ENTHUSIAST COURSE
TARGET : PRE-MEDICAL - 2016

Test Type : MAJOR
Test Pattern : AIIMS

TEST DATE : 24 - 02 - 2016

TEST SYLLABUS : FULL SYLLABUS

Important Instructions

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 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 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 dlp Corrections@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. Bullets of mass 0.03 kg each hit a plate at the rate of 200 bullets/s with a velocity of 50 m/s and reflect back with a velocity of 30 m/s. The average force (in Newton) acting on the plate is:

- (1) 120
- (2) 180
- (3) 300
- (4) 480

2. A metal rod of length 2 m has cross sectional areas 2 A and A as shown in the adjacent figure. The ends of the rod are maintained at 100°C and 70°C. The temperature of middle point C is:

- (1) 8°C
- (2) 85°C
- (3) 90°C
- (4) 95°C

3. A point object on the principal axis at a distance 1.5 cm in front of a concave mirror of radius of curvature 20 cm has velocity 2 mm/s perpendicular to the principal axis. The velocity of image at that instant will be:

- (1) 2 mm/s
- (2) 4 mm/s
- (3) 8 mm/s
- (4) 16 mm/s

4. In the circuit shown, what is the potential difference \( V_{PQ} \) :

- (1) 3V
- (2) 2V
- (3) 4V
- (4) 6V
5. In the figure shown, a cubical block is held stationary against a rough wall by applying a force ‘F’, then incorrect statement among the following is :-

- (1) frictional force $f = Mg$
- (2) $F = N$, $N$ is normal reaction
- (3) $F$ does not apply any torque
- (4) $N$ does not apply any torque

6. A solid sphere of copper of radius $R$ and a hollow sphere of the same material of inner radius $r$ and outer radius $R$ are heated to the same temperature and allowed to cool in the same environment. Hollow sphere :-

- (1) will cool faster than solid sphere
- (2) will cool slower than solid sphere
- (3) will cool at the same rate as the solid sphere
- (4) data is not sufficient to decide

7. A ray of light is incident on a parallel slab of thickness $t$ and refractive index $n$. If the angle of incidence $\theta$ is small, then the lateral displacement in the incident and emergent ray will be :-

- (1) $\frac{t(\theta(n-1))}{n}$
- (2) $\frac{t\theta}{n}$
- (3) $\frac{t\theta n}{n-1}$
- (4) $\frac{t\theta(n+1)}{n}$

8. A wheel having mass $m$ has charge $+q$ and $-q$ on diametrically opposite points. It remains in equilibrium on a rough inclined plane in the presence of uniform vertical electric field $E$ equal to :- ($-q$ is in contact with the incline plane)

- (1) $\frac{mg}{q}$
- (2) $\frac{mg}{2q}$
- (3) $\frac{mg \cos \theta}{2q}$
- (4) None
9. Two bullets are fired horizontal in vacuum with different velocities from the same height. Which will reach the ground first?
   (1) Slower one
   (2) Faster one
   (3) Both will reach simultaneously
   (4) It cannot be predicted

10. 5 kg of water at 10°C is added to 10 kg of water at 40°C, the equilibrium temp. is close to
   (1) 25°C  (2) 35°C  (3) 33°C  (4) 30°C

11. Two coherent point sources \( s_1 \) and \( s_2 \) vibrating in phase emit light of wavelength \( \lambda \). The separation between the sources is \( 2\lambda \). The smallest distance from \( s_2 \) on a line passing through \( s_2 \) and perpendicular to \( s_1 s_2 \), where a minimum of intensity occurs is :-
   (1) \( \frac{7\lambda}{12} \)
   (2) \( \frac{15\lambda}{4} \)
   (3) \( \frac{\lambda}{2} \)
   (4) \( \frac{3\lambda}{4} \)

12. A hollow sphere of radius \( 2R \) is charged to \( V \) volts and another smaller sphere of radius \( R \) is charged to \( \frac{V}{2} \) volts. Now the smaller sphere is placed inside the bigger sphere without changing the net charge on each sphere. The potential difference between the two spheres would be :-
   (1) \( \frac{3V}{2} \)
   (2) \( \frac{V}{4} \)
   (3) \( \frac{V}{2} \)
   (4) \( V \)

13. A body of mass 1 kg crosses a point O with a velocity 60 ms\(^{-1}\). A force of 10 N directed towards O begins to act on it. It will again cross O in
   (1) 24 s
   (2) 12 s
   (3) 6 s
   (4) will never return to O

14. The pressure and density of a gas (\( \gamma = 1.5 \)) changes for \( (P, \rho) \) to \( (p', \rho') \) during adiabatic changes. If \( p'/p = 32 \), then \( P/P \) will be :-
   (1) 128
   (2) 1/128
   (3) 32
   (4) None

15. Two identical coherent sources placed on a diameter of a circle of radius \( R \) at separation \( x << R \) symmetrically about the centre of a circle. The sources emit identical wavelength \( \lambda \) each. The number of points on the circle with maximum intensity is \( (x = 5\lambda) \) :-
   (1) 20
   (2) 22
   (3) 24
   (4) 26
16. A fully charged capacitor C with initial charge $q_0$ is connected to a coil of self inductance L at $t = 0$. The time at which the energy is stored equally between the electric and magnetic field is:

\[
\begin{align*}
(1) & \quad \frac{\pi}{4}\sqrt{LC} \\
(2) & \quad 2\pi\sqrt{LC} \\
(3) & \quad \sqrt{LC} \\
(4) & \quad \pi\sqrt{LC}
\end{align*}
\]

17. Given that $\vec{A} + \vec{B} + \vec{C} = \vec{0}$. Out of these three vectors two are equal in magnitude and the magnitude of the third vector is $\sqrt{2}$ times as that of either of the two having equal magnitude. Then the angles between vectors are given by:

\[
\begin{align*}
(1) & \quad 30^\circ, 60^\circ, 90^\circ \\
(2) & \quad 45^\circ, 45^\circ, 90^\circ \\
(3) & \quad 45^\circ, 60^\circ, 90^\circ \\
(4) & \quad 90^\circ, 135^\circ, 135^\circ
\end{align*}
\]

18. Three processes form a thermodynamic cycle as shown on P-V diagram for an ideal gas. Process 1 → 2 takes place at constant temperature $(300K)$. Process $2 \rightarrow 3$ takes place at constant volume. During this process $40J$ of heat leaves the system. Process $3 \rightarrow 1$ is adiabatic and temperature $T_3$ is $275K$. Work done by the gas during the process $3 \rightarrow 1$ is:

\[
\begin{align*}
(1) & \quad -40\ J \\
(2) & \quad -20\ J \\
(3) & \quad +40\ J \\
(4) & \quad +20\ J
\end{align*}
\]

