CLASROOM CONTACT PROGRAMME
(ACADEMIC SESSION 2012-2013)

LEADER COURSE
(Phase : MLT, MLU, MLV)

TARGET : PRE-MEDICAL 2013

MAJOR TEST # 03

ALLEN NEET-UG

DATE: 02 - 04 - 2013

SYLLABUS # 03

INSTRUCTIONS

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.

Note: In case of any correction in the test paper please mail to dlpcorrections@allen.ac.in within 2 days. यदि इस प्रश्न पत्र में कोई Correction हो तो कृपया 2 दिन के अन्दर dlpcorrections@allen.ac.in पर mail करें।

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1. A spherical hollow is made in a lead sphere of radius $R$ such that its surface touches the outside surface of the lead sphere and passes through the centre. The mass of the lead sphere before hollowing was $M$. The force of attraction that this sphere would exert on a particle of mass $m$ which lies at distance $d$ from the centre of the lead sphere on the straight line joining the centres of the sphere and the hollow is:

\[ \frac{GMm}{d^2} \]

\[ \frac{GMm}{d^2} \left[ \frac{1 - \frac{1}{8\left(1 - \frac{R}{2d}\right)^2}}{1 + \frac{1}{8\left(1 + \frac{R}{2d}\right)^2}} \right] \]

\[ \frac{GMm}{8d^2} \]

2. The relative permeability is represented by $\mu_r$ and the susceptibility is denoted by $\chi$ for a magnetic substance. Then for a paramagnetic substance:

(1) $\mu_r < 1, \chi < 0$

(2) $\mu_r < 1, \chi > 0$

(3) $\mu_r > 1, \chi < 0$

(4) $\mu_r > 1, \chi > 0$

3. If mass $M$ is split into two pairs $m$ and $(M - m)$ which are then separated by a distance, the ratio of $m/M$ that maximises the gravitational force between the two parts is:

(1) $1 : 2$

(2) $1 : 1$

(3) $2 : 1$

(4) $1 : 4$

4. The use of study of hysteresis curve for a given material is to estimate the:

(1) Voltage loss

(2) Hysteresis loss

(3) Current loss

(4) All of these
5. If the radius of earth were to shrink by one per cent, its mass remaining the same, the acceleration due to gravity on the earth's surface would :-

(1) decrease
(2) remain unchanged
(3) increase
(4) nothing will happen

6. If the angular momentum of an electron is \( \mathbf{\vec{j}} \) then the magnitude of the magnetic moment will be:

(1) \( \frac{e\mathbf{J}}{m} \)
(2) \( \frac{e\mathbf{J}}{2m} \)
(3) \( e\mathbf{J} \)
(4) \( \frac{2m}{e\mathbf{J}} \)

7. Two satellites S and S' revolve around the earth at distances 3R and 6R from the centre of the earth. Their periods of revolving will be in the ratio :-

(1) 1 : 2
(2) 2 : 1
(3) 1 : 2^{1.5}
(4) 1 : 2^{0.67}

8. A charged particle (charge \( q \)) is moving in a circle of radius \( R \) with uniform speed \( v \). The associated magnetic moment \( \mu \) is given by :-

(1) \( \frac{qR}{2} \)
(2) \( q\mathbf{vR}^2 \)
(3) \( \frac{qR^2}{2} \)
(4) \( q\mathbf{vR} \)

9. The masses and radii of the earth and moon are \( M_1, R_1 \) and \( M_2, R_2 \) respectively. Their centres are at distance \( d \) apart. The minimum speed with which a particle of mass \( m \) should be projected from a point midway the two centres so as to escape to infinity is :-

(1) \( \sqrt{\frac{2GM_1}{d}} \)
(2) \( \sqrt{\frac{4GM_1}{d}} \)
(3) \( \sqrt{\frac{4GM_1M_2}{d}} \)
(4) \( \sqrt{\frac{G(M_1 + M_2)}{d}} \)

10. In the given figure the electron enters into the magnetic field. It deflects in.......direction :-

(1) +ve X direction
(2) -ve X direction
(3) +ve Y direction
(4) -ve Y direction
11. The metallic bob of a simple pendulum has the relative density $\rho$. The time period of this pendulum is $T$. If the metallic bob is immersed in water, then the new time period is given by:

\[
(1) \frac{(\rho-1)T}{\rho} \quad (2) \frac{\rho T}{\rho-1} \\
(3) \sqrt{\frac{(\rho-1)T^2}{\rho}} \quad (4) \sqrt{\frac{\rho T^2}{\rho-1}}
\]

12. An electron is travelling along the x-direction. It encounters a magnetic field in the y-direction. Its subsequent motion will be :-

(1) Straight line along the x-direction
(2) A circle in the xz-plane
(3) A circle in the yz-plane
(4) A circle in the xy-plane

13. Two point charges $+q$ and $-q$ are held fixed at $(-d, 0)$ and $(+d, 0)$ respectively of a $(X, Y)$ coordinate system. Then :-

(1) $E$ at all points on the $Y$ –axis is along $\hat{j}$
(2) The electric field $\vec{E}$ at all points on the $X$–axis has the same direction
(3) Dipole moment is $2qd$ directed along $\hat{i}$
(4) Work has to be done in bringing a test charge from infinity to the origin

14. Two particles A and B of masses $m_A$ and $m_B$ respectively and having the same charge are moving in a plane. A uniform magnetic field exists perpendicular to this plane. The speeds of the particles are $v_A$ and $v_B$ respectively, and the trajectories are as shown in the figure. Then:-

(1) $m_A v_A < m_B v_B$
(2) $m_A v_A > m_B v_B$
(3) $m_A < m_B$ and $v_A < v_B$
(4) $m_A = m_B$ and $v_A = v_B$

15. A charged particle $q$ is shot towards another charged particle $Q$ which is fixed, with a speed $v$. It approaches $Q$ upto a closest distance $r$ and then returns. If $q$ were given a speed $2v$, the closest distances of approach would be :-

(1) $r$ (2) $2r$ (3) $r/2$ (4) $r/4$

11. किसी सल्लू तक के भार तुल के गांसेता का आ थे विष्णु के बंधन वर्तमान हैं। इसलाया लक का आ वर्तमान है। वर्ष ढोल के गांसेता के जम रामें डू बी दिय जिने तो आ वर्तमान हत हो:-

\[
(1) \frac{(\rho-1)T}{\rho} \quad (2) \frac{\rho T}{\rho-1} \\
(3) \sqrt{\frac{(\rho-1)T^2}{\rho}} \quad (4) \sqrt{\frac{\rho T^2}{\rho-1}}
\]

12. एक नई $X$-डिशन ने के अनु दिशा गतिवार हैं। लू-डिशन की ओर अनु दिशा चुंबकीय यथा त्रमे में अन्ब व प्रधान है। इस परिपथ में गतिवार होगा——

(1) $X$-डिशा के अनु दिशा सल्लू रखा
(2) $xz$-सतह में $\tau$ रू रैं य
(3) $yz$-सतह में $\theta$ रू रैं य
(4) $xy$-सतह में $\phi$ रू रैं य

13. $(X, Y)$ निर्देशांक पर $P$ के अनु दिशा का अनु दिशा निर्देशांक है।

(1) $E$ सदैव बी डू अगर अपर$P$ के अनु दिशा है।
(2) वित्त व अनु दिशा के अनु दिशा निर्देशांक है।
(3) $\phi$ के अनु दिशा है।
(4) एक उत्सर्जन अगर उत्सर्जन भर अपने पदों में वेगुली लू तकला ने बना विषय किया अगर है।

