \\
(3) \frac{\ell_1}{\ell_2} &= \frac{5}{8} \\
(4) \frac{\ell_1}{\ell_2} &= \frac{1}{3}
\end{align*}
\]

37. A body is moving under the action of two forces \( \vec{F}_1 = 2\vec{i} - 5\vec{j}, \vec{F}_2 = 3\vec{i} - 4\vec{j} \). Its velocity will become uniform under an additional third force \( \vec{F}_3 \), given by:-

\[
\begin{align*}
(1) 5\vec{i} - \vec{j} &\quad (2) -5\vec{i} - \vec{j} \\
(3) 5\vec{i} + \vec{j} &\quad (4) -5\vec{i} + 9\vec{j}
\end{align*}
\]

38. Assume a bulb of efficiency 2.5% as a point source. The peak values of electric field produced by the radiation coming from a 100 W bulb at a distance of 3 m is respectively:

\[
\begin{align*}
(1) 2.5 \text{ V m}^{-1} &\quad (2) 4.2 \text{ V m}^{-1} \\
(3) 4.08 \text{ V m}^{-1} &\quad (4) 3.6 \text{ V m}^{-1}
\end{align*}
\]

39. A wire of area of cross-section \( 10^{-4}\text{m}^2 \) is increased in length by 0.1%. The tension produced is 1000 N. The Young's modulus of wire is:

\[
\begin{align*}
(1) 10^{12} \text{ N/m}^2 &\quad (2) 10^{11} \text{ N/m}^2 \\
(3) 10^{10} \text{ N/m}^2 &\quad (4) 10^9 \text{ N/m}^2
\end{align*}
\]

40. The transverse displacement of a string clamped at its both ends is given by

\[
y(x, t) = 2 \sin \left( \frac{2\pi}{3} x \right) \cos \left( 100 \pi t \right)
\]

where \( x \) and \( y \) are in cm and \( t \) is in s.

Which of the following statements is correct?

1. All the points on the string between two consecutive nodes vibrate with same frequency, phase and amplitude.
2. All the points on the string between two consecutive nodes vibrate with same frequency and phase but different amplitude.
3. All the points on the string between two consecutive nodes vibrate with different frequency and phase but same amplitude.
4. All the points on the string between two consecutive nodes vibrate with different frequency, phase and amplitude.

41. A transverse plane wave is produced by a point source at distance \( d \) from the point source. The relationship between the wave velocity \( v \), the wavelength \( \lambda \) and the frequency \( f \) is:

\[
v = \frac{\lambda}{2\pi} f
\]

42. The depth of the water in a tank is \( 1 \text{ m} \). The depth of the water in another tank is \( 2 \text{ m} \). The volume of water in both tanks is:

\[
\begin{align*}
(1) 10^{12} \text{ L} &\quad (2) 10^{11} \text{ L} \\
(3) 10^{10} \text{ L} &\quad (4) 10^9 \text{ L}
\end{align*}
\]

43. A cylinder of radius \( R \) and length \( l \) is made of a material with density \( \rho \). The mass of the cylinder is:

\[
m = \rho V = \frac{4}{3} \pi R^3 l
\]

44. The magnetic field produced by a current in a long straight wire is:

\[
\mathbf{B} = \frac{\mu_0 I}{2\pi} \frac{1}{r}
\]

45. The magnitude of the electric field in a region of uniform electric field is:

\[
E = \frac{\mathbf{F}}{q}
\]

46. The capacitance of a parallel plate capacitor is:

\[
C = \frac{ \epsilon_0 A }{ d }
\]

47. The time period of a simple pendulum is:

\[
T = 2\pi \sqrt{\frac{L}{g}}
\]

48. The speed of sound in air at room temperature is:

\[
v = 343 \text{ m/s}
\]

49. The frequency of a standing wave on a string is:

\[
f = \frac{n}{2L} v
\]

50. The wavelength of a sound wave is:

\[
\lambda = \frac{v}{f}
\]
41. The resistance in the two arms of a meter bridge are 5 Ω and R Ω, respectively. When the resistance R is shunted with an equal resistance, the new balance point is at 1.6 \( \ell_1 \). The resistance ‘R’ is:

\[ \begin{align*}
(1) & \quad 10 \Omega \\
(2) & \quad 15 \Omega \\
(3) & \quad 20 \Omega \\
(4) & \quad 25 \Omega
\end{align*} \]

42. A force \( F \) acting on an object varies with distance \( x \) as shown here. The force is in N and \( x \) in m. The work done by the force in moving the object from \( x = 0 \) to \( x = 6 \) is

\[ \begin{align*}
(1) & \quad 18.0 \text{ J} \\
(2) & \quad 13.5 \text{ J} \\
(3) & \quad 9.0 \text{ J} \\
(4) & \quad 4.5 \text{ J}
\end{align*} \]

43. A solenoid has an inductance of 60 henry and a resistance of 30 ohm. If it connected to a 100 volt battery, how long will it take for the current to reach \( e^{-1} \approx 63.2\% \) of its final value?

\[ \begin{align*}
(1) & \quad 1 \text{ second} \\
(2) & \quad 2 \text{ second} \\
(3) & \quad 3 \text{ second} \\
(4) & \quad 2e \text{ second}
\end{align*} \]

44. A tank 5 m high is half-filled with water and then is filled to the top with oil of density 0.85 g/cm\(^3\). The pressure at the bottom of the tank, due to these liquids is:

\[ \begin{align*}
(1) & \quad 1.85 \text{ g dyne/cm}^2 \\
(2) & \quad 89.25 \text{ g dyne/cm}^2 \\
(3) & \quad 462.5 \text{ g dyne/cm}^2 \\
(4) & \quad 500 \text{ g dyne/cm}^2
\end{align*} \]

45. An organ pipe of length \( L \) open at both ends is found to vibrate in its first harmonic when sounded with a tuning fork of 480 Hz. What should be the length of the pipe closed at one end, so that it also vibrates in its first harmonic with the same tuning fork?

\[ \begin{align*}
(1) & \quad \frac{L}{4} \\
(2) & \quad \frac{L}{2} \\
(3) & \quad L \\
(4) & \quad 2L
\end{align*} \]
46. Which of the following is not substitution reaction.