19. Energy density of an EM wave having electric field $E = E_0\sin(ot - kx)$ is given by:

\[
\begin{align*}
(1) & \quad \frac{1}{2}\varepsilon_0\ E^2 \\
(2) & \quad \varepsilon_0\ E^2 \\
(3) & \quad \frac{E^2}{\varepsilon_0} \\
(4) & \quad \frac{E^2}{2\varepsilon_0}
\end{align*}
\]

20. If a direct current of 'a' unit is super imposed with an alternating current $I = 'bsinot'$ then effective value of resulting current is:

\[
\begin{align*}
(1) & \quad \left(\frac{a^2 + b^2}{2}\right)^{1/2} \\
(2) & \quad \left(\frac{a^2}{2} + b^2\right)^{1/2} \\
(3) & \quad \left(a^2 + b^2\right)^{1/2} \\
(4) & \quad \left(\frac{a^2}{2} + b^2\right)^{1/2}
\end{align*}
\]
21. Two identical cylindrical vessels with their bases at the same level, each contains a liquid of density \( \rho \). The height of the liquid in one vessel is \( h_1 \) and that in the other \( h_2 \). The area of either bases is \( A \). The work done by the gravity in equalizing the levels when the vessels are interconnected is:

\[
\begin{align*}
(1) & \quad Apg \left[ \frac{(h_1 - h_2)}{2} \right] \\
(2) & \quad Apg \left[ \frac{(h_1 - h_2)}{2} \right]^2 \\
(3) & \quad Apg \left[ \frac{(h_1 - h_2)}{4} \right] \\
(4) & \quad Apg \left[ \frac{(h_1 - h_2)}{4} \right]^2
\end{align*}
\]

22. A hollow pipe of length 0.8 m is closed at one end. At its open end a 0.5 m long uniform string is vibrating in its second harmonic and it resonates with the fundamental frequency of the pipe. If the tension in the wire is 50N and the speed of sound is 320 m s\(^{-1}\), the mass of the string is:

\[
\begin{align*}
(1) & \quad 5 \text{ grams} \\
(2) & \quad 10 \text{ grams} \\
(3) & \quad 20 \text{ grams} \\
(4) & \quad 40 \text{ grams}
\end{align*}
\]

23. A NPN transistor conducts when

1. Both collector and emitter are positive with respect to the base
2. Collector is positive and emitter is negative with respect to the base
3. Collector is positive and emitter is at same potential as the base
4. Both collector and emitter are negative with respect to the base

24. A capacitor of capacitance \( C \) is initially charged. Now it is connected to a battery of 2V with opposite polarity. The ratio of heat generated to the final energy stored in the capacitor will be:

\[
\begin{align*}
(1) & \quad 1.75 \\
(2) & \quad 2.25 \\
(3) & \quad 2.5 \\
(4) & \quad \frac{1}{2}
\end{align*}
\]

25. Two discs of moment of inertia \( I_1 \) and \( I_2 \) and angular speeds \( \omega_1 \) and \( \omega_2 \) are rotating along the callinear axes passing through their center of mass and perpendicular to their plane. If the two are made to rotate combinely along the same axis the rotational K.E. of system will be:

\[
\begin{align*}
(1) & \quad \frac{I_1 \omega_1 + I_2 \omega_2}{2(I_1 + I_2)} \\
(2) & \quad \frac{(I_1 + I_2)(\omega_1 + \omega_2)^2}{2} \\
(3) & \quad \frac{(I_1 \omega_1 + I_2 \omega_2)^2}{2(I_1 + I_2)} \\
(4) & \quad \text{None of these}
\end{align*}
\]
26. The x-t graph of a particle undergoing simple harmonic motion is shown below. The acceleration of the particle at t = 4/3 s is:-

-1
0
1
4 8 12 t(s)

(1) \(\frac{\sqrt{3}}{32} \pi^2 \text{ cm/s}^2\)  
(2) \(\frac{-\pi^2}{32} \text{ cm/s}^2\)
(3) \(\frac{\pi^2}{32} \text{ cm/s}^2\)  
(4) \(\frac{-\sqrt{3}\pi^2}{32} \text{ cm/s}^2\)

27. For the transistor circuit shown below if \(\beta = 100\), Voltage drop between emitter and base is 0.7 then value of \(V_{CE}\) will be

100Ω  
8.6kΩ  

(1) 10 V  
(2) 5 V  
(3) 13 V  
(4) 0 V

28. Which is not unit of radioactivity :-
(1) Becquerel 
(2) Curie 
(3) Sievert 
(4) Thomson

29. Consider the situation as shown in the figure, a smooth inclined plane fixed in a car accelerating on a horizontal road. If the sphere is set in pure rolling on the incline :-

\[a = g \tan \theta\]

(1) It will continue pure rolling  
(2) It will slip down the plane 
(3) Its linear velocity will increase  
(4) Its linear velocity will decrease
30. Which of the following will be $\sigma$ if $Y = 2.4 \eta$?
   (1) –1 (2) 0.2 (3) 0.1 (4) –0.28

31. There are two radioactive samples A and B with decay constant $\lambda_A$ and $\lambda_B$. Their activity (R) is plotted against number of active nuclei (N). Which one is correct:
   (1) $\lambda_A = \lambda_B$ (2) $\lambda_A > \lambda_B$
   (3) $\lambda_A < \lambda_B$ (4) Can't be obtained

32. A jet plane is travelling towards west at a speed of 1800 km/h. What is the voltage difference developed between the ends of the wing having a span of 25 m. If the Earth's magnetic field at the location has a magnitude of $5 \times 10^{-4}$ T and the dip angle is 30°:
   (1) 3.125 volt (2) 3.12 volt
   (3) 6.5 volt (4) None

33. In a smooth circular tube of radius R, a particle of mass m moving with speed $V_0$ hits another particle of mass 3m at rest as shown. The time after which the next collision takes place (assume elastic collision):
   (1) $\frac{\pi R}{V_0}$ (2) $\frac{2\pi R}{V_0}$ (3) $\frac{\pi R}{2V_0}$ (4) $\frac{\pi R}{4V_0}$

34. If an artificial satellite is moving in a circular orbit around the earth with a speed equal to half the magnitude of the escape velocity from the earth, the height of the satellite above the surface of the earth is:
   (1) 2R (2) $\frac{R}{2}$ (3) R (4) $\frac{R}{4}$

35. How long a nuclear power plant of 10 MW power can be operated by using fission energy of 20 kg U$^{235}$ consider 50% fission energy can be converted in electricity:
   (1) 6 yrs (2) 3 yrs (3) 6000 yrs (4) 2000 yrs
36. Kamla peddles a stationary bicycle the pedals of the bicycle are attached to a 100 turn coil of area 0.10 m$^2$. The coil rotates at half a revolution per second and it is placed in a uniform magnetic field of 0.01 T perpendicular to the axis of rotation of the coil. What is the maximum voltage generated in the coil:

(1) 3.125 volt
(2) 0.314 volt
(3) 31.2 volt
(4) 3.14 volt

37. Three conducting rods of same material and cross-section are shown in figure. Temperatures of A, D and C are maintained at 20°C, 90°C and 0°C. The ratio of lengths of BD and BC if there is no heat flow in AB is:

(1) 2/7
(2) 7/2
(3) 9/2
(4) 2/9

38. The gravitational field due to a mass distribution is $E = \frac{K}{x^3}$ in the x-direction. (K is a constant).

Taking the gravitational potential to be zero at infinity, its value at the a distance $x$ is:

(1) $\frac{K}{x}$
(2) $\frac{K}{2x}$
(3) $\frac{K}{x^2}$
(4) $\frac{K}{2x^2}$

39. Which conservation is must in a nuclear reaction:

(1) Baryon number
(2) Lepton number
(3) Charge
(4) All of the above

40. The magnet of a vibration magnetometer is heated so as to reduce its magnetic moment by 19%. By doing this the periodic time of the magnetometer will:

(1) Increase by 19%
(2) Decrease by 19%
(3) Increase by 11%
(4) Decrease by 21%
41. What percentage of oxygen is present in the compound CaCO$_3$·3Ca$_3$(PO$_4$)$_2$?
   (1) 23.3%  (2) 45.36%  (3) 41.94%  (4) 17.08%

42. Which of the following salt is basic:
   (1) HOCl  (2) NaHSO$_4$  (3) NH$_4$NO$_3$  (4) NaOCl

43. Mg metal is extracted from:
   (1) Cryolite  (2) Carnelite  (3) Malachite  (4) Cassiterite

44. NH$_2$O$_2$Br + KOH $\rightarrow$ X $\rightarrow$ HNO$_5$ $\rightarrow$ Y

45. When BrO$_3^-$ ion reacts with Br$^-$ in acid medium, Br$_2$ is liberated. The equivalent weight of Br$_2$ in this reaction is:
   (1) $\frac{5M}{8}$  (2) $\frac{5M}{3}$  (3) $\frac{3M}{5}$  (4) $\frac{4M}{6}$

46. The state of hybridisation of central atom in dimer form of both BH$_3$ and BeH$_2$ are respectively:
   (1) sp$^3$, sp$^2$  (2) sp$^3$, sp$^3$  (3) sp$^3$, sp  (4) sp$^2$, sp$^2$

47. CH$_2$=CH–CHO $\xrightarrow{\text{HCl}}$ 'P'; 'P' is:
   (1) CH$_2$=CH–CHO Cl  (2) CH$_3$–CH–CHO Cl  (3) CH$_2$=CH–CHO Br  (4) CH$_2$=CH–CH$_2$–OH Cl

48. O$_2$ Zn, H$_2$O $\rightarrow$ A + B

Compounds A and B is differentiate by:
   (1) NaO$I$  (2) Tollen’s Reagent  (3) Grignard Reagent  (4) Na metal

49. When BrO$_3^-$ anion reacts with Br$^-$ in acid medium, Br$_2$ is liberated. The equivalent weight of Br$_2$ in this reaction is:
   (1) $\frac{5M}{8}$  (2) $\frac{5M}{3}$  (3) $\frac{3M}{5}$  (4) $\frac{4M}{6}$

50. The state of hybridisation of central atom in dimer form of both BH$_3$ and BeH$_2$ are respectively:
   (1) sp$^3$, sp$^2$  (2) sp$^3$, sp$^3$  (3) sp$^3$, sp  (4) sp$^2$, sp$^2$
49. Among the following series of transition metal ions, the one where all metal ions have same 3d electronic configuration is :-
(1) Ti$^{2+}$, V$^{3+}$, Cr$^{4+}$, Mn$^{5+}$
(2) Ti$^{3+}$, V$^{2+}$, Cr$^{3+}$, Mn$^{5+}$
(3) Ti$^+$, V$^{4+}$, Cr$^{6+}$, Mn$^{7+}$
(4) Ti$^{4+}$, V$^{3+}$, Cr$^{2+}$, Mn$^{3+}$

50. Which will not shows disproportionation reaction in aqueous solution :-
(1) Cu$^{+1}$
(2) Al$^{+1}$
(3) Au$^{+1}$
(4) Ti$^{+1}$

51. Alkene $\xrightarrow{\text{dil. } H_2SO_4}$

Find which of the following alkene give this product :-
(1) 
(2) 
(3) 
(4) All of these

52. What is the relation between given pairs :

(1) Enantiomers
(2) Diastereomers
(3) Identical
(4) Structural isomer

53. Which of the following can be most readily liquefied ?
(Given : value of $a'$ for NH$_3$ = 4.17, CO$_2$ = 3.59, SO$_2$ = 6.71, Cl$_2$ = 6.49)
(1) NH$_3$
(2) Cl$_2$
(3) SO$_2$
(4) CO$_2$

54. Paramagnetic and colored ions are :-
(1) Ce$^{4+}$, Yb$^{2+}$
(2) Gd$^{3+}$, Nd$^{3+}$
(3) La$^{3+}$, Lu$^{3+}$
(4) Lr$^{3+}$, Lu$^{3+}$

55. Which of the following will not produce aldehyde:-
(1) $\text{CH}_3-\text{C}=\text{N} \xrightarrow{\text{CH}_3\text{MgBr}} \text{H}_2\text{O}$
(2) $\text{CH}_3-\text{C}=\text{Cl} \xrightarrow{\text{H}_2/\text{Pd}} \text{BaSO}_4$
(3) $\text{OH} \xrightarrow{\text{PCC}}$
(4) 1 and 3 both
56. Which is ortho para directing group :-
   (1) –CN  (2) –Cl  
   (3) –NH₃  (4) –C–OCH₃

57. For the reaction takes place at certain temperature
   \[ \text{NH}_2\text{COONH}_4(s) \rightleftharpoons 2\text{NH}_3(g) + \text{CO}_2(g) \]. If
   equilibrium pressure is 3X bar then \( \Delta G^\circ \) would be:-
   (1) \(-RT \ln 9 - 3RT \ln X\)
   (2) \(-RT \ln 4 - 3RT \ln X\)
   (3) \(-3RT \ln X\)
   (4) None of these

58. Correct match is :-
   (1) S > Se > Te > O - E.A.
   (2) Sc > Y > La > Ac - IE
   (3) Al < Mg < B < Be - Radius
   (4) Cu⁺¹ > Cu⁺² - I.P.