14. $A$ : $m_A$ उ $m_B$ दूर सतह ने के दूर $A$ सतह ने हैं, एक सतह में गतिवार हैं। इस सतह के तर वायु एक सतह चुंबकीय यथा त्र का ये रत है। काम के भ व सतह $v_B$ है एक फाइट के चित्र में दिखाय गया है।

(1) $m_A v_A < m_B v_B$
(2) $m_A v_A > m_B v_B$
(3) $m_A < m_B$ का व $A v_B < v_B$
(4) $m_A = m_B$ का $A v_B = v_B$

15. किसी अने निश्चय के बीएफ के सेंटर निश्चय निर्मात जिन विष्णु रखे हैं, की अने बर्मेंट दूरी यात्रा खोली यात्रा ती के पास करते बीएफ के रू ता हैं।

वर्ष अंक के बीएफ से छोड़ डू ते, तो इसके उपर यात्रा की ती तक डू सी होँ ते।

(1) $r$ (2) $2r$ (3) $r/2$ (4) $r/4$
16. Two long straight wires are set parallel to each other. Each carries a current I in the same direction and the separation between them is 2r. The intensity of the magnetic field midway between them is:

(1) \( \mu_0 \frac{i}{r} \)
(2) \( 4\mu_0 \frac{i}{r} \)
(3) Zero
(4) \( \frac{\mu_0 i}{4r} \)

17. A linear charge having linear charge density \( \lambda \), penetrates a cube diagonally and then it penetrate a sphere diametrically as shown. What will be the ratio of flux coming cut of cube and sphere:

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

18. PQRS is a square loop made of uniform conducting wire. If the current enters the loop at P and leaves at S, then the magnetic field will be:

(1) Maximum at the centre of the loop
(2) Zero at the centre of loop
(3) Zero at all points inside the loop
(4) Zero at all points outside of the loop

19. A point charge is surrounded symmetrically by six identical charges at distance r as shown in the figure. How much work is done by the forces of electrostatic repulsion when the point charge q at the centre is removed at infinity:

(1) zero
(2) \( 6q^2/4\pi \varepsilon_0 r \)
(3) \( q^2/4\pi \varepsilon_0 r \)
(4) \( 12q^2/4\pi \varepsilon_0 r \)
20. A long solenoid is formed by winding 20 turns/cm. The current necessary to produce a magnetic field of 20 millitesla inside the solenoid will be approximately:

\[
\frac{\mu_0}{4\pi} = 10^{-7} \text{ tesla-metre/ampere}
\]

(1) 8.0 A  (2) 4.0 A  (3) 2.0 A  (4) 1.0 A

21. Electric charges of +10µC, +5µC, −3µC and +8µC are placed at the corners of a square of side \(\sqrt{2}\) m. The potential at the centre of the square is:

(1) 1.8 V  (2) \(1.8 \times 10^6\) V  (3) \(1.8 \times 10^5\) V  (4) \(1.8 \times 10^4\) V

22. A circular coil of radius \(R\) carries an electric current. The magnetic field due to the coil at a point on the axis of the coil located at a distance \(r\) from the centre of the coil, such that \(r \gg R\), varies as:

\[
\frac{1}{r}, \frac{1}{r^{3/2}}, \frac{1}{r^3}, \frac{1}{r^4}
\]

(1) \(\frac{1}{r}\)  (2) \(\frac{1}{r^{3/2}}\)  (3) \(\frac{1}{r^3}\)  (4) \(\frac{1}{r^4}\)

23. An electric charge \(10^{-3}\) µC is placed at the origin (0, 0) of X – Y co-ordinate system. Two points A and B are situated at \((\sqrt{2}, \sqrt{2})\) and (2, 0) respectively. The potential difference between the points A and B will be:

(1) 9 volt  (2) zero  (3) 2 volt  (4) 3.5 volt

24. In the figure shown there are two semicircles of radii \(r_1\) and \(r_2\) in which a current \(i\) is flowing. The magnetic induction at the centre O will be:

\[
\frac{\mu_i}{r_1}(r_1 + r_2) \quad \frac{\mu_i}{4}(r_1 - r_2) \\
\frac{\mu_i}{r_1} \left( \frac{r_1 + r_2}{r_1 r_2} \right) \quad \frac{\mu_i}{4} \left( \frac{r_2 - r_1}{r_1 r_2} \right)
\]

25. Two charges +3.2 \(\times 10^{-19}\) C and −3.2 \(\times 10^{-19}\) C kept 2.4 Å apart forms a dipole. If it is kept in uniform electric field of intensity \(4 \times 10^5\) volt/m then what will be its potential energy in equilibrium:

(1) \(+3 \times 10^{-23}\) J  (2) \(-3 \times 10^{-23}\) J  (3) \(-6 \times 10^{-23}\) J  (4) \(-2 \times 10^{-23}\) J
26. A straight section PQ of a circuit lies along the X-axis from \(x = -\frac{a}{2}\) to \(x = \frac{a}{2}\) and carries a steady current I. The magnetic field due to the section PQ at a point \(X = + a\) will be:

(1) Proportional to \(a\)  
(2) Proportional to \(a^2\)  
(3) Proportional to \(\frac{1}{a}\)  
(4) Zero

27. Charge q is uniformly distributed over a thin half ring of radius \(R\). The electric field at the centre of the ring is:

(1) \(\frac{q}{2\pi\varepsilon_0 R^2}\)  
(2) \(\frac{q}{4\pi\varepsilon_0 R^2}\)  
(3) \(\frac{q}{4\pi\varepsilon_0 R^2}\)  
(4) \(\frac{q}{2\pi\varepsilon_0 R^2}\)

28. A current I flows along the length of an infinitely long straight and thin-walled pipe. Then:

(1) The magnetic field at all points inside the pipe is the same but not zero  
(2) The magnetic field at any point inside the pipe is zero  
(3) The magnetic field is zero only on the axis of the pipe  
(4) The magnetic field is different at different points inside the pipe

29. A battery of 24 cells, each of emf 1.5 V and internal resistance 2\(\Omega\) is to be connected in order to send the maximum current through a 12\(\Omega\) resistor. The correct arrangement of cells will be:

(1) 2 rows of 12 cells connected in series  
(2) 3 rows of 8 cells connected in series  
(3) 4 rows of 6 cells connected in series  
(4) All of these

30. A dip circle is kept in such a way that its plane makes an angle of 30° with the magnetic meridian. The measured value of the angle of dip is 45°. What will be its true value at that place?