(1) \( \text{OH} \to \text{SOCl}_2 \)
(2) \( \text{Br} \to \text{NO}_2 \)
(3) \( \text{CH}_3 \to \text{HI} \)
(4) \( \text{CH}_3 - \text{CH}_2 - \text{Br} \to \text{NaI} \)

47. Insulin has:

(1) 51 amino acid  (2) 41 amino acid  
(3) 31 amino acid  (4) 101 amino acid

48. If in \( \text{NH}_3 \) formation \( \text{N} \) uses its pure atomic orbital then wrong statement is:

(1) At least three bond angle are of 90°
(2) Three \( \pi \) bond with identical strength
(3) Lone pair will be in 2s orbital
(4) Molecule will be T-shaped

49. \[ A \xrightarrow{\Delta} B + C_{(\text{gas})} + \text{Ca(OH)}_2 \to D_{(\text{milky})} \]

\[ + \text{H}_2\text{O} \to \text{C}_{\text{gas}} \to \text{E} \]

Then incorrect statement is:

(1) A is \( \text{NaHCO}_3 \)
(2) B is metal carbonate which is soluble in \( \text{H}_2\text{O} \)
(3) pH of aqueous solution of both A and E is 7
(4) D is \( \text{CaCO}_3 \)

50. Consider a reversible reaction \( 2A + B \rightleftharpoons 2C \) having equilibrium constant 25. If a reaction vessel having 2, 0.25 and 0.5 mol of A, B and C respectively in 100 L vessel than what will be direction of reaction?

(1) Forward
(2) Backward
(3) Exist in equilibrium
(4) can’t predict

51. Which of the following is most reactive towards \( S_N^2 \)

(1) \( \text{CH}_2 - \text{Cl} \)
(2) \( \text{CH}_2 - \text{I} \)
(3) \( \text{Cl} \)
(4) \( \text{I} \)
52. Which of the following is not addition polymer
(1) Polythene   (2) Teflon
(3) Poly acrylonitrile   (4) Terylene

53. Which given statement is wrong?
(1) Hydrated CuSO$_4$ shows ionic, covalent, coordinate and H-bond
(2) NO$_3^-$ shows covalent and coordinate bonds
(3) K$_4$[Fe(CN)$_6$] shows only ionic and coordinate bonds
(4) Anion of K$_2$CO$_3$ shows resonance

54. Which of the following statement is not correct regarding calcination?
(1) Impurities are removed in the form of elemental vapours
(2) Carbonate ores convert into their oxides
(3) Temperature of the process is maintained below the melting point of the mixture
(4) Lower oxidation state oxides are oxidised further

55. 20 ml of 0.2 M HCN mix with 10 ml of 0.2 M NaOH, then calculate pH of resulting mixture. pKa value of HCN is 5.:-
(1) 6  (2) 7.5
(3) 5  (4) 11

56. Correct order of bond angle for

bond will be :
(1) Ph – OH > CH$_3$ – O – CH$_3$ > CH$_3$ – OH
(2) CH$_3$ – O – CH$_3$ > Ph – OH > CH$_3$OH
(3) CH$_3$ – OH > CH$_3$ – O – CH$_3$ > Ph – OH
(4) CH$_3$ – O – CH$_3$ > CH$_3$OH > Ph – OH

57. \[ \text{HBr}_1 \text{mole} \] Major product will be :

(1) \[ \text{Br} \]
(2) \[ \text{Br} \]
(3) \[ \text{Br} \]
(4) \[ \text{Br} \]

58. In which hybridisation angular shape is not possible?
(1) sp   (2) sp$^2$
(3) sp$^3$   (4) None of these

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59. Which of the following compounds does give N\textsubscript{2} on heating?
   (1) NH\textsubscript{4}NO\textsubscript{2}  
   (2) NH\textsubscript{4}NO\textsubscript{3}  
   (3) NaN\textsubscript{3}  
   (4) Both (1) and (3)

60. Which of the following is not extensive property:-
   (1) Temperature  
   (2) pressure  
   (3) Viscosity  
   (4) All

61. (a) Secondary alcohol \( \xrightarrow{\Delta} \frac{H\textsubscript{2}P\textsubscript{O}}{\Delta} \) 
   (b) Tertiary alcohol \( \xrightarrow{\Delta} \frac{H\textsubscript{2}P\textsubscript{O}}{\Delta} \) 
   For above dehydration reaction rate of reaction will be
   (1) \( a > b \)  
   (2) \( a < b \)  
   (3) \( a \equiv b \)  
   (4) None

62. \( CH_{3} - C \equiv C - CH_{3} \xrightarrow{\Delta / KMnO_{4}} A \xrightarrow{(1) LiAIH\textsubscript{4} (2) H_{2}O} B \) 
   B will be:
   (1) \( CH_{3} - COOH \)  
   (2) \( CH_{3} - CH_{2} - OH \)  
   (3) \( CH_{3} - CHO \)  
   (4) \( CH_{3} - C - C - CH_{3} \) 

63. Copper sulphate dissolves in excess of KCN to give
   (1) CuCN  
   (2) [Cu(CN)\textsubscript{4}]\textsuperscript{3-}  
   (3) [Cu(CN)\textsubscript{4}]\textsuperscript{2-}  
   (4) Cu(CN)\textsubscript{2}

64. \( \Delta_{c}U^{\circ} \) of combustion of CH\textsubscript{4}(g) at certain temperature is \(-100\text{kJ/mol}. \) The value of \( \Delta_{c}H^{\circ} \) is
   (1) Equal to \( \Delta_{c}U^{\circ} \)  
   (2) \( < \Delta_{c}U^{\circ} \)  
   (3) \( > \Delta_{c}U^{\circ} \)  
   (4) Zero

65. 1000 mL 1 M CuSO\textsubscript{4}(aq) is electrolysed by 9.65 amp current for 100 sec using Pt-electrode. Which is incorrect statement?
   (1) Blue colour intensity decreases during electrolysis.
   (2) Blue colour intensity remains constant if Cu-electrode used.
   (3) pH of solution is 8 after electrolysis.
   (4) At anode O\textsubscript{2} gas liberated during electrolysis.