59. Which is incorrect name reaction :-
   (1) \( \text{NCl}_2 / \text{HCl} \rightarrow \text{Cl} \)
       Sandmayer reaction
   (2) \( \text{NCl}_2 / \text{HCl} \rightarrow \text{Cl} \)
       Gattermann reaction
   (3) \( \text{CO}/\text{HCl} \rightarrow \text{CHO} \)
       Gattermann koch reaction
   (4) \( \text{CH}_3 / \text{CrOCl}_3, \text{H}_2\text{O} \rightarrow \text{CHO} \)
       Rosenmund Reaction

60. Which of the following is correct priority order
    of functional group in IUPAC system :-
    (1) –COOH, –CHO, –CN
    (2) –SO₂H, –CN, –COCl
    (3) –COCl; –CN, –OH
    (4) –CHO, –OCH₃, –NH₂
61.  A schematic plot of \( \ln K_{eq} \) versus inverse of temperature for a reaction is shown below:

\[
\ln K_{eq} \quad \rightarrow 1/T \quad (K^{-1})
\]

the reaction must be:
1. Exothermic
2. Endothermic
3. One with negligible enthalpy change
4. Highly spontaneous at ordinary temperature

62.  Which is/are correct statement?

1. \([\text{Co(en)}_3]\) \([\text{Cr(CN)}_6]\) will display coordination isomerism
2. \([\text{Mn(CO)}_5] \) will display linkage isomerism
3. \([\text{Co(NH}_3)_5(\text{NO}_3)]\text{SO}_4 \) will display ionisation isomerism
4. All are correct

63.  Compare order of basic strength in gas phase:

1. \(\text{C}_2\text{H}_3\text{NH}_2 > (\text{C}_2\text{H}_5)_2\text{NH}_2 > (\text{C}_2\text{H}_3)_2\text{N} > \text{NH}_3\)
2. \(\text{C}_2\text{H}_3\text{N} > (\text{C}_2\text{H}_3)_2\text{NH} > (\text{C}_2\text{H}_3)_2\text{N} > \text{NH}_3\)
3. \(\text{NH}_3 > (\text{C}_2\text{H}_3)_2\text{NH} > (\text{C}_2\text{H}_3)_3\text{N} > (\text{C}_2\text{H}_3)_2\text{NH} > (\text{C}_2\text{H}_3)_3\text{N}\)
4. \(\text{NH}_3 > (\text{C}_2\text{H}_3)_2\text{NH} > (\text{C}_2\text{H}_3)_2\text{NH} > (\text{C}_2\text{H}_3)_3\text{N}\)

64.  If the distance between Na⁺ and Cl⁻ ions in sodium chloride crystal is \(x\) pm, then length of the edge of the unit cell is:

1. \(2x\) pm
2. \(4x\) pm
3. \(x/2\) pm
4. \(x/4\) pm

65.  1.0 L solution is prepared by mixing 61 gm benzoic acid (\(pK_a = 4.2\)) with 72 gm of sodium benzoate and then 300 mL 1.0 M HBr solution was added. The pH of final solution is:

1. 3.6
2. 3.8
3. 4.2
4. 4.8

66.  If \(P > \Delta_i\) then electronic configuration of \(d^5\) is:

1. \(t_2g^3, eg^2\)
2. \(t_2g^2, eg^3\)
3. \(eg^2, t_2g^3\)
4. \(eg^4, t_2g^1\)
67. Arrange following compounds in order of decreasing reactivity towards electrophile:
(a) Chlorobenzene
(b) 2, 4-dinitrochlorobenzene
(c) p-nitrochlorobenzene
(d) Toluene
(1) d > a > b > c  (2) d > a > c > b  
(3) d > c > b > a  (4) d > b > c > a

68. Equal amounts of a solute are dissolved in equal amounts of two solvents A and B. The relative lowering of vapour pressure for the solution A is twice the relative lowering of vapour pressure for the solution B. If $M_A$ and $M_B$ are the molecular weights of solvents A and B respectively, then:
(1) $M_A = M_B$  
(2) $M_A = M_B/2$  
(3) $M_A = 4M_B$  
(4) $M_A = 2M_B$

69. On heating lead (II) nitrate gives a brown gas 'A' on cooling gives colorless solid 'B'. Solid B at 250K with NO forms a blue solid 'C'. Identify A, B, C respectively:
(1) NO, NO\(_2\), N\(_2\)O\(_3\)  
(2) NO\(_2\), N\(_2\)O\(_4\), N\(_2\)O\(_3\)  
(3) NO\(_2\), NO, N\(_2\)O\(_3\)  
(4) N\(_2\)O, NO\(_2\), N\(_2\)O\(_4\)

70. Image on a developed photography film is due to:
(1) AgBr  
(2) [Ag(S\(_2\)O\(_3\))\(_2\)]\(^{1+}\)  
(3) Ag  
(4) Ag\(_2\)O

71. Find the correct order of acid strength?
(P) 2,4,6-trinitrophenol  
(Q) 3-nitrophenol  
(R) 3,5-dinitrophenol  
(S) 4-methylphenol
(1) P > R > Q > S  
(2) P > Q > S > R  
(3) P > R > S > Q  
(4) P > S > Q > R

72. The conductivity of saturated solution of BaSO\(_4\) is 3.06 × 10\(^{-6}\) mho cm\(^{-1}\) and its equivalent conductance is 1.53 mho cm\(^{2}\) eq\(^{-1}\). The $K_{sp}$ for BaSO\(_4\) will be:
(1) 4 × 10\(^{-12}\) M  
(2) 4 × 10\(^{-6}\) M  
(3) 4 × 10\(^{-12}\) M\(^2\)  
(4) 1 × 10\(^{-6}\) M\(^2\)

73. Which given match is correct?
(1) Hypo - oxidise I\(_2\)  
(2) SiO\(_2\) - molecular solid  
(3) Na\(_2\)S\(_4\)O\(_6\) - has 3 S-S bond  
(4) P\(_2\)O\(_6\) - contain 3 rings of 6 member
74. Hard water when passed through RCOOH resin it becomes free from:
   (1) Cl\(^-\) (2) H\(_3\)O\(^+\) (3) SO\(_4\)^{2-} (4) Ca\(^{2+}\)

75. What is the structure of monomer from which the following polymer is made?
   \[ \text{CH}_2=\text{CH}-\text{CH}-\text{CH}-\text{CH}-\text{CH} \]
   (1) CH\(_2\)=CH\(_2\)  (2) CH\(_3\)=CH=CH\(_2\)
   (3) CH\(_3\)=CH-CH\(_3\)  (4) CH\(_2\)=CH-CH\(_2\)

76. For a second order reaction, \(2A \xrightarrow{k} \) products, a plot of log \(t_{1/2}\) vs log \(a\) (where, \(a\) is initial concentration) will give an intercept equal to which one of the following?
   (1) \(\frac{1}{k}\)  (2) \(\log \left(\frac{1}{2k}\right)\)
   (3) \(\log \left(\frac{1}{k}\right)\)  (4) \(k\)

77. Which of the following pair is isoelectronic:
   (1) ICl\(_2\), ClO\(_2\)  (2) BrO\(_2\), BrF\(_2\)
   (3) ClO\(_3\), BrF  (4) O\(_3\), CN\(^\Theta\)

78. [H\(_2\)O < H\(_2\)O\(_2\)] order is incorrect for:
   (1) Boiling point  (2) Acidic nature
   (3) Dipole moment  (4) Strength of H-bond