(1) \(\tan^{-1}\left(\frac{1}{2}\right)\)  
(2) \(\tan^{-1}(1)\)  
(3) \(\tan^{-1}\left(\frac{\sqrt{3}}{2}\right)\)  
(4) \(\tan^{-1}\left(\frac{1}{\sqrt{3}}\right)\)
31. A potential divider is used to give outputs of 4 V and 8 V from a 12 V source. Which combination of resistances, \((R_1 : R_2 : R_3)\) gives the correct voltages?
   (1) 2 : 1 : 2  
   (2) 1 : 1 : 1  
   (3) 2 : 2 : 1  
   (4) 1 : 1 : 2

32. Two magnets of equal mass are joined at right angles to each other as shown. Magnet 1 has a magnetic moment three times that of magnet 2. This arrangement is pivoted so that it is free to rotate in the horizontal plane. In equilibrium what angle will the magnet 1 subtend with the magnetic meridian:
   (1) \(\tan^{-1}\left(\frac{1}{2}\right)\)  
   (2) \(\tan^{-1}\left(\frac{1}{3}\right)\)  
   (3) \(\tan^{-1}\)  
   (4) 0º

33. As the switch S is closed in the circuit shown in figure, current passing through it is:
   (1) 4.5 A  
   (2) 6.0 A  
   (3) 3.0 A  
   (4) zero

34. The variation of the intensity of magnetisation (I) with respect to the magnetising field (H) in a diamagnetic substance is described by the graph:
   (1) OD  
   (2) OC  
   (3) OB  
   (4) OA

35. A galvanometer of resistance \(G\) can measure 1 A current. If a shunt \(S\) is used to convert it into an ammeter to measure 10 A current. The ratio of \(\frac{G}{S}\) is:
   (1) \(\frac{1}{9}\)  
   (2) \(\frac{9}{1}\)  
   (3) 10  
   (4) \(\frac{1}{10}\)
36. Two charges $q$ and $-3q$ are placed fixed on x-axis separated by distance $'d'$. Where should a third charge $2q$ be placed such that it will not experience any force?

(1) $\frac{d}{2}(1 + \sqrt{3})$ from $q$
(2) $\frac{d}{2}(1 + \sqrt{3})$ from $-3q$
(3) $d(1 + \sqrt{3})$ from $q$
(4) $d(1 + \sqrt{3})$ from $-2q$

37. In a potentiometer experiment the balancing with a cell is at length 240 cm. On shunting the cell with a resistance of $2\Omega$, the balancing length becomes 120 cm. The internal resistance of the cell is:

(1) $4\Omega$
(2) $2\Omega$
(3) $1\Omega$
(4) $0.5\Omega$

38. A metallic spherical shell has an inner radius $R_1$ and outer radius $R_2$. A charge $Q$ is placed at the centre of the spherical cavity. What will be surface charge density on the inner surface:

(1) $\frac{Q}{4\pi R_1^2}$
(2) $-\frac{Q}{4\pi R_1^2}$
(3) $\frac{Q}{4\pi R_2^2}$
(4) $-\frac{Q}{4\pi R_2^2}$

39. The resistivity of a potentiometer wire is $40 \times 10^{-8} \Omega$-m and its area of cross-section is $8 \times 10^{-6} \text{m}^2$. If 0.2 amp current is flowing through the wire, the potential gradient will be:

(1) $10^{-3}$ V/m
(2) $10^{-1}$ V/m
(3) $3.2 \times 10^{-2}$ V/m
(4) 1 V/m

40. An infinite number of charges each equal to 0.2$\mu$C are arranged in a line at distances 1m, 2m, 4m, 8m...... from a fixed point. The potential at fixed point is:

(1) 1.80 kV
(2) 2.00 kV
(3) 3.60 kV
(4) 2.25 kV

41. In the circuit shown, the current through 8 ohm is same before and after connecting $E$. The value of $E$ is:

(1) 12 V
(2) 6 V
(3) 4 V
(4) 2 V
42. The electric flux through the surface :-

(i) (ii) (iii) (iv)

(1) In fig. (iv) is the largest.
(2) In fig. (iii) is the least.
(3) In fig. (ii) is same as fig. (iii) but is smaller than fig. (iv)
(4) is the same for all the figures

43. The reading of the ammeter as shown in figure:-

(1) \( \frac{1}{8} \) A
(2) \( \frac{3}{4} \) A
(3) \( \frac{1}{2} \) A
(4) 2 A

44. In the given figure the current through 4Ω resistor is :-

\[ \begin{align*}
1.4A & \quad 20\Omega \\
\quad & \quad 4\Omega \\
\quad & \quad 15\Omega \\
\quad & \quad 10\Omega \\
\end{align*} \]

(1) 1.4 A  (2) 0.4 A  (3) 1.0 A  (4) 0.7 A

45. Two wires A and B made of same material and having their lengths in the ratio 6 : 1 are connected in series. The potential difference across the wires are 3V and 2V respectively. If \( r_A \) and \( r_B \) are the radii of A and B respectively, then \( \frac{r_B}{r_A} \) is :-

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

Use stop, look and go method in reading the question
46. Which is most stable?
   (1) R – C ≡ C
   (2) C\textsubscript{6}H\textsubscript{5}
   (3) CH\textsubscript{2}=CH
   (4) CH\textsubscript{3} – CH\textsubscript{2}

47. \( \phi-NH\xrightarrow{HNO_{2}} \) ?
   (1) \( \phi-NH-NH \)
   (2) \( \phi-N=N \)
   (3) \( \phi=N=N-N=\phi \)
   (4) CH\textsubscript{3}

48. \( \phi-NO\xrightarrow{\text{Electrolysis}} \) ?
   (1) \( \phi-NH-NH \)
   (2) \( \phi-N=N \)
   (3) \( \phi=N=N-N=\phi \)
   (4) NO\textsubscript{2}

49. CH\textsubscript{3} – CH\textsubscript{2} – CH=CH\textsubscript{2} + HBr \( \xrightarrow{\text{absence of peroxide}} \) ?
   (1) CH\textsubscript{3} – CH\textsubscript{2} – CH – CH\textsubscript{2} Br
   (2) CH\textsubscript{3} – CH\textsubscript{2} – CH – CH\textsubscript{2}
   (3) CH\textsubscript{2} – CH\textsubscript{2} – CH – CH\textsubscript{2} – Br
   (4) CH\textsubscript{2} – CH\textsubscript{2} – CH – Br

46. कौन सा विकल्प कर्तव्य है?
   (1) R – C ≡ C
   (2) C\textsubscript{6}H\textsubscript{5}
   (3) CH\textsubscript{2}=CH
   (4) CH\textsubscript{3} – CH\textsubscript{2}

47. \( \phi-NH\xrightarrow{HNO_{2}} \) ?
   (1) \( \phi-NH-NH \)
   (2) \( \phi-N=N \)
   (3) \( \phi=N=N-N=\phi \)
   (4) CH\textsubscript{3}

48. \( \phi-NO\xrightarrow{\text{Electrolysis}} \) ?
   (1) \( \phi-NH-NH \)
   (2) \( \phi-N=N \)
   (3) \( \phi=N=N-N=\phi \)
   (4) NO\textsubscript{2}

49. CH\textsubscript{3} – CH\textsubscript{2} – CH=CH\textsubscript{2} + HBr \( \xrightarrow{\text{absence of peroxide}} \) ?
   (1) CH\textsubscript{3} – CH\textsubscript{2} – CH – CH\textsubscript{2} Br
   (2) CH\textsubscript{3} – CH\textsubscript{2} – CH – CH\textsubscript{2}
   (3) CH\textsubscript{2} – CH\textsubscript{2} – CH – CH\textsubscript{2} – Br
   (4) CH\textsubscript{2} – CH\textsubscript{2} – CH – Br
50. \[ \text{HO} \text{CH}_2\text{OH} + \text{HCl} \stackrel{\Delta}{\longrightarrow} \]

(1) \[ \text{HO} \text{CHCl} \]
(2) \[ \text{HO} \text{CH}_2\text{Cl} \]
(3) \[ \text{HO} \text{C}_2\text{H}_5 \]
(4) \[ \text{HO} \text{C}_2\text{H}_5 \]

