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

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

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

6. Each correct answer carries 4 marks, while 1 mark will be deducted for every wrong answer. Guessing of answer is harmful.

7. A candidate has to write his / her answers in the OMR sheet by darkening the appropriate bubble with the help of Blue / Black Ball Point Pen only as the correct answer(s) of the question attempted.

8. Use of Pencil is strictly prohibited.
1. A spring executes SHM with mass of 10 kg attached to it. The force constant of spring is 10 N/m. If at any instant its velocity is 40 cm/sec, the displacement will be (here amplitude is 0.5 m):
   (1) 0.06 m   (2) 0.3 m   (3) 0.01 m   (4) 1.0 m

2. A star is going away from earth with a speed of 100 km/s. Find the shift in wavelength of a 5700 Å ray produced by it, when observed from earth:
   (1) 0.63 Å   (2) 1.90 Å   (3) 3.80 Å   (4) 5.70 Å

3. The ratio of K.E. of the particle executing S.H.M. at mean position to the K.E. at point whose distance is half of amplitude is:
   (1) $\frac{1}{3}$   (2) $\frac{2}{3}$   (3) $\frac{4}{3}$   (4) $\frac{3}{2}$

4. The amplitudes of two waves undergoing interference are in ratio of 3 : 1. The ratio of maximum to minimum intensity would be:
   (1) 1 : 1   (2) 2 : 1   (3) 4 : 1   (4) 4 : 3

5. A torque of 30 N m is acted on a 5 kg wheel of moment of inertia 2 kg m² for 10 second. Then the angle rotated by wheel in 10 second:
   (1) 750 rad   (2) 1500 rad   (3) 3000 rad   (4) 6000 rad

6. In the circuit shown in Fig., the current gain, $\beta = 100$ for the transistor. What would be the bias resistance $R_B$ so that $V_{CE} = 5$ V? (Neglect $V_{BE}$).
   (1) $2 \times 10^3$ Ω   (2) $2 \times 10^5$ Ω   (3) $1 \times 10^3$ Ω   (4) 500 Ω

7. A ring is suspended from its one end and oscillating then its time period for small oscillations will be:
   (1) $2\pi \sqrt{\frac{R}{g}}$   (2) $2\pi \sqrt{\frac{2R}{g}}$   (3) $2\pi \sqrt{\frac{R}{2g}}$   (4) $2\pi \sqrt{\frac{3R}{2g}}$
8. Choose the only false statement from the following :-
   (1) Substances with energy gap of the order of 10eV are insulators.
   (2) The conductivity of a semiconductor increases with increase in temperature.
   (3) In conductors, the valence and conduction bands may overlap.
   (4) The resistivity of a semiconductor increases with increase in temperature.

9. The electric field and electric potential at a point are E and V respectively as :-
   (1) If E = 0, then V must be zero.
   (2) If V = 0, then E must be zero.
   (3) If E ≠ 0, then V can't be zero.
   (4) If E ≠ 0, then V may be zero.

10. A piece of copper and another of germanium are cooled from room temperature to 77K. The resistance as :-
    (1) Each of these decreases.
    (2) Copper strip increases and that of germanium decreases.
    (3) Copper strip decreases and that of germanium increases.
    (4) Each of these increases.

11. When two point charges are brought closer to each other, then electrostatic potential energy of system as :-
    (1) decreases
    (2) increases
    (3) remains unchanged
    (4) may decrease.

12. If \( \mathbf{A} = 2\mathbf{i} - 3\mathbf{j} + 7\mathbf{k} \), \( \mathbf{B} = \mathbf{i} + 2\mathbf{k} \) and \( \mathbf{C} = \mathbf{j} - \mathbf{k} \), find \( \mathbf{A} \cdot (\mathbf{B} \times \mathbf{C}) \) as :-
    (1) \(-2\mathbf{i} + \mathbf{j} + \mathbf{k}\)
    (2) 0
    (3) \(\mathbf{i} + 2\mathbf{k}\)
    (4) None

13. Two square metal plates, each of side length a, are used to form a capacitor. If electric field between plates is E then electrostatic energy between plate will be - (d = distance between plates) as :-
    (1) \(\frac{1}{2} \varepsilon_0 E\)
    (2) \(\frac{1}{2} \varepsilon_0 E^2\)
    (3) \(\frac{a^2}{2} \varepsilon_0 E^2\)
    (4) \(\frac{a^2 d}{2} \varepsilon_0 E^2\)

14. Choose the only false statement from the following :-
    (1) If E = 0, then V must be zero.
    (2) If V = 0, then E must be zero.
    (3) If E ≠ 0, then V can't be zero.
    (4) If E ≠ 0, then V may be zero.

15. When two point charges are brought closer to each other, then electrostatic potential energy of system as :-
    (1) decreases
    (2) increases
    (3) remains unchanged
    (4) may decrease.
14. If the terminal speed of a sphere of gold (density $= 19.5 \text{ kg/m}^3$) is $0.2 \text{ m/s}$ in a viscous liquid (density $= 1.5 \text{ kg/m}^3$), find the terminal speed of a sphere of silver (density $= 10.5 \text{ kg/m}^3$) of the same size in the same liquid.

1. $0.1 \text{ m/s}$
2. $0.2 \text{ m/s}$
3. $0.4 \text{ m/s}$
4. $0.133 \text{ m/s}$

15. As the temperature of a conductor decreases its resistivity and conductivity change. The product of resistivity and conductivity:

1. increases
2. decreases
3. remains unchanged
4. may decreases

16. Kerosene rises in the wicks of a stove due to the property -

1. High viscosity
2. Low density
3. Due to capillary action
4. Evaporation of oil at low temperature

17. Current in $10\Omega$ is :-

1. $1\text{ A}$
2. $2\text{ A}$
3. $2.5\text{ A}$
4. $0\text{ A}$

18. The Young’s modulus of a metal is $1.2 \times 10^{11} \text{ Nm}^{-2}$ and its inter atomic force constant is $3.6 \times 10^{-9} \text{ N/m}$, then the average distance between atoms is:

1. $15\text{ Å}$
2. $3 \times 10^{-16} \text{ m}$
3. $3 \times 10^{-20} \text{ m}$
4. None of these

19. If voltmeter reads $18 \text{ V}$ then its resistance is (approx) :-

1. $130\Omega$
2. $100\Omega$
3. $70\Omega$
4. $50\Omega$
20. If the atomic masses for the parent and daughter element in a radioactive decay are \( M_p \) and \( M_d \) and the mass of the electron \( m_e \), then the Q-value for radioactive \( \beta \)-decay is given by:

(1) \( Q = M_p \cdot C^2 \)
(2) \( Q = (M_p - M_d - m_e) \cdot C^2 \)
(3) \( Q = (M_p - M_d) \cdot C^2 \)
(4) \( Q = (M_p - M_d - 2m_e) \cdot C^2 \)

21. A real image is formed by a convex lens. If we put it in contact with a concave lens and the combination again forms a real image, which of the following is true for the new image from the combination?:

(1) Shifts towards the lens system
(2) Shifts away from the lens system
(3) Remains at the original position
(4) No image is formed

22. The radius of the nucleus of \( ^{16}O \) is \( 3 \times 10^{-15} \) m. Its density in kg/m³ will be about:

(1) \( 2.35 \times 10^{-17} \)
(2) \( 2.35 \times 10^{-14} \)
(3) \( 10^{14} \)
(4) \( 2.35 \times 10^{17} \)

23. A double convex lens of focal length 6 cm is made of glass of refractive index 1.5. The radius of curvature of one surface is double that of the other surface. The value of smaller radius of curvature is:

(1) 6 cm
(2) 4.5 cm
(3) 9 cm
(4) 4 cm

24. A vessel of height \( 2d \) is half-filled with a liquid of refractive index \( \sqrt{2} \) and the other half with a liquid of refractive index \( n \). (The given liquids are immiscible). Then the apparent depth of the bottom of the vessel (neglecting the thickness of the bottom of the vessel) will be:

(1) \( \frac{n}{d(n+\sqrt{2})} \)
(2) \( \frac{d(n+\sqrt{2})}{n\sqrt{2}} \)
(3) \( \frac{\sqrt{2}n}{d(n+\sqrt{2})} \)
(4) \( \frac{nd}{d+\sqrt{2}n} \)

25. Which is not true for series LCR circuit in resonance?:

(1) Maximum current
(2) Maximum impedance
(3) Zero phase difference
(4) Resistive nature of circuit

26. If the ac voltage is given by \( V = 622 \sin \omega t \) volt then rms value of voltage is:

(1) 2d volt
(2) 311 volt
(3) 220 volt
(4) 200 volt

27. The atomic masses for the parent and daughter element in a radioactive decay are \( M_p \) and \( M_d \) and the mass of the electron \( m_e \), then the Q-value for radioactive \( \beta \)-decay is given by:

(1) \( Q = M_p \cdot C^2 \)
(2) \( Q = (M_p - M_d - m_e) \cdot C^2 \)
(3) \( Q = (M_p - M_d) \cdot C^2 \)
(4) \( Q = (M_p - M_d - 2m_e) \cdot C^2 \)

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(1) \( \frac{n}{d(n+\sqrt{2})} \)
(2) \( \frac{d(n+\sqrt{2})}{n\sqrt{2}} \)
(3) \( \frac{\sqrt{2}n}{d(n+\sqrt{2})} \)
(4) \( \frac{nd}{d+\sqrt{2}n} \)

26. Which is not true for series LCR circuit in resonance?:

(1) Maximum current
(2) Maximum impedance
(3) Zero phase difference
(4) Resistive nature of circuit

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27. A beam of light of wavelength 600 nm from a distant source falls on a single slit 1 mm wide and the resulting diffraction pattern is observed on a screen 2 m away. The distance between the first dark fringes on either side of the central bright fringe is:

(1) 1.2 cm  
(2) 1.2 mm  
(3) 2.4 cm  
(4) 2.4 mm

28. Which of the following graph represents variation in induced emf and time corresponding to the given \( \phi - t \) graph:

(1)  
(2)  
(3)  
(4) None

29. A particle moves on a rough horizontal ground with some initial velocity \( v_0 \). If \( \frac{3}{4} \) of its kinetic energy in friction in time \( t_0 \), then co-efficient of friction between particle and the ground is:

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

30. For a diamagnetic material:

(1) \( \mu_r > 1, \chi > 1 \)  
(2) \( \mu_r > 1, \chi < 1 \)  
(3) \( \mu_r < 1, \chi < 0 \)  
(4) \( \mu_r < 1, \chi > 0 \)

31. A body of mass \( M \) and moving with velocity \( u \) makes a head on-elastic collision with another stationary body of mass \( m \). If \( A = m/M \), then the ratio \( (f) \) of the loss of energy of \( M \) to its initial energy will be:

(1) \( f = A(A + 1)^2 \)  
(2) \( f = \frac{A}{(A + 1)^2} \)  
(3) \( f = \frac{uA}{(A + 1)^2} \)  
(4) \( f = \frac{4A}{(A + 1)^2} \)
32. An electromagnet uses a :-
   (1) Soft iron core  (2) Steel core
   (3) Nickel core  (4) Copper core

33. $\frac{1}{n}$ th portion of a uniform chain of mass $m$ and length $\ell$ lies on inclined plane as shown in figure. Work done in pulling the hanged part on the horizontal part of the plane is (Assume there is no friction everywhere)
   (1) $\frac{2mg\ell}{n^2}$  (2) $\frac{mg\ell}{2n^2}$
   (3) $\frac{mg\ell}{4n^2}$  (4) $\frac{mg\ell}{n^2}$

34. Ampere circuital law is equivalent to :-
   (1) Coulomb law  (2) Gauss law
   (3) Gauss law in magnetism  (4) Maxwell law

35. Amount of work done to carry a block from A to B will be (Assume friction coefficient $\mu$)
   (1) $mgh$
   (2) $\mu mg(\ell + h)$
   (3) $\mu mg(\ell + h) + lq\mu m h$
   (4) $mg(h + \mu \ell)$

36. When a current carrying conductor is placed in magnetic field, then :-
   (1) It always experience a force
   (2) It may experience a force
   (3) It never experience a force
   (4) None

37. A body moves with velocity $v$, $2v$ and $3v$ in the first, second and third, one third distance of path travelled. Its average speed is :-
   (1) $\left(\frac{6}{11}\right)v$
   (2) $\left(\frac{12}{11}\right)v$
   (3) $\left(\frac{18}{11}\right)v$
   (4) $\left(\frac{36}{11}\right)v$
38. The pressure and temperature of an ideal gas in a closed vessel are 720 kPa and 40°C respectively. If \( \frac{1}{4} \) th of the gas is released from the vessel and the temperature of the remaining gas is raised to 353°C, the final pressure of the gas is :-

(1) 1440 kPa  
(2) 1080 kPa  
(3) 720 kPa  
(4) 540 kPa

39. Two cars A and B are travelling in the same direction with velocities \( v_1 \) and \( v_2 \) (\( v_1 > v_2 \)). When the car A is at a distance \( d \) behind of the car B, the driver of the car A applied the brake producing a uniform retardation \( a \). There will be no collision when

(1) \( d < \frac{(V_1 - V_2)^2}{2a} \)  
(2) \( d < \frac{V_1^2 - V_2^2}{2a} \)  
(3) \( d > \frac{(V_1 - V_2)^2}{2a} \)  
(4) \( d > \frac{V_1^2 - V_2^2}{2a} \)

40. An ideal gas heat engine operates in a Carnot cycle between 227°C and 127°C. It absorbs 6 kcal at the higher temperature. The amount of heat (in k-cal) converted into work is equal to:-

(1) 3.5  
(2) 1.6  
(3) 1.2  
(4) 4.8

41. A stone projected with a velocity \( u \) at an angle \( \theta \) with the horizontal reaches maximum height \( H_1 \). When it is projected with velocity \( u \) at an angle \( \left( \frac{\pi}{2} - \theta \right) \) with the horizontal, it reaches maximum height \( H_2 \). The relation between the horizontal range \( R \) of the projectile, \( H_1 \) and \( H_2 \) is :-

(1) \( R = 4\sqrt{H_1H_2} \)  
(2) \( R = 4(H_1 - H_2) \)  
(3) \( R = 4(H_1 + H_2) \)  
(4) \( R = \frac{H_1^2}{H_2} \)  
(5) \( R = \frac{H_2^2}{H_1} \)  
(6) \( R = \frac{H_1}{H_2} \)  
(7) \( R = \frac{H_2}{H_1} \)
42. A gas undergoes a change of state during which 100 J of heat is supplied to it and it does 20 J of work. The system is brought back to its original state through a process during which 20 J of heat is released by the gas. The work done by the gas in the second process is:
(1) 60 J  (2) 40 J  (3) 80 J  (4) 20 J

43. A block A with mass 100 kg is resting on another block B of mass 200 kg. As shown in figure a horizontal rope tied to a wall holds it. The coefficient of friction between A and B is 0.2 while coefficient of friction between B and the ground is 0.3. The minimum required force F to start moving B will be:
(1) 900 N  (2) 100 N  (3) 1100 N  (4) 1200 N

44. A metal ball of surface area 200 cm$^2$ and temperature 527ºC is surrounded by a vessel at 27ºC. If the emissivity of the metal is 0.4, then the rate of loss of heat from the ball is:
\( \sigma = 5.67 \times 10^{-8} \, \text{J} / \text{m}^2 \cdot \text{s} \cdot \text{K}^4 \)
(1) 108 joule/sec (approx)
(2) 168 joule/sec (approx)
(3) 182 joule/sec (approx)
(4) 192 joule/sec (approx)