79. Which is most reactive for Hoffmann bromamide reaction?
   (1) \(\text{C-\text{NH}_2}\)  (2) \(\text{C-\text{NH}_2}\)
   (3) \(\text{C-\text{NH}_2}\)  (4) \(\text{C-\text{NH}_2}\)

80. Which one of the following is a shape selective catalyst?
   (1) V\(_2\)O\(_5\)  (2) Cr\(_2\)O\(_3\)
   (3) Hydrated zeolites  (4) ZSM-5
81. Which option is not related to unicellular eukaryotes?
   (1) Nitrogen fixation ability
   (2) Zygote formation
   (3) Membrane bound organelles in cytoplasm
   (4) Movement with the help of cilia, flagella and pseudspodia

82. Nucleoprotein fibers called chromatin net. these observed in :-
   (1) Interphase nucleus
   (2) Metaphase
   (3) Anaphase
   (4) Late prophase

83. Match the items in column-I with those in column-II and find out the correct answer ?

   Column-I                      Column-II
   A. Leydig cells  (i) Fructose
   B. Sertoli cells  (ii) Present only in male mammal
   C. Seminal vesicle (iii) Nutrition to germ cells
   D. Cowper's gland (iv) Androgens
   E. Prostate gland  (v) Lubrication of penis

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

84. "Jaya" and "Ratna" are better yielding semi dwarf varieties of which crop?
   (1) Wheat  (2) Rice
   (3) Maize  (4) Sugarcane

85. What is incorrect for chemosynthetic autotrophic bacteria :-
   (1) Oxidise various organic and inorganic substances
   (2) Uses the energy released through oxidation for their ATP production
   (3) Play great role in recycling of nutrients like nitrogen, phosphorus, iron and sulphur
   (4) They are most abundant in nature
86. Which one of the following cellular parts is not correctly described?
   (1) Cytoskeleton: An elaborate network of filamentous proteinaceous structures present in the cytoplasm
   (2) Cilia: Work like Oars and responsible for cell movement
   (3) Cell wall: Rigid structure protects the cell from mechanical damage and infection
   (4) Vacuoles: Double membrane Bound space can occupy upto 90 percent of the volume of the plant cell

87. How many hormones are produced only during pregnancy:
   FSH, LH, Estrogen, Progesterone, HCG, HPL, Relaxin, Cortisol, thyroxine
   (1) 7 (2) 6 (3) 5 (4) 3

88. Choose the incorrect statement of following:
   (1) In Gymnosperms, the multicellular female gametophyte is retained within megasporangium
   (2) In Marchantia, Gemma cells are haploid
   (3) Pteridophytes are the first terrestrial plants to possess vascular tissue and roots
   (4) In Bryophytes, some cells of the gametophyte undergo meiosis to produce gametes

89. Sweet potato and potato are modification of respectively:
   (1) Root and Stem (2) Stem and Root
   (3) Root and Leaf (4) Root and Root

90. A plant having following characters:
   (Pulvinate leaf base, papillaceous corolla, petals having vexillary aestivation, stamen 10, diadelphous, Gynoeicum- monocarpallary, uni-locular with many ovules and superior ovary.) Plant belongs to which family?
   (1) Solanaceae (2) Malvaceae (3) Fabaceae (leguminosae) (4) Liliaceae
92. If a person is suffering from nausea, vomiting, diarrhoea and paralytic ileus. What is the possible cause of this disease :-
   (1) Salmonella typhi
   (2) Vibrio cholerae
   (3) Clostridium botulinum
   (4) Entamoeba histolytica

93. Some of the cnidarians, example corals have a skeleton composed of :-
   (1) Chitin
   (2) Silica
   (3) Calcium carbonate
   (4) Bones

94. Which of the following statement is incorrect?
   (1) Any population has built in variation in characteristics
   (2) Natural selection is a mechanism of evolution
   (3) The geological history of earth never correlates with the biological history of earth
   (4) According to Darwin, the fitness refers ultimately and only to reproductive fitness

95. List some of the plants are given below (Argemone, Dianthus, Primrose, Mustard, Chinarose, Pea, Lemon, Marigold, Tomato, onion) How many plants having axile placentation?
   (1) 2 (2) 4 (3) 5 (4) 6

96. In domestic sewage colloidal material includes :-
   (1) Sand silt clay
   (2) Fecal matter, bacteria, cloth and paper fiber
   (3) Nutrients (nitrate, ammonia, phosphate, sodium, calcium)
   (4) All of the above

97. Which of the following character is not the fundamental character of chordate :-
   (1) paired pharyngeal gill slits
   (2) Dorsal hollow nerve cord
   (3) Notochord
   (4) Closed circulatory system

98. Stanley Miller took which compounds in his experiment :-
   (1) NH₃, H₂, CH₄, O₂
   (2) H₂S, NH₃, CH₄, H₂
   (3) CH₄, O₂, H₂O, NH₃
   (4) CH₄, NH₃, H₂, H₂O
99. In angiosperms, male and female sex organs are respectively known as androecium and gynoecium and in the life cycle of angiosperm, 7-celled mature female gametophyte and 3-celled mature male gametophyte is formed. Which of the following is also a very important unique event occurring in these plants that is not found in other plants?
(1) Presence of vascular tissue & seeds
(2) Formation of haploid endosperm for providing nourishment to developing embryo
(3) Double fertilization
(4) Syngamy

99. In 99. अंगिःप्रृत्ती जिंके में नरजागरण तथा माद जागरण ग्रंथि: पुं मं गर्भां कहलाते हैं तथा अंगिःप्रृत्ती में कु 7अथिन्नकोशीय परीक्षण मादा गर भागते हैं। उसी यथा वर्गमादा गर भागते हैं। जिसमें तमां संकर्षण करते हैं अंगिःप्रृत्ती घटना भाई। जो प्राप्त होते हैं, जो अधिक समय कहलाते हैं।
(1) विभिन्न उन्में एक यी जो संकर्षण करते हैं
(2) विभिन्न उन्में एक यी जो संकर्षण करते हैं
(3) संकर्षण करते हैं
(4) संकर्षण करते हैं

100. Match column-I with column-II and choose the correct answer :-

<table>
<thead>
<tr>
<th>Column-I</th>
<th>Column-II</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Pacific Salmon fish</td>
<td>I Produces a small number of large sized offspring</td>
</tr>
<tr>
<td>B Mammals</td>
<td>II Produces a large number of small sized offspring</td>
</tr>
<tr>
<td>C Oysters</td>
<td>III Breed only once in their lifetime</td>
</tr>
<tr>
<td>D Birds</td>
<td>IV Breed many times during their lifetime</td>
</tr>
</tbody>
</table>

(1) A-III, B-IV, C-II, D-I
(2) A-I, B-IV, C-II, D-III
(3) A-IV, B-II, C-I, D-III
(4) A-II, B-IV, C-III, D-I

101. Mechanical support to the growing parts of plant such as young stem & petiole of leaf is provided by:
(1) Parenchyma
(2) Collenchyma
(3) Sclerenchyma
(4) Prosenchyma