51. \[ \phi-\text{OH} \xrightarrow{\text{NaOH}} \text{A} \xrightarrow{\text{CHCl}_3} \text{B} \]
B is :-
(1) \[ \phi-\text{O-CH}_3 \]
(2) \[ \phi-\text{O-C}_2\text{H}_5 \]
(3) \[ \phi-\text{O-} \]
(4) \[ \phi-\text{O-CH}_2\text{CH}_2\text{CH}_3 \]

52. \[ \text{R-Br} \xrightarrow{\text{Mg}} \text{A} \xrightarrow{\text{D}_2\text{O}} \text{B} \]
B is :-
(1) \[ \text{R-D} \]
(2) \[ \text{R-OH} \]
(3) \[ \text{R-OD} \]
(4) \[ \text{R-O-R} \]

53. \[ \text{CH}_3\text{C-H} \xrightarrow{\text{EtMgCl}} \text{H} \]

(1) \[ \text{CH}_3\text{C}-\text{C}_2\text{H}_5 \]
(2) \[ \text{CH}_3\text{C}-\text{H} \]
(3) \[ \text{CH}_3\text{C}-\text{C}_2\text{H}_5 \]
(4) None

54. IUPAC name of \[ \text{Cl}\text{OH} \] is :-
(1) 2-chloro cyclohex-4-enol
(2) 6-chloro cyclohex-3-enol
(3) 3-chlorocyclohex-1-enol
(4) 5-chlorocyclohexen-4-ol

55. \[ \text{CH}_3\text{CH}-\text{ONa}^+ + \text{CH}_3\text{Cl} \]

(1) \[ \text{CH}_3\text{CH} \]
(2) \[ \text{CH}_3\text{CH}-\text{O-CH}_3 \]
(3) \[ \text{CH}_3\text{CH}-\text{O-CH}_3\text{CH}_3 \]
(4) \[ \text{CH}_3\text{CH}-\text{CH}_3 \]

\[ \text{Take it Easy and Make it Easy} \]
56. \[ \text{O} + \text{H}_2\text{N-C-NH-NH}_2 \to ? \]

(1) \[ \text{N-C-NH-NH}_2 \]

(2) \[ \text{N-NH-C-NH}_2 \]

(3) \[ \text{C_\text{NH}_2} \text{NH-NH}_2 \]

(4) \[ \text{NH} \]

57. \[ \text{CH}_3\text{-C≡C-H} \xrightarrow{\text{Hg}^2+\text{H}_2\text{SO}_4, \text{H}_2\text{O}} \]

(1) \[ \text{CH}_3\text{-CH}_2\text{-CH} \text{ O} \text{ O} \]

(2) \[ \text{CH}_3\text{-CCH}_3 \text{ O} \text{ O} \]

(3) \[ \text{CH}_3\text{-CH} = \text{O} \]

(4) \[ \text{CH}_3\text{-CH}-\text{CH}_3 \text{ O} \text{ O} \]

58. \[ \text{CH}_3\text{CH}_3 \xrightarrow{\text{H/\text{KMnO}_4}} ? \]

(1) \[ \text{CH}_3\text{CH} = \text{O} \]

(2) \[ \text{CH}_2\text{COOH} \]

(3) \[ \text{CH}_2\text{OH} \]

(4) \[ \text{C}\text{CH}_3 \]

59. Which has minimum dipole moment ?

(1) \[ \text{CH}_3\text{Cl} \]

(2) \[ \text{CH}_2\text{Cl}_2 \]

(3) \[ \text{CHCl}_3 \]

(4) \[ \text{CCl}_4 \]

60. \[ \text{Cl} \text{C} \text{C} \text{H}_3 \]

has the configuration :-

(1) \[ \text{E-} \]

(2) \[ \text{Z-} \]

(3) \[ \text{R-} \]

(4) \[ \text{S-} \]

61. How many chiral compounds are possible on monochlorination of 2–methyl butane ?

(1) \[ 6 \]

(2) \[ 8 \]

(3) \[ 2 \]

(4) \[ 4 \]

62. \[ \text{O} \text{O} \text{O} \text{O} \text{O} \]

are :

(1) Metamers

(2) Tautomers

(3) Resonating structure

(4) Position isomers
63. \[ \text{C}_6\text{H}_5\text{O} + \text{Zn-Hg/HCl} \rightarrow ? \]

(1) \[ \text{C}_6\text{H}_5\text{Cl} \]  
(2) \[ \text{C}_6\text{H}_5\text{Cl} \]  
(3) OH  
(4) OH

64. \[ \text{CH}_3\text{C-CH}_2\text{C-CH}_2\text{C-CH}_2\text{O} \xrightarrow[\Delta]{\text{NaOH,CaO}} ? \]

(1) \[ \text{CH}_3\text{C-CH}_3 \]  
(2) \[ \text{CH}_3\text{C-CH}_2\text{C-CH}_3 \]  
(3) \[ \text{CH}_3\text{C-CH}_2\text{C-H} \]  
(4) \[ \text{CH}_3\text{C-CH}_2\text{C-CH}_2\text{CH}_3 \]

65. Which is most stable?

(1) \[ \text{C}_6\text{H}_5\text{CH}_2 \]  
(2) \[ \text{C}_6\text{H}_5\text{CH}_2 \]  
(3) \[ \text{C}_6\text{H}_5\text{CH}_2 \]  
(4) \[ \text{C}_6\text{H}_5\text{CH}_2 \]

66. Amongst the following the most basic compound is:

(1) p-nitro aniline  
(2) Acetanilide  
(3) Aniline  
(4) Benzylamine

67. Glycerol is purified by:

(1) Steam distillation  
(2) Vacuum distillation  
(3) Simple distillation  
(4) Fractional distillation
68. Which is most unstable structure of acetic acid?

(1) \(\text{CH}_3\text{C}=\text{CH}_3\) \(\xrightarrow{\text{Na/NH}_3}\) ?
(2) \(\text{CH}_2\text{=CH}_2\) \(\xrightarrow{\text{O/H}_2\text{O} / \text{Zn}}\) ?
(3) \(\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_3\)
(4) \(\text{CH}_2 = \text{CH} = \text{CH} = \text{CH}_2\)

69. \(\phi\text{-H}+(\text{CH}_3\text{CO})_2\text{O} \xrightarrow{\text{AlCl}_3 / \Delta}\) ?

(1) \(\text{COCH}_3\)
(2) \(\text{OCH}_3\)
(3) \(\text{OCOCH}_3\)
(4) \(\text{CH}_2 = \text{O}\)

70. \(\phi\text{-H}+(\text{CH}_3\text{CO})_2\text{O} \xrightarrow{\text{AlCl}_3 / \Delta}\) ?

(1) \(\text{COCH}_3\)
(2) \(\text{OCH}_3\)
(3) \(\text{OCOCH}_3\)
(4) \(\text{CH}_2 = \text{O}\)

71. \(\phi\text{-H}+(\text{CH}_3\text{CO})_2\text{O} \xrightarrow{\text{AlCl}_3 / \Delta}\) ?