45. A body of weight 2 kg is suspended as shown in the figure. The tension $T_1$ in the horizontal string (in kg wt) is:
(1) $2/\sqrt{3}$  
(2) $\sqrt{3}/2$
(3) $2\sqrt{3}$  
(4) 2
46. $\text{PhCH}_2\text{OPh} \xrightarrow{1\text{mole conc. HI}} \text{product}$ Final product is :-
   (A) PhCH$_2$OH   (B) PhCH$_2$I
   (C) PhOH        (D) Ph–I
   (1) A, C       (2) A, D
   (3) B, D       (4) B, C

47. The species having pyramidal shape is :-
   (1) SO$_3$   (2) BrF$_3$
   (3) SiO$_3^{2–}$   (4) OSF$_2$

48. The compound which is used for separation of acetone and acetoepheneone :-
   (1) Sodium bisulphite
   (2) Girgnard reagent
   (3) Sodium sulphate
   (4) Ammonium chloride

49. Which of the following statements is correct for CsBr$_3$ :-
   (1) It is a covalent compound
   (2) It contains Cs$^{3+}$ and Br$^–$ ions
   (3) It contains Cs$^+$ and Br$^–$ ions
   (4) It contains Cs$^+$, Br$^–$ and lattice of Br$_2$ molecules

50. Gabriel phthalamide synthesis is used for preparation of :-
   (1) RNH$_2$   (2) R$_2$NH
   (3) R$_3$N    (4) PhNH$_2$

51. The number of sigma and pi bonds in butenyne are :-
   (1) 5 sigma and 3 pi   (2) 7 sigma and 3 pi
   (3) 8 sigma and 2 pi   (4) 6 sigma and 4 pi

52. $\text{MgBr} \xrightarrow{(i)\text{CD}_3\text{H}_2O} P$

In above reaction, product P is :-
   (1) CHO   (2) COOH
   (3) OH    (4) $\text{C}_6\text{H}_5 – \text{C} – \text{C}_6\text{H}_5$

Take it Easy and Make it Easy

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53. **Correct order of boiling point is :-**
   (1) HF > HCl > HBr > HI
   (2) HI > HBr > HCl > HF
   (3) HF > HI > HBr > HCl
   (4) HCl > HBr > HI > HF

54. **In the cannizarro reaction given below :**
   \[2\text{Ph–CHO} \xrightarrow{\text{OH}^-} \text{Ph–CH}_2\text{OH} + \text{PhCO}^2-\]
   the slowest step is :-
   (1) The attack of OH\(^-\) at the carbonyl group
   (2) The transfer of hydride ion to the carbonyl group
   (3) The abstraction of proton from the carboxylic acid
   (4) The deprotonation of Ph–CH\(_2\)OH

55. **Which is odd molecule :-**
   (1) SO\(_2\)
   (2) NO\(_2\)
   (3) CO\(_2\)
   (4) N\(_2\)O

56. **Which can undergoes HVZ reaction :-**
   (1) HCOOH
   (2) MeCOOH
   (3) (COOH)\(_2\)
   (4) Me\(_3\)CCOOH

57. **The composition of white lead is :-**
   (1) PbCO\(_3\)\(_2\)Pb(OH)\(_2\)
   (2) PbCO\(_3\)2Pb(OH)\(_2\)
   (3) 2PbCO\(_3\)Pb(OH)\(_2\)
   (4) Pb(HCO\(_3\)\(_2\)

58. **CH\(_3\)CH\(_2\)Cl \xrightarrow{\text{NaCN}} X \xrightarrow{\text{Ni/H}} Y \xrightarrow{\text{Acetic anhydride}} Z**
   Z is :-
   (1) CH\(_3\)CH\(_2\)CH\(_2\)NH\(_2\)
   (2) CH\(_3\)CH\(_2\)CH\(_2\)NHCOCH\(_3\)
   (3) CH\(_3\)CH\(_2\)NHCOCH\(_3\)
   (4) CH\(_3\)CH\(_2\)CH\(_2\)CONHCH\(_3\)

59. **Which one of the following anions is present in the chain structure of silicates ?**
   (1) (Si\(_2\)O\(_5\))\(_n\)\(^2-\)
   (2) (SiO\(_3\))\(_n\)\(^2-\)
   (3) (SiO\(_4\))\(_n\)\(^4-\)
   (4) Si\(_3\)O\(_7\)\(^6-\)

60. **CH\(_3\)COOH + PCl\(_5\) \xrightarrow{\text{Ph-H}} \text{Cl} \xrightarrow{\text{HCl}} B \xrightarrow{\text{Et-MgBr}} C**
   Product C is :-
   (1) CH\(_3\)CH(OR)CH\(_2\)CH\(_3\)
   (2) CH\(_3\)COPh
   (3) CH\(_3\)CH(OR)Ph
   (4) CH\(_3\)CH\(_2\)C(OR)Ph

**कार्यक्रम का यही क्रम है :-**
(1) HF > HCl > HBr > HI
(2) HI > HBr > HCl > HF
(3) HF > HI > HBr > HCl
(4) HCl > HBr > HI > HF

54. **निम्न कैंनिजारो अभिक्रिया में सबसे मंद पद है :**
   \[2\text{Ph–CHO} \xrightarrow{\text{OH}^-} \text{Ph–CH}_2\text{OH} + \text{PhCO}^2-\]
   (1) कार्बाइनिल समूह पर OH\(^-\) का आक्रमण
   (2) कार्बाइनिल समूह पर हाइड्राइड आपन का स्थानांतरण
   (3) कार्बाइनिलिक अम्ल से प्रोटोन का निष्कासन
   (4) Ph–CH\(_2\)OH का विप्रोटोनिकरण

55. **निम्न में विषम हल्कातृण आय कौन-सा है?**
   (1) SO\(_2\)
   (2) NO\(_2\)
   (3) CO\(_2\)
   (4) N\(_2\)O

56. **निम्न में से कौनसा HVZ अभिक्रिया प्रदर्शित करता है?**
   (1) HCOOH
   (2) MeCOOH
   (3) (COOH)\(_2\)
   (4) Me\(_3\)CCOOH

57. **प्रत्येक सीसा होता है :-**
   (1) PbCO\(_3\)Pb(OH)\(_2\)
   (2) PbCO\(_3\)2Pb(OH)\(_2\)
   (3) 2PbCO\(_3\)Pb(OH)\(_2\)
   (4) Pb(HCO\(_3\)\(_2\)

58. **CH\(_3\)CH\(_2\)Cl \xrightarrow{\text{NaCN}} X \xrightarrow{\text{Ni/H}} Y \xrightarrow{\text{Acetic anhydride}} Z**
   Z है :-
   (1) CH\(_3\)CH\(_2\)CH\(_2\)NH\(_2\)
   (2) CH\(_3\)CH\(_2\)CH\(_2\)NHCOCH\(_3\)
   (3) CH\(_3\)CH\(_2\)NHCOCH\(_3\)
   (4) CH\(_3\)CH\(_2\)CH\(_2\)CONHCH\(_3\)

59. **कौनसी ईंकाई रेखीय सिलिकेट में उपस्थित होती है?**
   (1) (Si\(_2\)O\(_5\))\(_n\)\(^2-\)
   (2) (SiO\(_3\))\(_n\)\(^2-\)
   (3) (SiO\(_4\))\(_n\)\(^4-\)
   (4) Si\(_3\)O\(_7\)\(^6-\)

60. **CH\(_3\)COOH + PCl\(_5\) \xrightarrow{\text{Ph-H}} \text{Cl} \xrightarrow{\text{HCl}} B \xrightarrow{\text{Et-MgBr}} C**
   उपयुक्त C है :-
   (1) CH\(_3\)CH(OR)CH\(_2\)CH\(_3\)
   (2) CH\(_3\)COPh
   (3) CH\(_3\)CH(OR)Ph
   (4) CH\(_3\)CH\(_2\)C(OR)Ph
61. Borax bead on heating with cobalt oxide forms a bead of: 
   (1) Co(BO$_2$)$_2$  (2) CoBO$_3$
   (3) Co$_3$(BO$_3$)$_2$  (4) Na$_2$Co(BO$_3$)$_2$

62. In the reaction
   CH$_3$COCH$_2$CH$_2$CH$_2$COCH$_3$ $\xrightarrow{\text{Base } \Delta}$ A
   A will be –
   (1)  (2)
   (3)  (4)