102. Above structure show which biomolecule :-
(1) Adenosine
(2) Alanine
(3) Lecithin
(4) Cholesterol
103. What is antisense technology?
   (1) When a piece of RNA that is complementary in sequence is used to stop expression of a specific gene
   (2) RNA polymerase producing DNA
   (3) A cell displaying a foreign antigen used for synthesis of antigens
   (4) Production of somaclonal variants in tissue cultures

104. Which one of the following do not account for the formation of major biomes?
   (1) Annual variation in intensity of temperature
   (2) Annual variation in duration of temperature
   (3) Annual variation in precipitation
   (4) Annual variation in texture of soil

105. Common feature between tracheids & vessels is:
   (1) Both have protoplasm at maturity
   (2) Both have continuous lumen
   (3) Both are the main water transporting element in flowering plants.
   (4) All of the above

106. The presence of ketone bodies in urine are indicative of?
   (1) Diabetes insipidus
   (2) Diabetes mellitus
   (3) Starvation
   (4) Both 2 and 3

107. Select the two correct statements out of the four (a–d) given below about lac operon.
   (a) Glucose or galactose may bind with the repressor and inactivate it
   (b) In the absence of lactose the repressor binds with the operator region
   (c) The z-gene codes for permease
   (d) This was elucidated by Francois. Jacob and Jacque Monod
   The correct statements are:
   (1) (a) and (b)
   (2) (b) and (c)
   (3) (a) and (c)
   (4) (b) and (d)

108. "Time Management is Life Management"
108. Read the following statements :-
(a) Respiratory rhythm centre is present in Medulla region
(b) A chemosensitive area related with respiration is highly sensitive to CO₂ and hydrogen ions.
(c) The role of oxygen in the regulation of respiratory rhythm is quite insignificant
(d) Pneumotaxic centre Present in Pons region.
How many statements are correct about regulation of Respiration.
(1) Three (2) Four
(3) Five (4) Two

109. Colouring agent of plasma is :-
(1) Billiverdin (2) Sterlobillinogen
(3) Urobilinogen (4) Urochrome

110. Maximum reabsorption of Na⁺ and water takes place in which segment of Nephron ?
(1) PCT (2) Loop of Henle
(3) Bowman’s capsule (4) DCT

111. Stirred-tank bioreactors have been designed for:
(1) Availability of oxygen throughout the process
(2) Addition of preservatives to the product
(3) Purification of the product
(4) Ensuring anaerobic conditions in the culture vessel

112. Match the following :-
(i) Femur (a) Calcaneum
(ii) Tarsus (b) Trapezoid
(iii) Carpals (c) Coronoid fossa
(iv) Humerus (d) Greater trochanter
(1) i → (d); ii → (a); iii → (b); iv → (c)
(2) i → (a); ii → (d); iii → (b); iv → (c)
(3) i → (d); ii → (a); iii → (c); iv → (b)
(4) i → (a); ii → (b); iii → (c); iv → (d)

113. Connective tissue belong to :-
(1) Ectoderm (2) Mesoderm
(3) Endoderm (4) Any of the above

114. Na⁺ VGC and K⁺ VGC are closed but Na⁺ – K⁺ pump and ion channels are functioning during which stage :-
(1) Repolarisation (2) Polarisation
(3) Depolarisation (4) Hyperpolarisation

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(1) Repolarisation (2) Polarisation
(3) Depolarisation (4) Hyperpolarisation
115. Which one of the following result is possible from a cross between dihybrid F1 male Drosophila with recessive female parent for body colour & wings size character:

(1) Progenies with 50% parental and 50% recombinants.
(2) Progenies will have about 90% parental & 10% recombinant.
(3) Progenies will show 1 : 1 parental combination.
(4) Progenies with 9 : 3 : 3 : 1 ratio.

116. Read the following four statements (A-D):

(A) Value of DPD may be higher than OP.
(B) Several prokaryotic species are capable of biological nitrogen fixation.
(C) Shoot of plants show curvature towards light due to higher auxin concentration on light exposed side of plants.
(D) Co-enzymes are organic compounds but their association with apo-enzyme is only transient, usually occurring during the course of catalysis.

How many of the above statements are right?

(1) Four
(2) Three
(3) Two
(4) One

117. What will happen when malpighian tubules of cockroach open directly out side the body:

(1) Concentration of uric acid will increase in haemolymph.
(2) Excess water and mineral will lose from the body.
(3) Concentration of water and minerals will increase in haemolymph.
(4) Haemolymph will not affected.

118. How many of the following statement is/are correct with respect to menstrual cycle?

(A) The first menstruation begins at puberty and is called menopause.
(B) Menstruation only occurs if the released ovum is not fertilised.
(C) During pregnancy all events of the menstrual cycle stop and there is no menstruation.
(D) In human, menstrual cycles Ceases around 50 years of age.

(1) Four
(2) Three
(3) Two
(4) One
119. If a polygenic trait is controlled by two gene pairs than what will be the probability of individuals in \( F_2 \) generation showing exact resemblance to \( F_1 \) progeny:

- (1) \( \frac{6}{16} \)
- (2) \( \frac{4}{16} \)
- (3) \( \frac{2}{16} \)
- (4) \( \frac{1}{16} \)

120. In an experiment incident light was suddenly switched off. Then in the chloroplast of target plant, the concentration of certain Calvin cycle compounds can be correctly represented as:

- (1) Concentration of 3-PGA and PGAL increases, concentration of NADP+ decreases.
- (2) Concentration of 3-PGA decreases, concentration of RUBP increases.
- (3) Concentration of 3-PGA decreases, concentration of RUBP decreases.
- (4) Concentration of 3-PGA increases, concentration of RUBP decreases.
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 velocity time graph is a straight line parallel to time-axis, then the body moves with constant non-zero acceleration.

**Reason** :- Acceleration is defined as the rate of change of velocity and is equal to the area of the curve on time-velocity graph.

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

122. **Assertion** :- An EM wave can transport energy and momentum.

**Reason** :- Energy and momentum of EM wave is associated with electric and magnetic fields.

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

123. **Assertion** :- If angle of inclination of an inclined plane is same as angle of repose (θ), then \( \tan \theta = \mu \), where \( \mu \) is coefficient of friction.

**Reason** :- The coefficient of friction between the block and the surface decreases with the increases in the angle of friction.

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

124. **Assertion** :- At the point of destructive interference intensity is zero.

**Reason** :- Energy of wave is lost at the point of destructive interference.

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

125. **Assertion** :- When a body dropped from a height explodes in mid air, its centre of mass keeps moving in vertically downward direction.

**Reason** :- Explosion occurs under internal forces only. External force is zero.

(1) A (2) B (3) C (4) D
126. **Assertion :-** When a n-p-n transistor in CE configuration is being used as a switch it is operated in cut-off region or in saturation region.