(1) \(\text{COCH}_3\)
(2) \(\text{OCH}_3\)
(3) \(\text{OCOCH}_3\)
(4) \(\text{CH}_2 = \text{O}\)

72. \(\text{CH}_3\text{COONa} \xrightarrow{\text{Kolbe's electrolysis}} ?\)

(1) \(\text{CH}_3\text{CH}_3\)
(2) \(\text{CH}_3\text{CH}_2\text{CH}_3\)
(3) \(\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_3\)
(4) \(\text{CH}_3\text{H}\)

73. \(\text{CH}=\text{CH} \xrightarrow{2\text{HBr}} \text{A} \xrightarrow{\text{AlCl}_3 / \Delta}\) B; B is :-

(1) CH = CH
(2) CH = CH
(3) CH = CH
(4) CH = CH

74. \(\phi\text{-H}+(\text{CH}_3\text{CO})_2\text{O} \xrightarrow{\text{AlCl}_3 / \Delta}\) ?
75. Which is most acidic?
(1) [Image of a COOH group with an OH group]
(2) [Image of a COOH group with a CH₃ group]
(3) [Image of a COOH group with an OH group]
(4) [Image of a COOH group with a CH₃ group]

76. In which compound lone pair of electrons on N is localised:
(1) [Image of a molecule with an NH₂ group]
(2) [Image of a molecule with a NH group]
(3) [Image of a molecule with a NH group]
(4) [Image of a molecule with a NH group]

77. Which does not show hyperconjugation?
(1) [Image of a CH₃ group with an OH group]
(2) [Image of a CH₃ group with an OH group]
(3) [Image of a CH₃ group with an OH group]
(4) [Image of a CH₃ group with an OH group]

78. Which is most reactive for SN₁?
(1) [Image of a CH₂Br group with NO₂ group]
(2) [Image of a CH₂Br group with OH group]
(3) [Image of a CH₂Br group with CH₃ group]
(4) [Image of a CH₂Br group with CH₃ group]

79. Intermediate in E₁ reaction is:
(1) C₇⁻
(2) C₇⁻
(3) C₇⁻
(4) Transition state
80. Which is most reactive towards ESR?

\[ \begin{align*}
(1) & \quad \text{OH} \\
(2) & \quad \text{OR} \\
(3) & \quad \text{CH}_3 \\
(4) & \quad \text{NO}_2
\end{align*} \]

81. Which is wrong intermediate in above reaction?

\[ \begin{align*}
(1) & \quad \text{CH}_3 \\
(2) & \quad \text{CH}_2^+ \\
(3) & \quad \text{CH}_3 \\
(4) & \quad \text{All Correct}
\end{align*} \]

82. \( \text{CH}_3\text{CH}_2\text{OH} \xrightarrow{\text{SOCl}_2} \text{A} \xrightarrow{\text{NaNH}_2} \text{B} \), B is :-

\[ \begin{align*}
(1) & \quad \text{CH}_3\text{CH}_2\text{NH}_2 \\
(2) & \quad \text{CH}_2=\text{CH}_2 \\
(3) & \quad \text{CH}=\text{CH}_2 \\
(4) & \quad \text{Cl} \quad \text{NH}_2
\end{align*} \]

83. \( \text{CH}_3\text{C}^=\text{Cl} \xrightarrow{\text{NH}_2} \text{Br}_2 \xrightarrow{\text{KOH}} ? \)

\[ \begin{align*}
(1) & \quad \text{CH}_3\text{CH}_2\text{NH}_2 \\
(2) & \quad \text{CH}_3\text{CH}_2\text{Br} \\
(3) & \quad \text{CH}_3\text{NH}_2 \\
(4) & \quad \text{CH}_3\text{CH}_2\text{OH}
\end{align*} \]

84. Reaction of trans-2-phenyl-1-bromocyclopentane on reaction with alcoholic KOH produces-

\[ \begin{align*}
(1) & \quad \text{4-phenyl cyclopentene} \\
(2) & \quad \text{2-phenyl cyclopentene} \\
(3) & \quad \text{1-phenyl cyclopentene} \\
(4) & \quad \text{3-phenyl cyclopentene}
\end{align*} \]

85. HBr reacts with \( \text{CH}_2=\text{CH} - \text{OCH}_3 \) under anhydrous conditions at room temperature to give -

\[ \begin{align*}
(1) & \quad \text{BrCH}_2\text{CHO and CH}_3\text{OH} \\
(2) & \quad \text{BrCH}_2\text{CH}_2\text{OCH}_3 \\
(3) & \quad \text{H}_3\text{C}^=\text{CHBrOCH}_3 \\
(4) & \quad \text{CH}_3\text{CHO and CH}_3\text{Br}
\end{align*} \]
86. \( \text{CH}_3-\text{CH}=\text{O} \) and \( \text{C}_6\text{H}_5-\text{CH}=\text{O} \) can be distinguished by :-
   (1) Tollens reagent
   (2) Fehling reagent
   (3) Grignard reagent
   (4) \( \text{LiAlH}_4 \)

87. Which is most reactive towards esterification?
   (1) \( \text{COOH} \)
   (2) \( \text{HCOOH} \)
   (3) \( \text{CH}_3\text{COOH} \)
   (4) \( \text{CH}_2\text{CH}_2\text{COOH} \)

88. \( \text{NH}_2 \text{CHCOCl} \) :-
   (1) \( \text{NH}_2\text{Cl} \)
   (2) \( \text{NH}_2\text{COCH}_3 \)
   (3) \( \text{NH}_2\text{COCH}_3 \)
   (4) \( \text{NH}_2\text{COCH}_3 \)

89. \( \text{C}_2\text{H}_5-\text{N} \rightarrow \text{Na}/\text{C}_2\text{H}_5\text{OH} \)
   (1) \( \text{C}_2\text{H}_5-\text{NH}_2 \)
   (2) \( \text{C}_2\text{H}_5-\text{NH}\text{CH}_3 \)
   (3) \( \text{C}_2\text{H}_5-\text{NH}-\text{C}_2\text{H}_5 \)
   (4) \( \text{C}_2\text{H}_5-\text{NH}-\text{C}_2\text{H}_5 \)

90. In the following sequence of reactions
\[
\text{CH}_3\text{CH}_2\text{OH} \xrightarrow{\text{P+I}_2} \text{A} \xrightarrow{\text{Mg/Ether}} \text{B} \xrightarrow{\text{HCHO}} \text{C} \xrightarrow{\text{H}_2\text{O}} \text{D},
\]
then compound 'D' is -
   (1) butanal
   (2) \( \text{n--butyl alcohol} \)
   (3) \( \text{n--propyl alcohol} \)
   (4) propanal
91. Read the following four statements (A - D) and answer as asked next to them :-
(A) In asexual reproduction, offspring produced with or without involvement of gametes
(B) In asexual reproduction clones are formed
(C) Asexual reproduction is very common in single celled organisms
(D) Buds of *Hydra* is the method of sexual reproduction
How many of the above statements are correct
(1) Four (2) One (3) Three (4) Two

92. When genes were grouped on same chromosome, some genes were loosely linked then they show-
(1) Very low recombination
(2) Higher recombination
(3) No new combination
(4) Very low parental

93. In plants, homothallic [monoecions] condition represent :-
(1) Unisexual (2) Bisexual
(3) Asexual (4) None of the above

94. A x-linked gene has 15 alleles then what will be possible genotypes in population :
(1) 120 (2) 110 (3) 100 (4) None

95. In diploid organisms, specialised cells called meiocytes divided by :-
(1) Mitosis (2) Meiosis
(3) Amitosis (4) Endomitosis

96. Splicing represent dominance of :-
(1) RNA world (2) DNA world
(3) Protein world (4) Virus

97. Read the following four (A - D) statements :-
(A) Embryo development
(B) Zygote formation
(C) Fusion of gametes
(D) Transfer of gametes
How many of the above statements are events of prefertilization :-
(1) Three (2) Two (3) Four (4) One