66. \( \Delta_{c}U^{\circ} \) of combustion of CH\textsubscript{4}(g) at certain temperature is \(-100\text{kJ/mol}. \) The value of \( \Delta_{c}H^{\circ} \) is \(-100\text{kJ/mol} \) and

67. 1000 mL 1 M CuSO\textsubscript{4}(aq) is electrolysed by 9.65 amp current for 100 sec using Pt-electrode. Which is incorrect statement?
   (1) Blue colour intensity decreases during electrolysis.
   (2) Blue colour intensity remains constant if Cu-electrode used.
   (3) pH of solution is 8 after electrolysis.
   (4) At anode O\textsubscript{2} gas liberated during electrolysis.

68. \( \Delta_{c}U^{\circ} \) of combustion of CH\textsubscript{4}(g) at certain temperature is \(-100\text{kJ/mol}. \) The value of \( \Delta_{c}H^{\circ} \) is \(-100\text{kJ/mol} \) and
66. Ph – O – CH₂ – Ph → A + B will be
(1) Ph – OH + Ph – CH₂ – I
(2) Ph – I + Ph – CH₂ – I
(3) Ph – I + Ph – CH₂ – OH
(4) Ph – OH + Ph – CH₂ – OH

67. CHO has correct IUPAC name.
(1) 3 – Methyl hexanal
(2) 2 – Methyl hexanal
(3) Hexane – 1 – Carbaldehyde
(4) Hexane – 2 – Carbaldehyde

68. Which of the following complexes exhibit the highest paramagnetic behaviour?
(1) [Co(OX)₂(OH)₂]⁻³
(2) [Ti(NH₃)₆]³⁺
(3) [V (gly)₂(OH)₂(NH₃)₂]⁺
(4) [Fe(en) (bpy) (NH₃)₂]²⁺

Where gly = glycine, en = ethylenediamine and bpy=bipyridyl moities.
(At. nos. Ti = 22, V = 23, Fe = 26, Co = 27)

69. Gases possess characteristic critical temperature which depends upon the magnitude of intermolecular forces between the particles. Following are the critical temperatures of some gases.

<table>
<thead>
<tr>
<th>Gases</th>
<th>P</th>
<th>Q</th>
<th>R</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Critical temperature in Kelvin</td>
<td>33.2</td>
<td>5.3</td>
<td>154.3</td>
<td>126</td>
</tr>
</tbody>
</table>

From the above data what would be the order of liquefaction of these gases? Start writing the order from the gas liquefying first
(1) P, Q, R, S
(2) Q, R, P, S
(3) S, R, Q, P
(4) R, S, P, Q

70. In a face centered cubic arrangement of A and B atoms whose A atoms are at the corner of the unit cell and B atoms at the face centers. One of the B atoms missing from one of the face in unit cell. The simplest formula of compound is:-
(1) AB₃
(2) A₈B₅
(3) A₂B₅
(4) AB₂/₅
71. \[ R-C=\overset{\text{N}}{\text{SnCl}}_2 + \text{HCl} \rightarrow A \overset{\text{H}_2\text{O}^\circ}{\rightarrow} \text{RCHO} \]

Above reaction is known as:

(1) Stephen reaction
(2) Rosenmund reduction
(3) Etard reaction
(4) Mendius reaction

72. Which of the following can show Geometrical isomerism.

(1) Ph – CH = CH – CH\(_3\)  (2) \(\text{D} \text{D}\)
(3) \(\text{D} \text{D}\)
(4) All of above

73. Which one of the following ions is the most stable in aqueous solution?

(1) \(\text{Mn}^{3+}\)  (2) \(\text{Cr}^{3+}\)  (3) \(\text{V}^{3+}\)  (4) \(\text{Ti}^{3+}\)

74. Which of the following is incorrectly matched?

(1) 2\(r^+ + 2r^- = a\) ; For NaCl type crystal
(2) Coordination number = 12 ; For fcc unit cell
(3) 4\(r = \sqrt{3}a\) ; For fcc unit cell
(4) ZnS Crystal ; Frenkel defect

75. If \(k\) is rate constant and \(t\) is time then the degree of dissociation for a substance undergoing decay with first order kinetics is:

(1) \(e^{-kt}\)  (2) \(1 - e^{-kt}\)
(3) \(1 + e^{-kt}\)  (4) \(ekt\)

76. \[
\begin{array}{c}
\text{Br} \\
\text{NO}_2
\end{array}
\xrightarrow{\text{(1) Mg/ether}}
\begin{array}{c}
\text{A} \\
\text{(1) CO}_2 \\
\text{(2) H}_2\text{O}^\circ
\end{array}
\xrightarrow{\text{B}}
\]

(1) 3 – Nitro benzoic acid
(2) 3 – Nitro benzaldehyde
(3) 3 – Amino benzoic acid
(4) 3 – Amino benzaldehyde

77. If \(\text{Br}^-\) configuration is \([\text{Ar}]\ 3d^{10}4s^24p^6\) then \(\text{Br}^{2-}\) configuration will be identical to which element?