63. What is the product formed when Aluminium carbide reacted with water: 
   (1) Acetylene  (2) Methyl acetylene
   (3) Ethylene  (4) Methane

64. Match list one (I) and two (II) and select the correct answer using the codes given below the lists:

<table>
<thead>
<tr>
<th>List–I</th>
<th>List–II</th>
</tr>
</thead>
<tbody>
<tr>
<td>(A) Nylon</td>
<td>(i) Polyester</td>
</tr>
<tr>
<td>(B) Terylene</td>
<td>(ii) Polytetrafluoroethylene</td>
</tr>
<tr>
<td>(C) Teflon</td>
<td>(iii) Synthetic rubber</td>
</tr>
<tr>
<td>(D) Neoprene</td>
<td>(iv) Polyamide</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) i</td>
<td>iii</td>
<td>i</td>
<td>iv</td>
</tr>
<tr>
<td>(2) ii</td>
<td>iii</td>
<td>iv</td>
<td>i</td>
</tr>
<tr>
<td>(3) iv</td>
<td>i</td>
<td>ii</td>
<td></td>
</tr>
<tr>
<td>(4) iv</td>
<td>i</td>
<td>ii</td>
<td>iii</td>
</tr>
</tbody>
</table>

65. Among the following the paramagnetic compound is:
   (1) Na$_2$O$_2$  (2) O$_3$  (3) N$_2$O  (4) KO$_2$

66. Terylene is a condensation polymer of ethylene glycol and 
   (1) Benzoic acid  (2) Phthalic acid
   (3) Salicylic acid  (4) Terephthalic acid

67. Which of the following represents the correct order of increasing electron gain enthalpy with negative sign for the elements O, S, F and Cl?
   (1) Cl < F < O < S  (2) O < S < F < Cl
   (3) F < O < S < Cl  (4) S < O < Cl < F
68. Kjeldahl's method can be used for estimation of nitrogen in :-
(1) C₆H₅NO₂  (2) Pyridine
(3) C₆H₅N = NC₆H₅  (4) C₆H₅NHCOCH₃

69. Which of the following carbonate decomposes on heating into metal oxide and CO₂ :-
(1) Li₂CO₃, Na₂CO₃  (2) Na₂CO₃, K₂CO₃
(3) Li₂CO₃, MgCO₃  (4) Na₂CO₃, MgCO₃

70. Which of the following harmone contains iodine :-
(1) Adrenaline  (2) Testosterone
(3) Thyroxine  (4) Insulin

71. Which of the following ion is smallest :-
(1) Na⁺  (2) Mg²⁺  (3) Al³⁺  (4) Si⁴⁺

72. Glucose molecules react with x number of molecules of phenyl hydrazone to yield osazone. The value of x is
(1) 3  (2) 2  (3) 1  (4) 4

73. Correct order of basic nature :-
(1) CH₃< NH₂< OH< F⁻
(2) CH₃< F⁻< NH₂< OH⁻
(3) F⁻< OH< NH₂< CH₃
(4) F⁻< CH₃< NH₂< OH⁻

74. A mixture of benzaldehyde and fromaldehyde on heating with aqueous NaOH solution gives:-
(1) PhCH₂—OH and HCOONa
(2) PhCOONa and CH₃OH
(3) PhCOONa and HCOONa
(4) Ph—CH₂—OH and CH₃OH

75. Which of the following samples contains the largest number of atoms ?
(1) 1 g of Ni(s)  (2) 1 g of Ca(s)
(3) 1 g of N₂(g)  (4) 1 g of B(s)

76. Which one of the following isotopes has exactly 19 neutrons ?
(1) ³⁵Cl  (2) ¹⁹F  (3) ³⁵S  (4) ³⁹K

77. In how many elements does the outer most electron has quantum numbers n = 4, ℓ = 0, m = +1
(1) 2  (2) 14  (3) 0  (4) 12

78. How many electrons are gained by one mole of permanganate ions when permanganate ions react with reducing agents in acid solution to form manganese (II) ions ?
(1) 5  (2) 6.02 × 10²³
(3) (6.02 × 10²³)/5  (4) 5 × 6.02 × 10²³
79. Calculate the molar solubility of AgCl in a 1L solution which contains 10.0 g of CaCl$_2$ 
\[ K_{sp}(AgCl) = 1.6 \times 10^{-10} \]
(1) $8.9 \times 10^{-10}$  
(2) $8.9 \times 10^{-11}$  
(3) $8.9 \times 10^{-9}$  
(4) $8.9 \times 10^{-12}$

80. \(\text{H}_2\text{O}_2\) acts as a reducing agent in:
(1) \(\text{FeCl}_2 + \text{HCl} + \text{H}_2\text{O}_2 \rightarrow \text{FeCl}_3 + \text{H}_2\text{O}\) 
(2) \(\text{Cl}_2 + \text{H}_2\text{O}_2 \rightarrow \text{HCl} + \text{O}_2\) 
(3) \(\text{HI} + \text{H}_2\text{O}_2 \rightarrow \text{I}_2 + \text{H}_2\text{O}\) 
(4) \(\text{H}_2\text{SO}_3 + \text{H}_2\text{O}_2 \rightarrow \text{H}_2\text{SO}_4 + \text{H}_2\text{O}\)

81. Which of the following solutions has the highest pH? 
(1) 0.10 M \(\text{KNO}_3\)  
(2) 0.10 M \(\text{AlCl}_3\)  
(3) 0.10 M \(\text{NH}_4\text{Cl}\)  
(4) 0.10 M \(\text{CH}_3\text{NH}_2\)

82. Which oxidation state of chromium is (i) most easily oxidised, (ii) most easily reduced? 
(1) +3, +6  
(2) +2, +3  
(3) +3, +3  
(4) +2, +6

83. The correct formula to calculate the hydroxyl ion concentration of an aqueous solution of \(C_6\text{H}_5\text{NH}_3\text{Cl}^-\) is 
(1) \(\sqrt{\frac{K_w}{K_b}}\)  
(2) \(\sqrt{\frac{K_w \times K_b}{C}}\) 
(3) \(\sqrt{\frac{K_w}{K_a}}\)  
(4) \(\sqrt{\frac{K_w \times K_a}{C}}\)

84. Which of the following does not represent \(n\) and \(T\) relations at constant pressure and volume of an ideal gas:
(1) \(n\) vs. \(T\) 
(2) \(\log n\) vs. \(\log T\) 
(3) \(n\) vs. \(1/T\) 
(4) \(n\) vs. \(T\)
85. For the reaction
\[ \text{CuSO}_4 \cdot 5\text{H}_2\text{O}(s) \rightleftharpoons \text{CuSO}_4 \cdot 3\text{H}_2\text{O}(s) + 2\text{H}_2\text{O}(g) \]
which one is correct representation

(1) \( K_p = [p_{\text{H}_2\text{O}}]^2 \)  
(2) \( K_c = [\text{H}_2\text{O}]^2 \)
(3) \( K_p = K_c[\text{RT}]^2 \)  
(4) All

86. At what temperature will the average speed of \( \text{CH}_4 \) molecules have the same value of as \( \text{O}_2 \) has at 1300 K

(1) 1200 K  
(2) 650 K  
(3) 600 K  
(4) 300 K

87. The equilibrium constant for the reaction
\[ \text{N}_2\text{O}_4(g) \rightleftharpoons 2 \text{NO}_2(g) \]
is 6.10 \( \times \) 10\(^{-3} \) at 25°C. Calculate the value of \( k \) for this reaction :
\[ \text{NO}_2(g) \rightleftharpoons (1/2) \text{N}_2\text{O}_4(g) \]

(1) 327  
(2) 164  
(3) 12.8  
(4) 3.05 \( \times \) 10\(^{-3} \)

88. The magnetic moment of electron in an atom (excluding orbital magnetic moment) is given by:

(1) \( \sqrt{n(n+2)} \) Bohr Magneton (or BM)
(2) \( \sqrt{n(n+1)} \) BM
(3) \( \sqrt{n(n+3)} \) BM
(4) None