98. Which statement is true for flavr-savr tomato-
(1) It shows delayed ripening
(2) Polygalacturonase enzyme is totally absent
(3) It's nutritional value is less
(4) It has more polygalacturonase enzyme
99. Given below is the diagram of fruits of flowering plant. Identify the parts labelled A and B:

![Diagram of fruits of flowering plant]

1. A - Seed, B - Embryo
2. A - Seed coat, B - Embryo
3. A - Pericarp, B - Seed
4. A - Ectocarp, B - Mesocarp

100. Modified phenotypic ratio in lethal gene is:

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

101. When female gametophyte is directly formed from diploid cell of sporophyte without meiosis is called:

(1) Diplospory  (2) Apospory  (3) Apogamy  (4) Parthenogenesis

102. 100% parental combination are formed in case of:

(1) Independent assortment  (2) Perfect linkage  (3) Incomplete linkage  (4) Partial dominance

103. Which of the following statements are correct for sexually reproducing flowering plants:

(A) Formation of diploid zygote is universal feature
(B) Zygote is formed inside the ovule
(C) Ovule develop into a embryo
(D) The ovary develop into a seed

104. In lathyrus odoratus purple flower colour is expressed by complementary effect of two non allelic gene A & B. Which statement is true for genotype AAbb:

(1) Flower colour in purple
(2) Chromogen intermediate is formed
(3) Raw material does not convert into chromogen
(4) Anthocyanin pigment is formed

105. Inside the mature seed, which structure is the progenitor of next generation:

(1) Nucellus  (2) Endosperm  (3) Pericarp  (4) Embryo
106. In male grass hoppers and moths there are two pairs of autosomes and : -
   (1) x only  (2) x and y  (3) y-only  (4) None

107. Consider the following Four statements (A - D) and select the option which includes all the incorrect ones only :-
   (A) A typical anther of Angiosperm is bisporangiate
   (B) Sporogenous tissues present in centre of microsporangium
   (C) Microsporogenesis process take place inside the pollen sac
   (D) The pollen grains represent the sporophyte Option
   (1) Statements A, B, C  (2) Statements C, D  (3) Statements B, C  (4) Statements A, D

108. DNA finger printing involves identifying differences in some specific regions in DNA, called as : -
   (1) Repetitive DNA  (2) Coding DNA  (3) Single nucleotide polymorphism  (4) Selfish DNA

109. Read the following four statements (A - D) and answer as asked next to them :-
   (A) Hard outer layer of pollen grain called exine
   (B) Vegetative cell of pollen grain is bigger
   (C) Pollen grains are rich in nutrients
   (D) Viability of pollen grain is remains same in plants

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

110. Regulation of lac-operon by repressor is referred to as : -
   (1) Negative control  (2) Positive control  (3) Both one and Two  (4) None
111. Given below is the diagram of embryosac. In which of the option, all the four options A, B, C and D correct :-

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>Antipodals</td>
<td>Synergids</td>
<td>Egg cell</td>
<td>Polar nuclei</td>
</tr>
<tr>
<td>(2)</td>
<td>Synergids</td>
<td>Antipodals</td>
<td>Central cell</td>
<td>Egg cell</td>
</tr>
<tr>
<td>(3)</td>
<td>Antipodals</td>
<td>Polarnuclei</td>
<td>Central cell</td>
<td>Egg cell</td>
</tr>
<tr>
<td>(4)</td>
<td>Synergids</td>
<td>Polarnuclei</td>
<td>Secondary nucleus</td>
<td>Egg cell</td>
</tr>
</tbody>
</table>

112. In a bisexual plant like pisum, sex is determined :-
(1) Before fertilization
(2) After fertilization
(3) At the time of fertilization
(4) None of these

113. Which of the group of crop plants, propagated by vegetative propagation ?
(1) Potato, Papaya, Banana
(2) Onion, Coriander, Lime
(3) Groundnut, Cashewnut, Ginger
(4) Sugarcane, Ginger, Potato

114. The repressor of the operon is synthesized by the i-gene :-
(1) All the time
(2) Specific time
(3) In the presence or inducer
(4) None
115. Which of the following statements are correct:
(A) In bisexual flower, removal of anther is called
esmulation
(B) Zygote is formed by triple fusion
(C) Flies are attracted towards the foul odours of
flowers
(D) Nectar and pollen grains are the usual floral
reward
(1) Four (2) Two (3) Three (4) One

116. The lac operon consists of:
(1) One regulatory gene and three structural gene
(z, y, a)
(2) Three regulatory gene and one structural gene
(3) One regulatory gene and many structural gene
(4) One regulatory gene and one structural gene

117. Match the column-A with the column-B and
choose the correct answer:

<table>
<thead>
<tr>
<th>Column - A</th>
<th>Column - B</th>
</tr>
</thead>
<tbody>
<tr>
<td>(A) Autogamy</td>
<td>Pollination in between two flower</td>
</tr>
<tr>
<td></td>
<td>of some plant</td>
</tr>
<tr>
<td>(B) Chasmogamy</td>
<td>Pollination in closed flower</td>
</tr>
<tr>
<td>(C) Cleistogamy</td>
<td>Pollination in the same flower</td>
</tr>
<tr>
<td>(D) Geitonogamy</td>
<td>Pollination in opened flower</td>
</tr>
</tbody>
</table>

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

118. Which one of the following is not the part of
t-RNA:
(1) Anticodon arm
(2) Dihydouridine arm
(3) Amino acid arm
(4) Codon arm

119. Which of the following is not a connotation of
theory of special creation?
(1) All living organism that we see, today were
created as such
(2) Earth is about 4000 years old
(3) Origin of life took place from nonliving matter
(4) The diversity was always the same since
creation and will be the same in future

115. निम्नलिखित तथ्यों को सही नहीं हैं:
(A) द्रियालड़ी गूढ़ पूण्ये प्रजातियों विचार न हैं, वे सम
भागी हो सकते हैं।
(B) गृह मनमाना निम्नां प्रजातियों के डांड़ तो ही हैं।
(C) पूड़खंड गूढ़ पूण्ये की मूल्यांग जो ओर अन्यों तो
हैं।
(D) सक्रण द तक। पशु पक्षी पूंगे द्वारा प्राप्त आंध पिलोने हैं।
(1) चार (2) दो (3) तीन (4) फु

116. लैक ओपरन का निर्माण होता है:
(1) एक निर्यंत्रक जन और तीन संरचना जन (x, y, a)
(2) तीन निर्यंत्रक जन तक। १० संरचना जन
(3) निर्यंत्रक जन और स्वतंत्र संरचना जन
(4) निर्यंत्रक जन और सामान्य संरचना जन

117. रत्न-ए और रत्न-ब के सह भिन्न नहीं हैं?