(1) Se  (2) As  (3) Ga  (4) Ge

78. Increasing value of magnetic moments of \(-\):

(I) \([\text{Fe(CN)}_6]^{3-}\)  (II) \([\text{Fe(CN)}_6]^{4-}\)
(III) \([\text{Cr(NH}_3)_6]^{3+}\)  (IV) \([\text{Ni(H}_2\text{O})_4]^{2+}\)

is:

(1) \(I < II < III < IV\)  (2) \(IV < III < II < I\)
(3) \(II < III < I < IV\)  (4) \(I < II < IV < III\)

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(1) \(\text{R} \text{O} \text{R} \text{CH} \text{O} \text{\overset{\text{\(\equiv\)}}{\text{\(\equiv\)}}} \text{\(\equiv\)}}\)

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is:

(1) \(I < II < III < IV\)  (2) \(IV < III < II < I\)
(3) \(II < III < I < IV\)  (4) \(I < II < IV < III\)
79. Incorrect statement regarding adsorption is:-
(1) The extent of adsorption increases with the increase of surface area
(2) Physical adsorption is an exothermic process but its enthalpy of adsorption is quite low as compared to chemical adsorption.
(3) Physical adsorption is highly specific and it will only occur if there is some possibility of chemical bonding between adsorbent and adsorbate.
(4) Physisorption of a gas adsorbed at low temperature may change into chemisorption at a high temperature.

80. A compound MX₂ has observed and normal molecular masses 65.6 and 164 respectively. Calculate percentage of ionization of MX₂:-
(1) 75%
(2) 65%
(3) 55%
(4) 35%

81. C₂H₄ \text{Conc. HNO}_3 \xrightarrow{\text{B}} \text{Sn + HCl} \xrightarrow{\text{C}} \text{HNO}_3 \xrightarrow{\text{O-5° E}} \text{HBF}_4
F will be
(1) (2) (3) (4)

82. Find atomic number of that element from which pairing in 4f orbital starts :-
(1) 57 (2) 58 (3) 64 (4) 65

83. Which of the following statements is correct?
(1) [Pt(NO₃)₂(en)_2]²⁺ complex ion can show linkage isomerism
(2) [Cr(CO₃)(NH₃)_4]Br can show ionization isomerism
(3) FeCl₃·6H₂O can show hydrate isomerism
(4) [FeCl₃(NH₃)_3] can exhibit structural isomerism
84. 18 L mixture of N₂ and H₂ gives maximum 6 L of NH₃ at same temperature and pressure then what will be ratio of N₂ and H₂ initially taken?
(1) 1 : 5
(2) 1 : 1
(3) 1 : 2
(4) (1) & (2) both

85. What is the potential of the cell containing two hydrogen electrodes as represented below:

\[ \text{Pt} : \frac{1}{2} \text{H}_2(g) | \text{H}^+(10^{-8} \text{ M}) | \text{H}^+(10^{-3} \text{ M}) | \frac{1}{2} \text{H}_2(g) : \text{Pt} \]
(1) –0.295 V
(2) –0.0591 V
(3) 0.295 V
(4) 0.591 V

86. Which of the following is invert sugar?
(1) Sucrose
(2) Maltose
(3) Lactose
(4) Glucose

87. In which dative bond is not present?
(1) Protonation of ether
(2) HCl dissolved in water
(3) Dimerisation of BeCl₂
(4) Dimerisation of benzoic acid

88. Which of the following compound forms silicones on hydrolysis?
(1) (CH₃)₂SiCl₂
(2) (SiH₃)₃N
(3) SiCl₄
(4) All

89. Which of following is correct?
(1) Radius of orbit r₂H > r₁He > r₁H
(2) Ionisation energy I.E₁H > I.E₁He > I.E₁Li²
(3) Total Energy E₁H < E₂H < E₃H
(4) Energy difference \( E₂H - E₁H < E₃H - E₂H < E₄H - E₃H \)

90. The catalyst used in the hydrogenation of oils is
(1) Fe
(2) Ni
(3) Pt
(4) V₂O₅
91. ___ is a life process that is not essential for an individual’s survival but for survival of the species:

(1) Growth (2) Reproduction
(3) Respiration (4) Nutrition

92. Which of the following ART is not used in IVF program?
(1) ZIFT (2) GIFT (3) IUT (4) All of these

93. The male and female gametophytes do not have an independent free-living existence in:
(1) Bryophytes (2) Pteridophyte (3) Gymnosperm (4) All the above

94. What is not incorrect for cockroach?
(1) Alary muscles are 12 pairs (2) Tubular heart with 14 chambers
(3) Chief crecetory is Uricase glands (4) Malpighian tubules are present at the junction of foregut and mid gut.

95. Antisense technology is:
(1) Formation of double stranded DNA from RNA (2) A technique to prevent mRNA production from template strand of a gene of interest
(3) Introduction of RNA primer to locate a gene (4) A technique to enhance the recombinant protein production in heterologous host

96. In multicellular organisms the mitosis occurs due to cell growth, which causes the disturbance in ___ ratio:
(1) Nucleolus-cytoplasm (2) Cytoplasm-organalle
(3) DNA-protein (4) Nucleus and cytoplasm

97. Enzyme, vitamins and hormones can be classified into a single category of biological chemicals because all of these:
(1) enhance oxidative metabolism (2) are conjugated proteins
(3) are exclusively synthesized in the body of a living organism (4) help in regulating metabolism
98. In the given diagram identify A, B, C, D:

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(A)</td>
<td>(B)</td>
<td>(C)</td>
<td>(D)</td>
</tr>
<tr>
<td>(1)</td>
<td>Incisor</td>
<td>Canine</td>
<td>Molar</td>
</tr>
<tr>
<td>(2)</td>
<td>Incisor</td>
<td>Premolars</td>
<td>Molars</td>
</tr>
<tr>
<td>(3)</td>
<td>Premolars</td>
<td>Canine</td>
<td>Incisor</td>
</tr>
<tr>
<td>(4)</td>
<td>Molars</td>
<td>Premolars</td>
<td>Incisor</td>
</tr>
</tbody>
</table>

99. Cells forms in bone marrow include:
(1) RBC
(2) RBC and leucocytes
(3) Leucocytes
(4) Lymphocytes

100. Lichen and mosses do not grow in:
(1) CO₂ polluted area
(2) NO₂ polluted area
(3) CO polluted area
(4) SO₂ polluted area

101. The cells of endosperm have 24 chromosomes. What will be the number of chromosomes in gametes?
(1) 8 (2) 16 (3) 23 (4) 32

102. All of the following represents specific epithet except:
(1) Mangifera
(2) indica
(3) Tuberosum
(4) Leo

103. The excess of nutrients which are not used immediately are converted into ________ and stored in ________ Tissue:
(1) Fat, Areolar
(2) Protein, Adipose
(3) Fat, Adipose
(4) Protein, white fibrous connective tissue
104. Read the following statements carefully :-

(A) Hemizygous condition can be achieved in male individuals for autosomal characters.
(B) Hybrid vigour occurs due to heterozygosity in characters.
(C) In pea plants, wrinkled seeds do not have starch grains.
(D) Chromosome 2, 3 and 6 in pea plant do not have genes for any character.