89. Given that \( \Delta G^\circ \) for the reaction below is \(-5.40 \text{ kJ mol}^{-1} \), calculate \( \Delta G \) at 298 K when the pressure is 0.50 atm for \( \text{NO}_2(g) \) and 2.0 atm for \( \text{N}_2\text{O}_4(g) \).
\[ 2\text{NO}_2 \rightleftharpoons \text{N}_2\text{O}_4 \]

(1) \(-250 \text{ J mol}^{-1} \)  
(2) \(-8800 \text{ J mol}^{-1} \)
(3) \(-1900 \text{ J mol}^{-1} \)  
(4) \(-11,000 \text{ J mol}^{-1} \)

90. For which of the following reactions, \( \Delta H \) is not equal to \( \Delta E \)?

(1) \( \text{H}_2(g) + \text{I}_2(g) = 2 \text{ HI}(g) \)
(2) \( \text{C}(s) + \text{O}_2(g) = \text{CO}_2(g) \)
(3) \( \text{N}_2(g) + 3\text{H}_2(g) = 2\text{NH}_3(g) \)
(4) None of these
91. Lady bird (Beetle with red and black marking) is used as biological control of?
   (1) Mosquito (2) Aphids (3) Dragonflies (4) Jassids

92. Incorrect about cardiac muscles is:-
   (a) non-striated (b) voluntary (c) muscles of hollow visceral organs (d) Unbranched
   (1) c (2) b,c (3) c,d,b (4) a,b,c,d

93. IARI, New Delhi developed which variety of beans, which is protein enriched?
   (1) Pusa sawni (2) Pusa Gaurav (3) Pusa A-4 (4) Lablab

94. Thick myofilaments are made of:
   (1) Dyenin (2) Myosin (3) Kinesin (4) Actin

95. Which of the following scientist is the initiator of "Lab-to-land" programme?
   (1) M.S. Swaminathan (2) Norman Borlaug (3) Herbert Boyer (4) Panchanan Maheshwari

96. Which cell recognizes cells that have lost class-I MHC molecules from their surface?
   (1) T_{h} - Cell (2) T_{k}-cell (3) N.K.cell (4) All of these

97. Trichoderma' which are used as biological control agent for different plant disease are:
   (1) Virus (2) Free living fungi (3) Free living Bacteria (4) Simbiotic Bacteria

98. Keratin of skin does not support viral replication or penetration by bacteria. Skin forms .......... barrier of acquired immunity.
   (1) Physiological/Cytokine (2) Physical (3) Cellular (4) None of these

99. Occurrence of endemic species in south America and Australia is due to:-
   (1) Progressive evolution (2) Continental separation (3) Absence of terrestrial routes to these places (4) Mutation
100. Find incorrect statement with regard to meiosis :-
(1) During meiosis only a single cycle of DNA replication take place.
(2) In Anaphase - I sister chromatids remain associated at their centromeres.
(3) Diakinesis represents transition to metaphase
(4) Four haploid cells are formed at the end of meiosis-II which are genetically identical.

101. Some human individuals have long and pointed canine teeth. It is an example of :-
(1) Vestigial organ (2) Atavism (3) Homologous organ (4) None

102. The lysosome differs from the ER because it's:-
(1) having unit membrane (2) bear ribosomes on their surface
(3) Enzymes optimally active at acidic pH (4) Site for formation of glycoprotein and glycolipids

103. Production of oxygen started in which era during evolution :-
(1) Archaeozoic era (2) Proterozoic era (3) Palaeozoic era (4) Mesozoic era

104. Given below are four statements (A-D) each with one or two blanks. Select the option which correctly fill up the blank in two statements :-
Statements :
(A) Cilia are small structure which work like .........., causing the movement of either the cell or the surrounding fluid.
(B) Normally, there is only one ............ per cell.
(C) The ............... chromosome has centromere slightly away from the middle of the centromere whereas the ............... chromosome has terminal centromere.
(D) Chromatin contains DNA and some basic protein called ............... .

(1) (A) (i) Oars (B) Mitochondria (2) (B) Nucleus (C) (i) Acrocentric, (ii) Telocentric (3) (C) (i) Sub-meta centric, (ii) Telocentric (D) Histone (4) (D) Non - Histone

(A) (i) Oars

105. *Major Test* 100.

(1) During meiosis only a single cycle of DNA replication take place.
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(A) (i) Oars
105. Nictitating membrane in cat is an example of :-
(1) Atavismic character (2) Vestigial organ
(3) Homologous organ (4) Functional structure

106. Every chromosomes essentially has a .......... on the sides of which disc shaped structure called .......... are present :-
(1) Satellite, NOR
(2) Secondary constriction, centriole
(3) Primary constriction, centriole
(4) Centromere, Kinetochores

107. Near about the carboniferous period all the present day continents formed a single large land mass called:-
(1) Alligators (2) Realms
(3) Pangaea (4) Country

108. Which of the following is heteropolymer :-
(1) Protein (2) Inulin
(3) Glycogen (4) Starch

109. Read the following statements and give the answer as asked below :-
(A) The cell wall of fungi is composed of chitin and polysaccharide.
(B) Members of phycymycetes are facultative parasite on plants.
(C) In Ascomycetes asexual spores are called ascospores.
(D) In Basidiomycetes vegetative reproduction by fragmentation is common.
How many statements are correct ?
(1) One (2) Two (3) Three (4) Four

110. Lactose is :-
(1) Reducing monosaccharide
(2) Made up of β-D. Galactose & β-D-Glucose
(3) Milk sugar
(4) Both (2) & (3)

111. When the common characteristic goes on decreasing :-
(1) As we go higher from species to kingdom.
(2) As we go lower from kingdom to species.
(3) As we go both lower and higher in taxonomical hierarchy.
(4) None of these

112. Which of the following is essential amino acid
(1) Tryptophan (2) Threonine
(3) Histidine (4) All

105. The visual presentation contains images of a document with text in Hindi and English. The text is related to pre-medical studies, focusing on various biological and scientific concepts. The document includes multiple choice questions on various topics such as anatomy, genetics, and microbiology. The questions test knowledge on topics like nictitating membranes, chromosomes, and the classification of land masses over geological periods.

106. The questions require understanding of genetic terms, such as chromosomes and their components, and the role of vestigial organs in current biology.

107. The questions touch upon geological history, specifically the formation of the supercontinent Pangaea and its significance in pre-historic geography.

108. The questions delve into molecular biology, distinguishing between polymers and their specific structures, like proteins and inulin.

109. The questions are in the form of fill-in-the-blank and multiple choice, requiring an understanding of biological cell walls, fungal classification, and reproductive mechanisms in fungi.

110. The questions examine the properties of lactose, such as its classification as a sugar and its chemical components.

111. The questions test comprehension of biological hierarchy and classification, focusing on the correct flow of characteristics from species to kingdom.

112. The questions are centered on amino acids, a crucial component of protein chemistry, covering essential amino acids necessary for various biological processes.

The document is a part of a pre-medical course and aims to prepare students for the entrance exams in the medical field by covering essential biological and biochemical concepts.
113. In the column-I and column-II pathogen and related disease are given, match the correct pathogen of its causing disease :-

<table>
<thead>
<tr>
<th>Column-I</th>
<th>Column-II</th>
</tr>
</thead>
<tbody>
<tr>
<td>(i) Bacteria</td>
<td>(A) Potato spindle tuber disease</td>
</tr>
<tr>
<td>(ii) Fungi</td>
<td>(B) Leaf rolling and curling</td>
</tr>
<tr>
<td>(iii) Virus</td>
<td>(C) Wheat rust disease</td>
</tr>
<tr>
<td>(iv) Viroids</td>
<td>(D) Citrus canker</td>
</tr>
</tbody>
</table>

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

114. Protoplasm term given by :-
(1) Dujardin (2) Purkinje (3) Schultz (4) Huxley

115. In the following which one is the example of Bryophyta that has elaborate mechanism of spore dispersal :-

(1) Polysiphonia (2) Marchantia (3) Polytrichum (4) Dryopteris

116. All of the following are sense organs in Periplaneta except :-
(1) Anal style (2) Anal cerci (3) Antennae (4) Maxillary palps

117. Read the following statements and select the correct option :-

(A) Gymnosperms include medium size tree or tall trees, shrubs and herbs.
(B) In cycas coralloid roots are associated with mycorrhiza.
(C) In conifers needle like leaves reduce the surface area.
(D) The gymnosperms are heterosporous.