<table>
<thead>
<tr>
<th>रत्न - कॉलन - ए</th>
<th>रत्न - कॉलन - ब</th>
</tr>
</thead>
<tbody>
<tr>
<td>(A) रत्न: पार पकाई</td>
<td>i) एक ही अंश के दो अलग-अलग पूण्ये के प्रमाण पकाई</td>
</tr>
<tr>
<td>(B) उ - मी रंग पकाई</td>
<td>ii) दु रंग पूण्ये के अंश पकाई</td>
</tr>
<tr>
<td>(C) अनु - मी रंग पकाई</td>
<td>iii) एक ही अंश पूण्ये के प्रमाण पकाई</td>
</tr>
<tr>
<td>(D) खे खे पूण्ये पकाई</td>
<td>iv) रंग पूण्ये में प्रमाण पकाई</td>
</tr>
</tbody>
</table>

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

118. t-RNA में निम्न नहीं है:
(A) एडोलों नैम. बुज
(B) डोयोह इडो नैम. बुज
(C) अनो नैम. बुज
(D) जोडों नैम. बुज

119. निम्न में से किस नए अंश वर्तमान सुविधा बदल कर आ गया रहना है?
(A) अर्थज्ञान भंग जब यथा अवश्य विचार न हैं, वे सम
भागी हो सकते हैं।
(B) पूर्वों लगे ४००० वर्ष पूर्ण हो गयी हैं।
(C) वाचन की टू पर निष्क्रिय बढ़ा था। से हुई है।
(D) वाल विनियम तथा पर परिवार से ऐसे हो गये हैं।

Your Target is to secure Good Rank in Pre-Medical 2013
120. If a recombinant DNA bearing gene for ampicillin resistance is transferred into E. coli cells and the host cells are spread on agar plates containing ampicillin, then:
   (1) Both transformed and untransformed recipient cells will die
   (2) Both transformed and untransformed cells will grow
   (3) Transformed recipient cell will grow and untransformed recipient cells will die
   (4) Transformed recipient cell will die and untransformed recipient cells will grow

121. Which theory proposed that the first form of life could have come from pre-existing non-living organic molecules:
   (1) Spontaneous generation
   (2) Abiogenesis
   (3) Chemical evolution
   (4) Panspermia

122. In female, somatic cell contains:
   (1) Only autosome
   (2) Only sex chromosome
   (3) Autosome and either x or y-chromosome
   (4) Autosome and x-chromosome

123. Which of the following statement is/are true for chemical evolution:
   (1) The first form of life could have come from pre-existing non-living organic molecule
   (2) The atmosphere was oxidising
   (3) Chemical evolution, experimentally evident by oparin and haldane
   (4) All of these

124. Find out type of disorder in following pedigree:

   (1) Autosomal recessive
   (2) Autosomal dominant
   (3) X-linked recessive
   (4) Maternal disorder

125. Which of the following is an example of divergent evolution:
   (1) Fore limbs of whales and cheetah
   (2) Fore limbs of bat and wings of butterfly
   (3) Eyes of octopus and mammals
   (4) Wings of butterfly and birds
126. Which of the following is true for sickle cell anaemia:

<table>
<thead>
<tr>
<th>Gene</th>
<th>mRNA</th>
<th>Peptide chain</th>
</tr>
</thead>
<tbody>
<tr>
<td>GAG</td>
<td>GAG</td>
<td>Glutamic acid</td>
</tr>
<tr>
<td>(1)</td>
<td></td>
<td>(CTC)</td>
</tr>
<tr>
<td>GAG</td>
<td>GUG</td>
<td>Valine</td>
</tr>
<tr>
<td>(2)</td>
<td></td>
<td>(CTC)</td>
</tr>
<tr>
<td>GTG</td>
<td>GUG</td>
<td>Valine</td>
</tr>
<tr>
<td>(3)</td>
<td></td>
<td>(CAC)</td>
</tr>
<tr>
<td>GTG</td>
<td>GAG</td>
<td>Glutamic acid</td>
</tr>
<tr>
<td>(4)</td>
<td></td>
<td>(CAC)</td>
</tr>
</tbody>
</table>

127. Which of the following is an example of homology:

1. Vertebrate heart of brain
2. Flippers of Penguins and Dolphins
3. Potato and sweet potato
4. None of these

128. In which of the following sex of offspring is determination by egg:

1. Human
2. Insect
3. Bird
4. Drosophila

129. Which of the following statement shows common ancestry:

1. Development of similar adaptive features in different groups of organisms
2. The same structure developed along different directions due to adaptations of different needs
3. Different structures evolving for the same function
4. Different anatomical structures perform same function

130. Represented below is the inheritance pattern of a certain type of traits in human. Which one of the following condition could be an example of this pattern:

Female (Mother) → Male (Father)

<table>
<thead>
<tr>
<th>daughter</th>
<th>son</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Haemophilia</td>
<td>(2) Thalassemia</td>
</tr>
<tr>
<td>(3) Colourblindness</td>
<td>(4) Hypertrichosis</td>
</tr>
</tbody>
</table>

TGT
131. Which of the following is true for potato and sweet potato: -
1. Sweet potato is root modification and potato is stem modification
2. They both shows convergent evolution
3. They both shows example of analogy
4. All statements are true

132. What ratio is expected in offspring if father is colour blind and mother's father was colour blind: -
1. 50% daughters are colour blind
2. 50% sons are normal
3. 50% sons are colour blind
4. All are correct

133. Which of the following statement is/are true: -
1. Fitness is the end result of the ability to adapt and get selected by nature
2. The rate of appearance of new forms is linked to the life cycle or the life span
3. In a mixed population no variant is completely wiped out
4. All are correct

134. Read the four statements (A-D)
(A) Segregation of allele is a random process
(B) Genes which are very tightly linked show higher recombination
(C) Female heterogamy found in most of the insects
(D) Chromosomal aberration are commonly observed in cancer cell

How many above statements are correct: -
1. One 2. Two 3. Three 4. Fours

135. Darwin's finches show a variety of beaks suited for eating large seeds, flying insects and cactus seeds. The ancestral stock of Darwin's finches were: -
1. Seed eater 2. Insect eater 3. Meat eater 4. None of these

136. If a polygenic trait is controlled by three genes then how many offspring in F2 generation will show parental phenotype: -
1. 2 2. 16 3. 64 4. 256
137. The process of evolution of different species in a given geographical area starting from a point and literally radiating to other areas of geography. The phenomenon called as :-
(1) Homology
(2) Adaptive radiation
(3) Convergent evolution
(4) Divergent evolution

138. Which of the following human disorder does not follow Mendelian pattern of inheritance- 
(1) Colourblindness
(2) Sickle cell anaemia
(3) Down's syndrome
(4) Thalassemia

139. What is the difference between Darwin and Devries theory of mutation about evolution :-
(1) Darwinian variations are small and directional while mutations are random and direction less
(2) Darwinian variations are large and directional while mutations are random and directional
(3) Darwinian variations are small and continuous while mutations are random and directional
(4) Darijan variations are large and discontinuous while mutations are random and directionless

140. Modified allele is equivalent to the unmodified allele when it produce :- 
(1) Non functional enzyme
(2) Functional enzyme
(3) No enzyme
(4) None of these

141. Cranial capacity of Homoerectus was about :-
(1) 650-800 cc
(2) 900 cc
(3) 1400 cc
(4) 3000-1600 cc

142. In case of incomplete dominance modified phenotypic ratio is :-
(1) 1 : 1
(2) 1 : 2 : 1
(3) 3 : 1
(4) 1 : 1 : 1 : 1

143. The correct sequence of evolution of man is :- 
(1) Ramapithecus, Dryopithecus, Australopithecus, Homoerectus, Neanderthal man, Homosapians sapians
(2) Australopithecus, Homoerectus, Homohabilis, Neanderthal, Homosapians sapians
(3) Australopithecus, Homohabilis, Homoerectus, Neanderthal, Homosapians sapians
(4) Ramapithecus, Homoerectus, Homohabilis, Neanderthal, Homosapians sapians