How many of the above statements are wrong?
(1) A and B (2) A, B and C (3) B, C and D (4) A, C and D

105. Lysine and arginine amino acids are :
(1) (+)ively charged
(2) (–)ively charged
(3) Neural
(4) Lysine in (+)ively charged and Arginine is (–)ively charged

106. Which of the following enzyme is called regulatory enzyme of glycolysis ?
(1) Phosphogluco isomerase
(2) Phospho fructokinase
(3) Phosphotriose isomerase
(4) Mutase

107. Where did australophithecines live :-
(1) Australia
(2) East african grassland
(3) Asia
(4) Germany

108. The ______ is freely movable organ attached to the floor of the oral cavity by the frenulum.
(1) Uvula (2) Larynx (3) Tongue (4) Pharynx

109. Which of the following is an example of total stem parasite ?
(1) Rafflesia (2) Cuscuta (3) Viscum (4) Santalum

110. Which statement is not correct ?
(1) The number of cervical vertebrae are seven in almost all mammals
(2) Number of floating ribs in human are two pairs.
(3) Number of cranial bones in human are 22.
(4) Number of vertebra chondral ribs in human are 3 pairs.
111. Select the group of plants that possess stilt roots:–
   (1) Zea mays, Rhizophora mangle
   (2) Pandanus odoratissimus, Ficus bengalensis
   (3) Rhizophora mangle, Hedera helix
   (4) Ficus bengalensis, Pisum sativum

112. Which of the following represents Phylum / Division?
   (1) Primata    (2) Arthropoda
   (3) Mammalia   (4) Insecta

113. In Cockroach, each Oothecae contains eggs:–
   (1) 12 – 14    (2) 14 – 16
   (3) 13 – 15    (4) 16 – 18

114. Inheritance of skin colour in humans is an example of:
   (1) chromosomal aberration
   (2) point mutation
   (3) polygenic inheritance
   (4) codominance

115. Resistance to jassids in cotton and cereal leaf beetle in wheat are associated with:
   (1) Solid stem
   (2) High aspartic acid
   (3) Necter less
   (4) Hairy leaves

116. The first step in Dark Reaction of photosynthesis is:
   (1) Formation of ATP
   (2) Excitation of chlorophyll molecule
   (3) Photolysis of water
   (4) Attachment of carbon dioxide to pentose sugar

117. Potato and sweet potato are example of:
   (1) Homologous organ
   (2) Vestigial structure
   (3) Analogous structure
   (4) Atavism

118. Diphyodont teeth in Human is:
   (1) 2nd premolar    (2) 2nd molar
   (3) 1st premolar    (4) 3rd molar

119. Which of the following act as ‘Conduits’ for energy transfer across trophic level?
   (1) Parasite    (2) Predator
   (3) Scavenger    (4) Decomposer
120. Which of the following bone is not a part of appendicular skeleton?
(1) Humerous
(2) Tibia
(3) Scaphoid
(4) Sternum

121. In _______ placentation, a monocarpellary ovary bears a many ovules along the junction of two fused margins :-
(1) Axile
(2) Parietal
(3) Free central
(4) Marginal

122. Only heterotrophic nutrition is found in kingdom:
(1) Monera
(2) Protista
(3) Fungi
(4) Plantae

123. The main function of pedicellariae is :-
(1) Reproduction
(2) Locomotion
(3) Cleaning
(4) Food transportation

124. In a cross between individuals homozygous for (a, b) and wild type (+ +). In this cross 700 out of 1000 individuals were of parental type. Then the distance between a and b is :-
(1) 70 map unit
(2) 35 map unit
(3) 30 map unit
(4) 15 map unit

125. Principle of plant tissue culture ?
(1) Totipotency
(2) Pleuripotency
(3) PCR
(4) Mutation

126. Uniport, Symport and Antiport are the types of :-
(1) Simple diffusion
(2) Facilitated diffusion
(3) Active transport
(4) Osmosis

127. Which one of the following option is least applicable for origin of new species :-
(1) Variations
(2) Genetic drift
(3) Isolation
(4) Inheritance of acquired character
128. Total volume of air person can expire after a normal inspiration is :-
(1) Residual volume
(2) Inspiratory capacity
(3) Expiratory capacity
(4) Vital capacity

129. Species which occur most abundantly and spend their time in ecotone known as :-
(1) Key stone species
(2) Endemic species
(3) Critical link species
(4) Edge species

130. Regulatory proteins of skeletal muscle are :-
(1) Actin and myosin
(2) Troponin and tropomyosine
(3) Actinin and troponin
(4) Tropomyosin and myosin

131. During secondary growth in a dicot root, cork cambium is formed by the activity of :-
(1) Cortex
(2) Hypodermis
(3) Pericycle
(4) Epidermis

132. Eubacteria cannot do :
(1) Meiosis
(2) N₂-fixation
(3) Water pollution
(4) Nutrient recycling

133. The common character between *Balanoglossus*, *Herdmania* and *Branchiostoma* is/are :-
(1) Bisexual
(2) Nocturnal
(3) Retrogressive metamorphosis
(4) Ciliary feeder

134. In Drosophila, how many linkage groups will be represented ?
(1) 10
(2) 8
(3) 5
(4) 4
135. Match the column I with column-II:

<table>
<thead>
<tr>
<th>Column-I</th>
<th>Column-II</th>
</tr>
</thead>
<tbody>
<tr>
<td>(A) Rapeseed</td>
<td>(i) Pusa gaurav</td>
</tr>
<tr>
<td>(B) Okra</td>
<td>(ii) Jassids</td>
</tr>
<tr>
<td>(C) Flat bean</td>
<td>(iii) Shoot borer</td>
</tr>
<tr>
<td>(D) Cow pea</td>
<td>(iv) Bacterial blight</td>
</tr>
</tbody>
</table>

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

136. Find out the correct relationship:

(1) \( \psi_S = \psi_W + \psi_P \)
(2) \( \psi_P = \psi_W + \psi_S \)
(3) \( \psi_W = \psi_P - \psi_S \)
(4) \( \psi_W = \psi_S + \psi_P \)

137. Cancer of epithelial cells is called?

(1) Carcinoma
(2) Sarcoma
(3) Leukemia
(4) Lipoma

138. During swallowing entry of food into the larynx is prevented by:

(1) Sound box
(2) Trachea
(3) Gullet
(4) Epiglottis

139. Which productivity also known as total photosynthesis?

(1) Gross primary productivity
(2) Net primary productivity
(3) Net community productivity
(4) Secondary productivity

140. A nerve impulse is transmitted from one neuron to another neuron through junction called as:

(1) Synapse
(2) Neuro-muscular junction
(3) Synapsis
(4) Both (1) and (2)

136. रंग भाग के क भाग से गु में टिकाते है?

<table>
<thead>
<tr>
<th>रंग भाग</th>
<th>भाग /भाग</th>
</tr>
</thead>
<tbody>
<tr>
<td>(A) रंग (ii) पुष्कर ग्राह</td>
<td>(i) पुष्कर ग्राह</td>
</tr>
<tr>
<td>(B) जाल (ii) जाल</td>
<td>जाल</td>
</tr>
<tr>
<td>(C) फाली टोली (iii) लाइट नस्लें दकड़</td>
<td>' ' लाइट नस्लें दकड़</td>
</tr>
<tr>
<td>(D) लो फित (iv) जावा लो फित</td>
<td>जावा लो फित अंग मग रो</td>
</tr>
</tbody>
</table>

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

137. उधर शाह का शिव के कैंसर के बच्चे कहते है?

(1) तीन लाइटिका का (2) रूप कीर्ति मा (3) रूप के फित (4) ला इरिं मा

138. भारत समातिस जगा जा के केंद्र में प्रेष बनाए रखते है?

(1) व्यापारिक वा का (2) तीन लाइटिका का (3) गुदा लट (4) केंद्र खंड

139. क्षेत्र उंट पदन के कु ल लापक त संयोग व प पहली कहां है?

(1) संयोग 1961 मिस्र उंट पदन (2) उंट संयोग मिस्र उंट पदन (3) उंट संयोग मिस्र उंट पदन (4) मिस्र उंट पदन

140. तंत्रिका वे ग के संयोग फंटे तंत्रिका से दूर रखे तल तंत्रिका तंत्र व संयोग द्वारा हैं जिस रखते है?

(1) बांधे पप्प (2) तंत्रिका दूर रखे संयोग (3) बांधे पप्प (4) (1) बांधे (2) देखरें
141. 'A' cells start division and enter in 'B' stage of meiotic division and get temporarily 'C' at this stage, called 'D' identify A, B, C and D :-

(1) A-Oogonia, B-Metaphase-I, C-Arrested, D-Primary oocyte
(2) A-Oogonia, B-Anaphase-I, C-Released, D-Secondary oocyte
(3) A-Oogonia, B-Prophase I, C-Arrested, D-Primary oocyte
(4) A-Oogonia, B-Telophase-I, C-Released, D-Secondary oocyte

142. All single celled eukaryotes are placed under (A) Monera (B) Mycota
(3) Protista (4) Plantae

143. *Petromyzon* differs from *scioliodon* in having :
(1) Jawed mouth (2) Cranium
(3) Circular mouth (4) Scales

144. The possibility of a female being haemophilic is extremely rare because mother of such a female has to be at least (a) and father should be (b)
(1) a-haemophilic, b-carrier
(2) a-carrier, b-haemophilic
(3) a-haemophilic, b-normal
(4) a-haemophilic, b-haemophilic

145. In a linear double stranded DNA 6.2 kilo base pairs are present. If thymine is 2160 then give the number of guanine base :
(1) 8400 (2) 4040
(3) 4100 (4) 3860

146. Select the total number of incorrect statements from the following :
(A) The diffusion rate depends on size of substrate
(B) Diffusion across membrane depends upon solubility of lipid
(C) Membrane proteins are sites for hydrophilic substance to cross membrane.
(D) Facilitated diffusion does not require concentration gradient.

(1) A (2) B
(3) C (4) D
147. Incubation period of AIDS is generally?
   (1) 5–10 months  (2) 10–12 years
   (3) 12–18 years  (4) 5–10 years

148. Many collecting duct converge and through medullary Pyramids in the calyces open into the:
   (1) Renal Pelvis
   (2) Duct. of Bellini
   (3) Column of Bertini
   (4) Vasa Recta

149. Birds and mammals attain greater body size in cold region and lesser in warm region. This rule was given by:
   (1) Allen rule
   (2) Bergman rule
   (3) Gause rule
   (4) Dolo’s rule

150. The most convoluted part of hind brain is involved in:
   (1) Involuntary control of voluntary muscles
   (2) Voluntary control of voluntary muscles
   (3) Involuntary control of involuntary muscles
   (4) Voluntary control of involuntary muscles

151. Which of the following statements regarding spermatogenesis is correct?
   (1) It is found in seminiferous tubule and secrete testosterone hormone
   (2) It is a place where spermatozoa is concentrated and stored until ejaculation
   (3) It secrete spermatozoa activating substance like fructose, citrate, inositol, prostaglandin and protein
   (4) It is found in seminiferous tubule and function as nurse cells for differentiating spermatozoa