How many above statements are correct and incorrect :-
(1) 2 - Correct, 2 - Incorrect.
(2) 3 - Correct, 1 - Incorrect.
(3) 1 - Correct, 3 - Incorrect.
(4) 0 - Correct, 4 - Incorrect.

118. Which of the following route of blood clotting is correctly described ?

(1) Cascade process → Thrombin → Thrombokinase → Fibrin
(2) Thrombokinase → Cascade process → Thrombin → Fibrin
(3) Cascade process → Thrombokinase → Thrombin → Fibrin
(4) Thrombin → Thrombokinase → Cascade process → Fibrin

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<td>(i) जीवाणु</td>
<td>(A) पोटॉटी स्याइडल ट्यूबर रोग</td>
</tr>
<tr>
<td>(ii) कक्क</td>
<td>(B) लिफ रोलिंग एवं करलिंग</td>
</tr>
<tr>
<td>(iii) विबाणां</td>
<td>(C) गेंद का रस्ता रोग</td>
</tr>
<tr>
<td>(iv) वाइरॉड्स</td>
<td>(D) सिफ्ट्स कंकरं</td>
</tr>
</tbody>
</table>

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

120. निम्नलिखित में से कौनसा एक ब्रायोफ्यूटा का उदाहरण है, जो बीजाणु विक्रिया की कार्य को प्रदर्शित करता है?
(1) Polysiphonia (2) Marchantia (3) Polytrichum (4) Dryopteris

121. निर्माताणीय के अतिरिक्त सबसे गंभीर अंग है, केवल एक को छोड़कर ज्ञात है :-
(1) पुंडा शूक (2) पुंडा लुम (3) श्रीमंकी (4) मैक्सिलारी स्प्यांक

122. निम्नलिखित कथनों को पहाड़िया तथा सही विक्रिया के चुनाव कीजिए :-

(A) जीनास्पिर्स के नागम आकार वृक्ष या बड़े वृक्ष, झाड़ियों एवं शाक होती है।
(B) साइक्स में प्रवाह मूल, कक्क मूल के साथ सहयोग करती है।
(C) रक्तसारी पीथ की गुंडे के सामने पत्तियों साथी क्षेत्रफल की कम करती है।
(D) जीनास्पिर्स विभाजक और पुण्यतम होते हैं।

123. निम्न में से रोग त्वचन का कौनसा अंग सही वर्णित है?

(1) सोपानी प्रक्रम → श्रीम्बन → श्रीमोकाइनेज → फाइब्रिन 
(2) श्रीमोकाइनेज → सोपानी प्रक्रम → श्रीम्बन → फाइब्रिन
(3) सोपानी प्रक्रम → श्रीमोकाइनेज → श्रीम्बन → फाइब्रिन
(4) श्रीम्बन → श्रीमोकाइनेज → सोपानी प्रक्रम → फाइब्रिन
119. Taxonomist have developed a variety of taxonomic aids to facilitate :-
(1) Identification of organism
(2) Naming of organism
(3) Classification of organism
(4) All of the above

120. Which of the following cell junction helps to stop substances from leaking across a tissue ?
(1) Gap junction
(2) Tight junction
(3) Adhering junction
(4) All of these

121. For Bryophytes,
Select the incorrect statement in the following :
(1) The plant body of liver worts is thalloid and isobilateral.
(2) Mosses have upright, slender axis bearing spirally arranged leaves.
(3) Spores germinate to form gametophyte.
(4) The zygote produces a sporophyte

122. Hormones are :-
(A) Low molecular weight substances
(B) Stored in body
(C) Bio catalyst
(D) Mainly Functional away from origin
(E) Intercellular substances
(F) Non species specific
(G) Exclusively proteins
(1) B, C, E, F
(2) A, C, E, F
(3) A, D, E, F
(4) A, D, E, G

123. Identify the diagram that is given below :-

(1) Selaginella
(2) Equisetum
(3) Fern
(4) Salvinia

124. It iter is blocked than what will be happens with CSF conduction in spinal cord?
(1) No CSF conduction
(2) CSF conduction continuous
(3) Stopped
(4) CSF conduction will irregular
125. In the following diagrams which one is the example of Red Algae :-

126. Read the sentence:
The entire process of response to a PNS stimulation, that occur involuntary i.e. without conscious effort and requires involvement of CNS part is called a reflex action:-
Which one is not true about sentence-
(a) All spinal reflexes are involuntary
(b) All involuntary reflexes are spinal reflex
(c) Sensory stimuli passes through pseudo-unipolar from ventral surface
(d) Lateral horns are found is thoracic, cervical and lumbar region of spinal cord.
(1) a, c, d (2) b, c, d (3) a, b, d (4) a, b, c

127. Which chromosomal arrangement in F₁ is present in repulsion of Bateson :-
(1) Cis (2) Trans (3) Both of above (4) None of above

128. The maximum volume of air a person can breathe in after a forced expiration :-
(1) TV + ERV (2) TV + IRV (3) TV + ERV + IRV (4) ERV + RV

129. If AB and O blood group are present in the offsprings of a couple which is true for this couple:-
(1) Both are homozygous
(2) Both are heterozygous
(3) They have AB and O blood group
(4) They can donate blood to any one
### 130. List-I | List-II
| (a) Gliding joint | Between the carpals |
| (b) Cartilaginous joint | Between the adjacent vertebrae |
| (c) Pivot Joint | Between atlas and axis |
| (d) Hinge joint | Knee Joint |
| (e) Fibrous joint | Between skull bones |
| (f) Ball and socket joint | Between humerus and pectorial girdle |

How many joints are correctly matched:
(1) Two (2) Four (3) Five (4) Six

### 131.
When two genes are situated close to each other in a chromosome:
(1) The percentage of crossing over between them is very high
(2) Hardly any crossover is detected
(3) No crossing over can take place between them
(4) Only double crossovers can take place between them

### 132.
Read the following statements:
(i) Acute chest pain appears
(ii) The heart stops beating
(iii) No enough oxygen is reaching the heart muscle.
(iv) Congestion of the lungs is one of the main symptoms of this disease.
(v) It is more common among the middle aged and elderly.
(vi) It occurs due to conditions that affect the blood flow.

How many statements correct about Angina.
(1) Two (2) Three (3) Four (4) Five

### 133.
In which of the following inheritance phenotype of F₁-hybrid does not resemble with either of its parents:
(1) Incomplete dominance
(2) Codominance
(3) Polygenic inheritance
(4) All of above

**Time Management is Life Management**
134. Read the following statements :-
(I) Dialysis fluid contain all the constituents as in plasma except ----(a)-----
(II) A chordate animal having flame cells as excretory structure is ------(b)------
(III) Reabsorption of water from distal parts of the tubule is facilitated by hormone -----(c)---
In above statements (a), (b), (c) are :-
(1) Glucose, Planaria, ADH
(2) Nitrogenous wastes, Planaria, ADH
(3) Nitrogenous wastes, Amphioxus, ADH
(4) NaCl, Rotifers, Aldosterone

135. How many different type of gametes are produced by M/M, g/g, B/b, C/c, D/d genotype :-
(1) 2 (2) 4 (3) 8 (4) 16

136. The epidermis of mammals is characterized by the absence of:-
(1) mucous glands
(2) Femoral glands
(3) Poison gland
(4) all of these

137. The end product, whose addition will check the synthesis of biosynthetic enzyme is known as :-
(1) Aporepressor (2) Co-repressor
(3) Inducer (4) Suppressor