**Reason :-** In cut off region, here \( V_{in} \) is low but \( V_0 \) is high. In saturation region, here \( V_{in} \) is high but \( V_0 \) is low.

127. **Assertion :-** Condition of equilibrium for a rigid body is -

   Translatory equilibrium \( \sum F = 0 \) and

   Rotatory equilibrium \( \sum \tau = 0 \)

**Reason :-** A rigid body must be in equilibrium under the action of two equal & opposite forces.

128. **Assertion :-** Length of potentiometer wire kept very long to increase sensitivity without change in its voltage range.

**Reason :-** Resistance of potentiometer wire should have very low resistance so it can measure high voltage also.

129. **Assertion :-** If an ideal gas expands in vacuum in an isolated chamber \( \Delta Q, \Delta U \) and \( \Delta W \) all are zero.

**Reason :-** Temperature of gas remains same.

130. **Assertion :-** L-C-R series circuit can be used to rejected unwanted signals.

**Reason :-** L-C-R series circuit give maximum power at resonance frequency.

131. **Assertion :-** In isothermal process whole of the heat energy supplied to the body is converted into internal energy.

**Reason :-** According to the first law of thermodynamics \( \Delta Q = \Delta U - P \Delta V \).

132. **Assertion :-** A resistance is connected to an AC source. Now a capacitor is included in the series circuit. The average power dissipated by the resistance will decrease.

**Reason :-** By including a capacitor or an inductor in the resistive circuit, the current through the resistor decreases.
133. **Assertion:** The isothermal curves intersect each other at a certain point.
**Reason:** The isothermal changes take place rapidly, so the isothermal curves have little slope.
(1) A (2) B (3) C (4) D

134. **Assertion:** In a series LCR circuit, it is found that voltage leads current. If the capacitance of the circuit is increased the power consumption will increase.
**Reason:** The average power consumption is independent of inductor or capacitor.
(1) A (2) B (3) C (4) D

135. **Assertion:** Total mechanical energy of a satellite is negative.
**Reason:** For bound system total mechanical energy negative.
(1) A (2) B (3) C (4) D

136. **Assertion:** Two photons can’t be absorbed simultaneously by an electron.
**Reason:** Photon have no charge.
(1) A (2) B (3) C (4) D

137. **Assertion:** If earth were to stop rotating about its axis g would increase.
**Reason:** 

\[ g' = g - R \omega^2 \]

where \( g' \) is the value of acceleration due to gravity at the equator.
(1) A (2) B (3) C (4) D

138. **Assertion:** The magnetic field at the ends of a very long current carrying solenoid is half of that at the center.
**Reason:** If the solenoid is sufficiently long, the field within it is uniform.
(1) A (2) B (3) C (4) D

139. **Assertion:** Bigger drops of liquid resists deforming forces better than tiny drops.
**Reason:** Excess pressure in a soap bubble is inversely proportional to its radius.
(1) A (2) B (3) C (4) D

140. **Assertion:** Magnetic field interacts with a moving charge and not with a stationary charge.
**Reason:** A moving charge produces a magnetic field.
(1) A (2) B (3) C (4) D

141. **Assertion:** An orbital cannot have more than two electrons and they must have opposite spins.
**Reason:** No two electrons in an atom can have same set of all the four quantum numbers as per Pauli’s exclusion principle.
(1) A (2) B (3) C (4) D
142. **Assertion :-** N, N-diethyl benzene sulphonamide is soluble in alkali  
**Reason :-** Sulphonyl group attached to nitrogen atom is strong electron withdrawing group.

143. **Assertion :-** Heat of neutralization of \( CH_2COOH \) by \( NaOH \) is less than that of \( HCl \) by \( NaOH \).  
**Reason :-** Heat of neutralization of \( CH_2COOH \) is less because of the absorption of heat in the ionization process.

144. **Assertion :-** Hydroliese of \((-\) 2-bromo butane through \( SN_1 \) mechanism proceeds with inversion of configuration only.  
**Reason :-** This reaction proceeds through the formation of a carbocation only.

145. **Assertion :-** The gas phase reaction \( PCl_3(g) + Cl_2(g) \rightleftharpoons PCl_5(g) \) shifts to the right on increasing pressure.  
**Reason :-** When pressure increases, equilibrium shifts towards more number of moles.

146. **Assertion :-** Boiling points of alcohols is higher than ethers.  
**Reason :-** Alcohol forms intermolecular H-bonding

147. **Assertion :-** For removal of Pb impurity from Ag. Cupellation method is used.  
**Reason :-** Pb shows more affinity towards oxygen and oxidises easily.

148. **Assertion :-** The \( \alpha \)-Hydrogen atom in carbonyl compounds is not acidic in nature.  
**Reason :-** The anion formed after loss of \( \alpha \)-Hydrogen atom is resonance stabilised.

149. **Assertion :-** SCN\(^-\) act as ambidentate ligand.  
**Reason :-** If forms coordinate bond with metal ion through S & C atoms.

150. **Assertion :-** Pent-1-ene and pent-2-ene are position isomers  
**Reason :-** Position isomer differ in position of functional group or a substituent
151. Assertion :- All interhalogens are diamagnetic.
Reason :- Interhalogens are made up of 2 or >2 similar halogens.
(1) A  (2) B  (3) C  (4) D

152. Assertion :- Aniline does not give freidel craft reaction.
Reason :- Aniline is base reacts with Lewis acid AlCl₃ to form salt.
(1) A  (2) B  (3) C  (4) D

153. Assertion :- Graphite can be used as dry lubricant.
Reason :- Van der Waals forces are present between graphite layers.
(1) A  (2) B  (3) C  (4) D

154. Assertion :- Nitration of benzene with nitric acid requires the use of concentrated sulphuric acid.
Reason :- The mixture of concentrated sulphuric and concentrated nitric acid produces electrophile NO₂.
(1) A  (2) B  (3) C  (4) D

155. Assertion :- C₃O₂ is non planer molecule.
Reason :- All C in C₃O₂ shows different hybridisation state.
(1) A  (2) B  (3) C  (4) D

156. Assertion :- If standard reduction potential for the reaction, Ag⁺ + e⁻ → Ag is 0.80 volt, then for the reaction, 2Ag⁺ + 2e⁻ → 2Ag, it will be 1.60 volt.
Reason :- If concentration of Ag⁺ ions is doubled, the electrode potential is also doubled.
(1) A  (2) B  (3) C  (4) D

157. Assertion :- Both LiCl and MgCl₂ are soluble in alcohol.
Reason :- Li and Mg are small size element in their respective group.
(1) A  (2) B  (3) C  (4) D

158. Assertion :- Presence of CO₂ in the air accelerates corrosion.
Reason :- CO₂ is a poisonous gas.
(1) A  (2) B  (3) C  (4) D