152. How many statements are correct about fungi:
   (i) They show a great diversity in morphology
   (ii) They prefer to grow in warm and humid places
   (iii) With the exception of yeasts which are unicellular fungi are filamentous
   (iv) Only some fungi are heterotrophs.
   (1) One
   (2) Two
   (3) Three
   (4) Four

153. Pneumatic bones are present in:
   (1) Archaeopterix
   (2) Chelone
   (3) Corvus
   (4) Pteropus

147. एच एच एस ऑफ एडवीज उन दो एकत्रित के बिना होने लगे हैं?
   (1) 5–10 मास  (2) 10–12 साल
   (3) 12–18 साल  (4) 5–10 साल

148. अनेक कम्यून एक हक के निलवाएं. मिलकर चलने के बीच चित्रण या चित्रण में फिस मिलें या गु होता है जहां होते हैं खु लते हैं?
   (1) जब बींस कंपो चित्रण में एंट
   (2) जब हिलता है नलिका में?
   (3) वर्धनी के रूप में?
   (4) चय र से राहु

149. फ्लोरिंग रूपान्तरण और उबने के चरण में रहते हैं उनका बांका बड़ा, 1 ब गर्म चरण तो बांचो होगा तो होता है किसके रूप में?
   (1) ऐलन के नियम
   (2) वर्ण मात्र नियम
   (3) गू खुजला निम्नलिखित दो नियम के लिये बांका है?
   (1) ऐलन के नियम
   (2) वर्ण मात्र नियम
   (3) गू खुजला नियम
   (4) दो दो नियम

150. खुश मिलकर का सबसे विलयन ११ ग निविदन के गंगा के लिये बांका है?
   (1) मनोला नियम
   (2) वर्ण मात्र नियम
   (3) गू खुजला नियम
   (4) दो दो नियम

151. निम्नलिखित में से कोने से कठन न हो सके दो लोगों या जीवों के बारे में सही है?
   (1) जब ये नीचे फिसाने वाले दो के में पै खड़ी है लेट स्टांट रेस्ट न होने में हो रहती है?
   (2) जब रेस्ट र बज ले जायांग्ने के बांट द रहता है?
   (3) जब स्टांट के बांट द नियम के बांट द रहता है?
   (4) जब नीचे से फिसाने वाले दो के में पै खड़ी है लेट स्टांट फिसाने के लिये नंबर के बांट द रहता है?

152. कहाँ से हो घड़ी कहाँ कहाँ?
   (i) इनके आ पैकिंग में बढ़े तक नहीं होते तो है?
   (ii) जब ग्रामर ११ नियम र मैं फिसाने से उड़ जा रहे है?
   (iii) जब उड़े तो में हों, जब पैकिंग फिसाने के बांट द रहता है?
   (iv) फिसाने फिसाने के बांट द रहता है?
   (1) है
   (2) दो
   (3) ती
   (4) चार

153. बांट अपने वाले पैकिंग ११ ता है?
   (1) अफ़गान प्लेट फिसिस (2) की लेन
   (3) का बत्त स (4) टेस्ट बांट
154. Which of the following statement is wrong about thalassemia?
   (1) It is caused by deficient synthesis of \( \alpha \) and \( \beta \) subunits of globin chain
   (2) It is a quantitative abnormality of polypeptide globin chain synthesis
   (3) Clinically the patients are anemic and need massive blood transfusion
   (4) The patients can be treated by multidrug therapy (MDT)

155. If Meselson and Stahl's experiment is continued for four generations in bacteria, The ratio of DNA in the fourth generation would be:
   (1) 1:1:0
   (2) 1:4:0
   (3) 0:1:3
   (4) 0:1:7

156. Which of the following translocated through phloem:
   (1) Sugars
   (2) Amino acid
   (3) Hormone
   (4) All of these

157. Antiserum has:
   (1) Antigen
   (2) Antibody
   (3) W.B.C.
   (4) R.B.C.

158. Shapes of Henle's loop and vasa recta are:
   (1) 'C' shaped and 'U' shaped respectively
   (2) 'U' shaped and 'C' shaped respectively
   (3) Hairpin shaped and 'U' shaped respectively
   (4) Hairpin shaped and 'C' shaped respectively

159. Which of the following is not an example of exhaustible resource?
   (1) Natural gas
   (2) Coal
   (3) Tidal power
   (4) Soil

160. Which of the following nerve helps in maintaining the equilibrium of body:
   (1) Auditory nerve
   (2) Abducens nerve
   (3) Trochlear nerve
   (4) Cochlear nerve
161. HCG is secreted by :-
(1) Inner cell mass
(2) Trophoblast layer
(3) Liquor folliculie
(4) Chorion

162. Which of the following is known as :
Contagium vivum fluidum (infectious living fluid)
(1) Eubacteria
(2) Fungi
(3) Viruses
(4) Mycoplasma

163. Secretory unit of sebaceous gland is composed of :-
(1) Cuboidal epithelium
(2) Stratified squamous epithelium
(3) Squamous epithelium
(4) Columnar epithelium

164. Plasmid is used as vector because :-
(1) It is circular DNA which have capability to
    join with eukaryotic DNA
(2) It can move between prokaryotes and
eukaryotes
(3) It has antibiotic resistant gene
(4) It is main part of bacterial chromosome

165. s-phase marks the phase of :-
(1) Normal size maintaining stage
(2) Organelle duplication
(3) Chromosome duplication
(4) Cytoplasmic growth

166. Which of the following expression describe
nitrogen fixation :-
(1) \( N_2 + 3H_2 \rightarrow 2NH_3 \)
(2) \( 2NH_4^+ + 2O_2 + 8e^- \rightarrow N_2 + 4H_2O \)
(3) \( 2NH_3 \rightarrow N_2 + 3H_2 \)
(4) \( 2N_2 + \text{glucose} \rightarrow 2 \text{ amino acid} \)

167. Immunity acquired after an infection is ?
(1) Active immunity
(2) Passive immunity
(3) Innate immunity
(4) both 2 and 3