138. In humans at the end of the first meiotic division, the male germ cells differentiate into the :-
(1) new spermatogonia
(2) spermatids
(3) secondary spermatocytes
(4) primary spermatocytes

139. The expression of genes, for the production of milk in only female is :-
(1) Sex linked trait (2) Y-linked trait
(3) Sex limited trait (4) Sex influenced trait

140. Emergency contraceptives are effective if used within :-
(1) 72 hrs of coitus
(2) 72 hrs of ovulation
(3) 72 hrs of menstruation
(4) 72 hrs of implantation

134. निम्न कथनों को पढ़िए:-
(I) अपोहन द्रव में -----(a)----- के अलावा रक्त प्लाज्मा के अन्य सभी पदार्थ उपलब्ध होते हैं।
(II) -----(b)------ एक कॉर्डेट जन्तु है जिसमें ज्वाला कोशिका उत्सर्जन रचनायें होती है।
(III) चूँकि नकलिका के दूरस्थ भाग द्वारा जल का पुनरावशेषण -----(c)--- होता है।
उपरोक्त कथनों में (a), (b), (c) है:-
(1) ग्लूकोज, प्लानेरिया, ADH
(2) नाइट्रोजनीय अपरिशिष्ट, प्लानेरिया ADH
(3) नाइट्रोजनीय अपरिशिष्ट, एचफायरसेक्स, ADH
(4) NaCl, रोटिफर, एटिओस्टीरेरन

135. M/M, g/g, B/b, C/c, D/d जीन प्रारूप से फ़ितने प्रकार के गूढ़क बनेंगे :-
(1) 2 (2) 4 (3) 8 (4) 16

136. उपरोक्त में किसका अनुपरिशिष्ट सतनामार्गों की अधिचर्म का लक्षण है -
(1) रेल्फा प्रधानियां
(2) फिल्मोल प्रधानियां
(3) विष प्रधानियां
(4) उपरोक्त सभी

137. अनियम उत्पाद, जिसके मिलाने पर एजाइम का बनना बन्द हो जाता है, कहलाता है :-
(1) एपोप्रेसर (2) कॉ-रिप्रेसर
(3) इन्ह्यूसर (4) ग्रेसर

138. मतुरण में प्रथम अर्द्धसूत्री विभाजन के अंत में नर जंतु कोशिकाएं विभेदित हो जाती हैं -
(1) नये स्मैंफ्टोगोनिया में 
(2) स्मैंफ्टिट्रस में 
(3) द्वितीयक स्मैंफ्टोसाइड्रस में 
(4) प्रारंभिक स्मैंफ्टोसाइड्रस में 

139. केकल मादा में, दुध निर्माण हेतु, जीन की अभिव्यक्ति है :-
(1) लिंग सहायक लक्षण (2) Y-सहायक लक्षण
(3) लिंग सीमित लक्षण (4) लिंग प्रभावित लक्षण

140. आयामकालीन गर्भनिरोध प्रभावी होने जब उन्हें उपचार में लिया जाए -
(1) मैयून के 72 घंटे में 
(2) अण्डोट्स्क में 72 घंटे में 
(3) ल्यूक्स्ट्रा के 72 घंटे में 
(4) आरोपण के 72 घंटे में
141. Which of the following match is/are correct ?
(A) PCR Technique–Taq & Vent polymerase
(B) Tetra & Andi–Cloned monkey
(C) SCID disorder–ADA Enzyme
(D) First transgenic animal–Mouse
(1) All are correct
(2) Only C is correct
(3) Only A & D are correct
(4) Only B is correct

142. Mature graafian follicle is generally present in the ovary of a healthy human female around
(1) 5-8 day of menstrual cycle
(2) 11-17 day of menstrual cycle
(3) 18-23 day of menstrual cycle
(4) 24-28 day of menstrual cycle

143. The given pedigree chart shows the inheritance of which of the following Mendelian disorder ?

(1) Autosomal dominant trait - Myotonic dystrophy.
(2) X-linked dominant trait - Pseudorickettes
(3) Autosomal recessive trait - Sickle cell anemia
(4) X-linked recessive trait - Haemophilia.

144. Match the following and choose the correct options :
(A) Trophoblast (i) Embeding of blastocyst in the endometrium
(B) Cleavage (ii) Group of cells that would differentiate as embryo
(C) Inner cells mass (iii) outer layer of blastocyst attached to the endometrium
(D) Implantation (iv) mitotic division of zygote
(1) A-ii, B-i, C-iii, D-iv
(2) A-iii, B-iv, C-ii, D-i
(3) A-iii, B-i, C-ii, D-iv
(4) A-ii, B-iv, C-iii, D-i
145. Allelic sequence variations, where more than one variant (allele) at a locus in a human population with a frequency greater than 0.01 is referred to as:
   (1) Incomplete dominance
   (2) EST
   (3) SNP
   (4) DNA polymorphism

146. Catalytic converters are fitted into automobiles to reduce emission of harmful gases. Catalytic converters change unburnt hydrocarbons into:
   (1) carbon dioxide and water
   (2) carbon mono oxide
   (3) methane
   (4) carbon dioxide and methane

147. The restriction endonuclease enzyme binds to the DNA & cut:
   (1) any one strand of the double helix
   (2) each of the two strands at specific points in their base - sugar bonds.
   (3) each of the two strands at specific points in their base - phosphate bonds.
   (4) each of the two strands at specific points in their sugar - phosphate, backbone bonds.

148. Match correctly the following and choose the correct option:
(i) Environment Protection Act A. 1974
(ii) Air Prevention & Control of pollution Act B. 1987
(iii) Water Act C. 1986
(iv) Amendment of Air Act to include noise D. 1981

The correct matches is:
(1) i-C, ii-D, iii-A, iv-B
(2) i-A, ii-C, iii-B, iv-D
(3) i-D, ii-A, iii-B, iv-C
(4) i-C, ii-D, iii-B, iv-A

149. Read the following statement having two blanks:
"A drug used for (A) patients is obtained from a species of the organism (B)."

The one correct option for the two blanks is:
   Blank - A Blank - B
   (1) Heart Streptococcus
   (2) Heart Monascus
   (3) Organ - transplant Trichoderma
   (4) Swine flu Monascus
150. Choose the incorrect statement :-
(1) The Montreal protocol is associated with the control of emission of ozone depleting substances
(2) Methane and carbon dioxide are green house gases
(3) Dobson units are used to measure oxygen content
(4) Use of incinerators is crucial to disposal of hospital wastes

151. Consider the following four statements (a-d) and select the option which includes all the correct ones only.
(a) Cross-breeding allows the desirable qualities of two different species to be combined.
(b) Wax is used in the preparation of cosmetics and polishes of various kinds.
(c) Pisciculture is catching processing and selling of fishes
(d) Inbreeding helps in accumulation of superior genes.

Options :
(1) Statement (b), (c) and (d)
(2) Statement (a) and (d)
(3) Statement (a) and (c)
(4) Statement (a), (c) and (d)

152. Amensalism is an association between two species where :
(1) one species is harmed and other is benefitted
(2) one species is harmed and other is unaffected
(3) one species is benefitted and other is unaffected
(4) both the species are harmed

153. How many enzymes in the list given below are protein digesting enzyme found in pancreatic juice?
Lactase, Trypsin, Pepsin, Chymotrypsin, Aminopeptidase, Rennin, Carboxypeptidase, Nuclease, Maltase
(1) Six (2) Three (3) Four (4) Five

154. Formation of tropical forests needs mean annual temperature and mean annual precipitation as :
(1) 18-25°C and 150-400 cm
(2) 5-15°C and 50-100 cm
(3) 30-50°C and 100-150cm
(4) 5-15°C and 100-200 cm
155. Read the following five statement and answer as asked next to them?
(a) Peptic cells secrete the proenzyme pepsinogen
(b) Enterokinase is a digestive enzyme of pancreatic juice
(c) Haustra are found in large intenstine
(d) For its activity carboxypeptidase requires zinc
(e) Spicy food may cause indigestion
How many of the above statements are incorrect?
(1) Four (2) One (3) Two (4) Three