159. Assertion :- In Zn electron 1ˢᵗ removed from 4s in comparison to 3d.
Reason :- Zₑff for 4s electron is less than 3d electron.
(1) A  (2) B  (3) C  (4) D
160. **Assertion:** According to Kohlrausch’s law, the equivalent conductance of a strong electrolyte at infinite dilution is sum of equivalent conductance of its ions.
**Reason:** The current carried by cation and anion is always equal.
(1) A (2) B (3) C (4) D

161. **Assertion:** Bacteria are the sole members of the kingdom Monera.
**Reason:** Because only bacteria have prokaryotic cellular organization.
(1) A (2) B (3) C (4) D

162. **Assertion:** Cross breeds are superior than their parent breed.
**Reason:** Cross breeding allows the desirable qualities of two different breeds to be combined.
(1) A (2) B (3) C (4) D

163. **Assertion:** Cartilagenous fishes have to swim constantly to avoid sinking.
**Reason:** In cartilagenous fishes air bladder are absent.
(1) A (2) B (3) C (4) D

164. **Assertion:** Controlled breeding experiments are carried out by using artificial insemination.
**Reason:** Artificial insemination helps in desirable mating.
(1) A (2) B (3) C (4) D

165. **Assertion:** The innermost layer of the cortex is called endodermis.
**Reason:** All cells of endodermis are non-living.
(1) A (2) B (3) C (4) D

166. **Assertion:** Vallisneria is a dioecious plant.
**Reason:** Male and female flower are developed on different plants.
(1) A (2) B (3) C (4) D

167. **Assertion:** Heparin is an Anticoagulant found in mammals.
**Reason:** Heparin prevent conversion of prothrombin in Thrombin.
(1) A (2) B (3) C (4) D

168. **Assertion:** In members of liliaceae, flower are trimerous.
**Reason:** In members of liliaceae, ovary is superior.
(1) A (2) B (3) C (4) D
169. **Assertion** :- Membrane of lysosome has active H⁺ pump.
   **Reason** :- H⁺ pump produce alkaline pH in lumen of lysosome.
   (1) A  (2) B  (3) C  (4) D

170. **Assertion** :- Dominance is not always an autonomous feature of gene or its product.
   **Reason** :- Occasionally a single gene product may produce more than one effects.
   (1) A  (2) B  (3) C  (4) D

171. **Assertion** :- Liger is a hybrid animal.
   **Reason** :- Liger is fertile.
   (1) A  (2) B  (3) C  (4) D

172. **Assertion** :- The functions are unknown for over 50% of discovered gene in HGP.
   **Reason** :- Less than 2% of the human genome codes for protein.
   (1) A  (2) B  (3) C  (4) D

173. **Assertion** :- There is no scientific explanation to organic evolution.
   **Reason** :- Evolution is a discontinuous process.
   (1) A  (2) B  (3) C  (4) D

174. **Assertion** :- Successional process starts only in those areas, where no living organism ever existed.
   **Reason** :- These areas are not supported by physical environmental conditions.
   (1) A  (2) B  (3) C  (4) D

175. **Assertion** :- Monosaccharides are reducing sugars.
   **Reason** :- Monosaccharides has free aldehyde or ketone groups.
   (1) A  (2) B  (3) C  (4) D

176. **Assertion** :- Weak heart condition is associated with bradycardia.
   **Reason** :- Stroke volume increases in weak heart.
   (1) A  (2) B  (3) C  (4) D
179. **Assertion**: Testis performs dual functions as primary sex organ as well as an endocrine gland.

**Reason**: Androgens act on the central neural system and influence the male sexual behaviour.

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

180. **Assertion**: RQ of fats and proteins is less than one

**Reason**: C : O of fats and proteins is less than one

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

181. The gases associated with greenhouse effect:

(1) CO₂, N₂O and CFCl₃
(2) CO, NO and Freon
(3) Argon, Crypton and Neon
(4) O₃, O₂ and CO

182. Which was the first Indian cinematic film?

(1) Kaagaz ke Phool  (2) Harishchandra
(3) 36, Chowringhee lane  (4) Gandhi

183. When was the Capital of British India changed from Calcutta to Delhi?

(1) 1911  (2) 1932  (3) 1935  (4) 1947

184. Which of the following countries has the largest area in the world?

(1) China  (2) Russia
(3) Canada  (4) USA

185. The first President of India to die in Harness is

(1) Zakir Hussain  (2) S. Radhakrishnan
(3) Fakhruddin Ali Ahmed  (4) Justice Hidayatullah

186. The famous first sermon, the Dharma – Chakra–Parvartana, or setting in motion the wheel of the law, was delivered by Buddha in the Deer Park at:

(1) Bodhgaya  (2) Rajagriha
(3) Sarnath  (4) Sanchi

187. Maximum Sugarcane producing country in the world is

(1) India  (2) Indonesia
(3) Brazil  (4) China

188. Who raised the slogan "Dilli Chalo"?

(1) Tilak  (2) Netaji
(3) Bipin Chandra Pal  (4) S. Banerjee

189. Which one of the following pairs is correctly matched?

(1) Kanpur – Paper manufacturing
(2) Coimbatore – Textile industry
(3) Ahmedabad – Leather industry
(4) Murshidabad – Copper smelting
190. The term 'Upper Cut' is associated with :-
(1) Cricket  (2) Badminton  (3) Boxing  (4) Golf

191. Which pair is not correct ?
(1) Apiculture – Honey bee  (2) Pisciculture – Pearl oyster  (3) Sericulture – Silk moth  (4) Vermiculture – Earthworm

192. 'Fanning and Dust' these terms are associated with:-
(1) Coffee  (2) Tea  (3) Soup  (4) Cold drink

193. Rovers Cup is associated with :-
(1) Football  (2) Chess  (3) Lawn Tennis  (4) Badminton

194. Match list-I with list-II :-
(A) Parushni (i) Ravi
(B) Sutudri (ii) Satlej
(C) Asikni (iii) Chenab
(D) Vipasa (iv) Beas

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195. Which of the following is mismatched ?
(1) Satanic Verses - Salman Rushdie
(2) The God of Small - Arundhati Roy
(4) The Broken Wings - APJ Abul Kalam

196. Which of the following is a nonrenewable energy?
(1) Solar energy  (2) Wind energy  (3) Hydel energy  (4) Natural gas

197. Which of the following is not a plantation crop :-
(1) Tea  (2) Mustard  (3) Coffee  (4) Rubber

198. Who was considered as father of Indian unrest?
(1) Bhagat Singh  (2) Subhash Chandra Bose  (3) Bal Gangadhar Tilak  (4) Chandra Shekhar Azad

199. Tata Institute of Fundamental Research (TIFR) is situated in–
(1) Delhi  (2) Mumbai  (3) Trivendrum  (4) Chennai

200. Which is the deepest place in oceans?
(1) Sunda trench  (2) Mariana trench  (3) Puertorico trench  (4) Java trench