168. Uriniferous tubules are mainly concerned with :-
(1) Concentration of urine
(2) Passage of urine
(3) Removal of urea from blood
(4) Reabsorption of useful substances from
    glomerular filtrate
169. Wild life protection act in India introduced in :-
(1) 1972  
(2) 1974  
(3) 1988  
(4) 1986
170. Which gland stores hormone in intercellular space before it's secretion into blood :
(1) Pituitary gland  
(2) Thyroid gland  
(3) Hypothalamus  
(4) Ovary
171. Study the given statements and answer the questions :-
During 'P' phase of the menstrual cycle if pregnancy does not happen, the 'Q' dies usually around day 22 in a 28 days cycle. The drop in 'R' levels causes the lining of the uterus to fall away. This is known as 'S'. Identify P, Q, R, S:-
(1) P-menstrual, Q-Graffian follicle, R-Estrogen, S-Menstruation  
(2) P-Ovulatory, Q-Endometrium, R-FSH, S-Menopause  
(3) P-Luteal, Q-Corpus luteum, R-Progesterone, S-Menstruation  
(4) P-Follicular, Q-Secondary oocyte, R-LH, S-Menstruation
172. Among the following how many are the mosses ?
Funaria, Polytrichum, Sphagnum, Marchantia, Riccia, Equisetum, Selaginella
(1) Two  
(2) Three  
(3) Six  
(4) Five
173. Which one of the following option is incorrect about cockroach ?
(1) One pair of anal style are present 9th sternum of male cockroach only.  
(2) One pair of anal cerci are present 10th tergum of male and female cockroach.  
(3) 4 pair of malpighian tubules are found in cockroach between midgut and hind gut.  
(4) Uricose glands are excretory structures found only in male cockroach.
174. Which of the following is incorrectly matched:-

(1) Gel electrophoresis – separation of charged biomolecules
(2) Competent host cell – cell ready to uptake alien DNA
(3) Biolistic method – vector mediated gene transfer
(4) DNA ligase – Molecular glue

175. After the dissolution of the synaptonemal complex, the bivalents are attached to each other only at the site of cross-overs the structure formed is add :-

(1) Synaptonemal complex
(2) Synopsis
(3) Chiasmata
(4) Terminalisation

176. In photosynthesis, Hydrogen is transferred from the light reaction to Dark Reaction by :-

(1) DPN
(2) FAD
(3) ATP
(4) NADP

177. Inbreeding refers to the mating between:

(1) The animals of same breed having atleast one common ancestor upto 4-6 generations
(2) The animals of same breed having no common ancestors upto 4-6 generations on either sides of pedigree
(3) Animals of two different breed of same species
(4) Animals of two different species of same genus

178. Donor X and recipient Y belong to same blood group. Transfusion has led to RBC agglutination because :-

(1) X is Rh–, Y is Rh+
(2) X is Rh+, Y is Rh–
(3) Both are Rh–
(4) Both are Rh+

179. Which of the following is not an example of nonbiodegradable pollutant ?

(1) Glass
(2) DDT
(3) Wood
(4) Compounds of phenol

174. निम्न लिखित ने मे से कौन सा बेहतर है -

(1) जेल इले के मूड़ों में फाइनल्सिक ते व अनु आं का पूरा करना
(2) कम पने टेंटोरिस्ट के फिजिकलिडे पाएके अंत म य हुए निर्देश के लिए यह के विभाजन
(3) बारे स्पीकर के बिकिन्हरके खाय खोजे श ० ना तप
(4) डी पूण्यो तेज- अर छिकावा द

175. ख इने के वल जे न विनय के शस्त्र न पुजं, तर हो न्या म न से रहे भ निमा प है-त है

(1) व हे पट
(2) व इने पिंस
(3) विश्व जै मै
(4) उ पहा बन

176. प्र कब से एण प मे प्रका विष आचार जिसे बना का विष अनी जिस मे हो इ आ र श ० ना तप जिक हा वा य

(1) DPN
(2) FAD
(3) ATP
(4) NADP

177. अं तर जना का आँ निम न के माय: संगम से हे है

(1) फहो नरल के शर जो केरोपेप जी तक के हे ना को ए पूर्व बंद विनाश हो
(2) फहो नरल के शर जो केरोपेप जी तक के हे शा बंद बिल्ये में को ए पूर्व बंद विनाश हो
(3) फहो उल बी की दो शर नरल के शर जी बें शा बंद बिल्ये के विश्व बें
(4) फहो वं व बी की दो शर नरल के शर जी बें शा बंद बिल्ये के शर बें

178. दशा X और र र अच्छी म र त स ह सं न है फिर भी र ० ना तर तर के श द बंबु बां बंद भिन्न बहते हैं कि

(1) X र त है, Y दत है
(2) X र त है, Y दत है
(3) द र है
(4) द र है

179. निम्न स्थल मे से कौन सा एक औस बनाने का काम प द आ ध ना है क उ द हुए नहीं है

(1) X च
(2) DDT
(3) तकट, त
(4) फो ना के विण गिन
### 180. Match the Column-I with Column-II correctly:

<table>
<thead>
<tr>
<th>I</th>
<th>II</th>
</tr>
</thead>
<tbody>
<tr>
<td>(A) Oxytocin</td>
<td>(P) Stimulate ovulation</td>
</tr>
<tr>
<td>(B) Prolactin</td>
<td>(Q) Implantation and maintenance of pregnancy</td>
</tr>
<tr>
<td>(C) Luteinising hormone</td>
<td>(R) Lactation after child birth</td>
</tr>
<tr>
<td>(D) Progesteron</td>
<td>(S) Uterine contraction during labour pain</td>
</tr>
</tbody>
</table>

(1) A-P, B-Q, C-R, D-S  
(2) A-P, B-Q, C-S, D-R  
(3) A-S, B-R, C-P, D-Q  
(4) A-S, B-R, C-Q, D-P

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Your moral duty is to prove that **ALLEN is ALLEN**

Your Target is to secure Good Rank in Pre-Medical 2018