156. According to Allen's Rule, the mammals from colder climates have :
(1) shorter ears and longer limbs
(2) longer ears and shorter limbs
(3) longer ears and longer limbs
(4) shorter ears and shorter limbs

157. Read the following four statements (a-d) :-
(a) A single out cross often helps to overcome inbreeding depression
(b) Artificial insemination helps to overcome several problems of normal matings
(c) Bee keeping is easy and do not require any specialised knowledge
(d) Catla, rohu and common carp are fresh water fish.
How many of the above statements are correct?
(1) One (2) Two (3) Three (4) Four

158. Ecological niche is :-
(1) the surface area of the ocean
(2) an ecologically adapted zone
(3) the physical position and functional role of a species within the community
(4) formed of all plants and animals living at the bottom of a lake

159. When the resources are limited, which are the phases exhibited by an organism during growth?
(1) Lag, Log, exponential, deacceleration, asymptomatic
(2) Lag, log, asymptomatic, deacceleration, exponential
(3) Lag, log, deacceleration, exponential, asymptomatic
(4) None of these
160. Function of stem is :-
   (1) To bear leaves, flowers and branches.
   (2) Conduction of water and minerals to leaves.
   (3) Conduction of food (photosynthates)
   (4) All of the above

161. The density of a population in a given habitat during a given period, fluctuates due to changes in?
   (1) Immigration, Natality
   (2) Mortality
   (3) Emigration
   (4) All the above

162. Conjoint, bicollateral, open vascular bundles arranged in two rings are characteristic of :-
   (1) Cucurbita
   (2) Cocos
   (3) Asparagus
   (4) Yucca

163. Type of ovule in Pea :
   (1) Hemianatropous
   (2) Amphitropous
   (3) Anatropous
   (4) Campylotropous

164. AT.S. of monocot stem can be distinguished from that of a dicot stem by observing the :-
   (1) Vascular bundles, which are scattered in monocot stem.
   (2) Sunken stomata
   (3) Radial vascular bundles
   (4) Concentric vascular bundles

165. Formation of embryo from egg cell without fertilization ?
   (1) Parthenogenesis
   (2) Parthenocarpy
   (3) Apospory
   (4) Apomixis

166. Which modification is reported in Asparagus and Ruscus?
   (1) Cladodes
   (2) Phyllodes
   (3) Leaf spines
   (4) Phylloclades

167. Filiform apparatus is present in :
   (1) Suspensor cell
   (2) Egg cell
   (3) Synergids
   (4) Zygote

168. A flower having many free carpels will develop into :-
   (1) Schizocarpic fruit
   (2) Sorosis
   (3) Simple fruit
   (4) Etalternative

160. लेन का कारण है :-
   (1) पत्तियों पृष्ठीय व शाखाओं को धारण करना
   (2) पत्तियों तक जल एंव खानिज तत्वों का संचय करना
   (3) खानी पदाचों को संचय करना
   (4) उपरोक्त सभी

161. दी गई अवधि के दौरान दिया गए आवास में समस्त का पतन फिन मूलभूत प्रभावों में घटना-बढ़ना है?
   (1) आप्रवासन, नयादश
   (2) मृत्युदर
   (3) उत्पादन
   (4) उपरोक्त सभी

162. संख्या, समस्तीयतावादी, खुले संचय पूल को जिंक दो वर्गों में व्यवस्थित होते है, किसका लक्षणिक गुण होते है :-
   (1) कुकुरडिस्टा
   (2) कुक्कस
   (3) एसपेरेगास
   (4) युक्का

163. खुर में बीजाण्ड है :
   (1) खमी एनट्रोपस्प
   (2) एम्पीट्रोपस्प
   (3) प्राइप्स
   (4) वर्क

164. एक्बीजाण्ड तथा की अनुप्रस्थ काट को किसके द्वारा द्विबीजाण्ड तथा से विभेदित किया जा सकता है?
   (1) संचय पूली द्वारा जो कि एक बीजाण्ड तथा में बिखेर होते है।
   (2) धीरे रूपों द्वारा
   (3) अनेक संचय पूली द्वारा
   (4) संकेरित संचय पूली द्वारा

165. बिना निषेधन के अण्ड से भूष का निर्माण कहलाता है?
   (1) अनिवेशित जनन
   (2) अविवेशित फलन
   (3) अपवीजाणुकता
   (4) असंय जनन

166. ऐसपेरेगास व रस्कस में कौनसा रूपान्तरण पाया जाता है?
   (1) पाण्डभ बृंख
   (2) पाण्डभ बृंख
   (3) पाण्ड शोल
   (4) पाण्डभ बृंख

167. नीलुपूर्त समुच्चय किसका एक लक्षण है?
   (1) फिल्स्पक
   (2) अण्ड कोशिका
   (3) सहाय कोशिका
   (4) युमन्त

168. कई भुरु में आयतांक युक्त पूष्प विकसित होगा :-
   (1) भुरु फल में
   (2) सेमीसिस में
   (3) सरल फल में
   (4) पंज फल में
169. Match the column :-

<table>
<thead>
<tr>
<th>Column - A</th>
<th>Column - B</th>
</tr>
</thead>
<tbody>
<tr>
<td>A) Pennatula</td>
<td>(i) Portuguese man of war</td>
</tr>
<tr>
<td>B) Gorgonia</td>
<td>(ii) Bath sponge</td>
</tr>
<tr>
<td>C) Meandrina</td>
<td>(iii) Seapen</td>
</tr>
<tr>
<td>D) Euspongia</td>
<td>(iv) Sea fan</td>
</tr>
<tr>
<td>E) Physalia</td>
<td>(v) Brain coral</td>
</tr>
</tbody>
</table>

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

170. Which of the following character is shown by Australian Acacia and Parkinsonia ?

(1) Developmental heterophylly.
(2) Climb up to a support with the help of spines.
(3) Leaf part petiole gets modified into phyllode.
(4) Vegetative propagation occurs by bulbils.

171. Metagenesis is present in :-

(1) Corals
(2) Anemones
(3) Hydra
(4) None

172. The plant hormone which is basic in nature:-

(1) Auxin
(2) Gibberellins
(3) Cytokinin
(4) Abscisic acid

173. Select the incorrect statement among the following :-

(1) Flat worms are mostly endoparasites
(2) Ctenophora are exclusively marine
(3) Arthropods are mostly oviparous with direct or indirect development
(4) Many cartilaginous fishes are oviparous

174. An example of non-competitive inhibition is:-

(1) The inhibition of succinic dehydrogenase by malonate
(2) Cyanide action on cytochrome oxidase
(3) Sulpha drug on folic acid synthesing bacteria
(4) None of above

175. Worm like marine animals are :-

(1) Protochordates
(2) Ctenophores
(3) Cephalochordata
(4) Hemichordata
176. Identify the product marked (A) and (B) in the following pathway :-

3-Phosphoglyceric acid
\[ \text{CO}_2 \]
\[ \text{NADH} + \text{H}^+ \]
(A) Pyrovate

(1) (A) 2 phospho glycerate; (B) Acetyl CoA
(2) (A) PEP; (B) Ethyl alcohol
(3) (A) PEP (B) Lactic acid
(4) (A) PEP (B) acetyl CoA

177. Lencelet is :-
(1) Hemichordata (2) Vertebrata
(3) Urochordata (4) None

178. OEC is located in/on :-
(1) Outer surface of grana membrane
(2) Lumen of stroma lamellae
(3) Inner surface of thylakoid membrane
(4) Stroma

179. Transport proteins at control points where a plant adjust the quantity and types of solutes that reach the xylem :-
(1) Pericycle (2) Hypodermis
(3) Endodermis (4) Pith

180. (a) Essential elements are components of energy related compounds
(b) Essential elements are components of structural element of cells
(c) Mn²⁺ is an activator of alcohol dehydrogenase
(1) All are correct
(2) Only (a) is incorrect
(3) Only (b) is incorrect
(4) Only (c) is incorrect

Your moral duty
is that to prove ALLEN is ALLEN
Your Target is to secure Good Rank in Pre-Medical 2013