137. एकविश्वच न - १० - ११ ग नो विक्षेप ब में विभाजन न पर जिन का प्र क्रम मालकक दु से प्रति १० हो कर अन्य भाव - १० ग घो तक प्रति खिंच हो ना। च घटन ना बढ़ता तै है 
(1) साध हत 
(2) अनु चू ते ली विक्षेप 
(3) अद्ध जिन विभाजन स 
(4) अक रत विभाजन स

138. निष्क ने से कौन सा मानव में प व ज ने बाल यो ग में था ध्वनि के प्रतिशत अनु प्रतिशत नहीं होता है 
(1) ५ का - १ त टर 
(2) सिक्स से ल चूर्ण 
(3) हॉल किट ड, म न 
(4) बॉल ली विक्षेप

139. डांसिन न और रूड़ - ब्री जिके विक्षेप तक हर परिवर्तन न खिंचन न बन भिन्न नहीं है 
(1) डांसिन न की विभाजन न त ए छोटे और रिसाइकल या उर परिवर्तन न यू दी चिकक और रिसाइकल हो न होते हैं 
(2) डांसिन न की विभाजन न त ए बड़े और रिसाइकल या उर परिवर्तन न यू दी चिकक और रिसाइकल होते हैं 
(3) डांसिन न की विभाजन न त ए छोटे और रसाइकल या उर परिवर्तन न यू दी चिकक और रिसाइकल होते हैं 
(4) डांसिन न की विभाजन न त ए बड़े और असाइकल या उर परिवर्तन न यू दी चिकक और रिसाइकल होते हैं 

140. ख - तृतीय विक्षेप, अभ - तृतीय विक्षेप के सत्ता त यहे त जन नो तहे ता है - 
(1) निक्षेप ए इन्ज़म 
(2) क्रिया वो ल ए इन्ज़म 
(3) कोई ए इन्ज़म नहीं 
(4) उ जो करते में से कोई नहीं है द

141. यात्री दे कट सकी का कार ट शी संबंध ग न है 
(1) 650-800 cc
(2) 900 cc
(3) 1400 cc
(4) 3000-1600 cc

142. अनु र ब्राह्मण विक्षेप में ख - तृतीय विक्षेप प्र ख अनु दर ख तम हो ता: 
(1) 1 : 1 
(2) 1 : 2 : 1 
(3) 3 : 1 
(4) 1 : 1 : 1 : 1

143. मानव विक्षेप वस्त्र की अंग है 
(1) राम पिंडा कल डॉ. ये पिंडा कल आ रस्ते ले विक्षेप हो में टाके रस्ते निपट ड श्लाइ त, ये में वशिष्ट संसे दिन 
(2) आ रस्ते ले पिंडा कल टाके रस्ते हे जिल्ला निपट ड श्लाइ त में वशिष्ट संसे दिन 
(3) आ रस्ते ले पिंडा कल में विक्षेप में टाके रस्ते हे जिल्ला निपट ड श्लाइ त में वशिष्ट संसे दिन 
(4) यम विक्षेप में में टाके रस्ते हे जिल्ला निपट ड श्लाइ त हो में वशिष्ट संसे दिन
144. Which of the following is used to deliver desirable gene in to animal cell : -
(1) Normal retrovirus
(2) Disarmed retrovirus
(3) Agrobacterium
(4) E.coli

145. Key concept of Darwin’s theory of Evolution are:-
(1) Branching descent
(2) Natural selection
(3) Use and disuse of organs
(4) Both (1) & (2)

146. Which of the following technique is used for separation and isolation of DNA fragment : -
(1) RFLP
(2) Gel electrophoresis
(3) PCR-technique
(4) Cloning

147. Which of the following statement is true :-
(1) The geological history of earth closely correlates with the biological history of earth
(2) The fitness, according to Darwin, refers ultimately and only to reproductive fitness
(3) Branching descent and natural selection are two key concept of Darwinian theory of evolution
(4) All statements are true

148. In genetic engineering Agrobacterium and retrovirus are used as a vector for cloning gene in plant and animal because : -
(1) They are easily available
(2) They are pathogen
(3) They have ability to transform normal cell into a tumour and cancerous cell
(4) They infect all plant and animal cell

149. What is aneuploidy :-
(1) Loss of a segment of DNA
(2) Loss or gain of one complete chromosome
(3) Change of sequence of genes on chromosome
(4) Deletion or insertion of singlet base pair of DNA

150. Plant of genotype AaBBCc was crossed with another having the genotype aaBbcc. If all genes involved have complete dominance, the phenotypic ratio in first generation plants will be
(1) 1 : 2 : 1
(2) 1 : 1 : 1 : 1
(3) 1 : 3 : 3 : 9
(4) 1 : 1 : 1 : 1 : 1 : 1
151. Microsphere and Coacervates were experimentally produced by:
(1) Urey and Miller
(2) Jacob and Monod
(3) Fischer and Huxley
(4) Sidney Fox and Oparin

152. The dominant alleles A and B each add 2 grm weight to a basic weight (in homozygous recessive condition) of 6g of fruit of a certain plant. What is the fruit weight of plant having all four dominant allele:
(1) 6g
(2) 8g
(3) 14g
(4) 10g

153. The recent ancestors of modern man were:
(1) Java ape man and Peking man
(2) Peking man and Rhodesian man
(3) Rhodesian man and Neanderthal man
(4) Cromagnon man and Neanderthal man

154. In $F_2$ generation of a mendelian trihybrid cross the no of phenotype and genotype are:
(1) Phenotype - 4, Genotype - 16
(2) Phenotype - 8, Genotype - 4
(3) Phenotype - 16, Genotype - 64
(4) Phenotype - 8, Genotype - 27

155. Coacervates were:
(1) Colloidal complexes
(2) Eobionts
(3) Procaryotes
(4) Both (2) & (3)

156. Which is not a birth control technique?
(1) Vaccination
(2) Antibiotic
(3) Saheli
(4) (1) and (2) both

157. Which one gives rise to struggle for existence?
(1) High reproductive rate and limited resources
(2) Limited resources and inheritable variations
(3) Natural selection and limited resources
(4) Natural selection and environmental changes

158. How many of the following is an ARTs:
(a) Tubectomy
(b) Vasectomy
(c) ICSI
(d) IUCD
(e) TVF
(f) CSF
(1) 6
(2) 3
(3) 2
(4) 1
159. Mostly mutations are recessive and being recessive they never eliminated from a population. It is called as 'Hardy weinberg law'. This law is applicable to
(1) Small population
(2) Isolated population
(3) Large population
(4) Island population

160. Information on birth rate, death rate, sex ratio age, distribution of a population can be got from:-
(1) Natality table
(2) Mortality table
(3) Age distribution table
(4) Life table

161. A segment of the DNA has a base sequence : AAG, GAG, GAC, CAA, CCA – which one of the following sequence represents a frame shift mutation :-
(1) AAG, GAG, GAC, CAA, CCA
(2) AAG, AGG, ACC, AAC, CAA
(3) ACG, GAG, GAC, CAG, CCA
(4) AAG, GCG, GAC, CAG, CCA

162. How many of the following determines the carrying capacity of a population :-
(a) Limiting resources
(b) Mortality rate
(c) Natality rate
(d) Predation
(1) 1 (2) 2 (3) 3 (4) 4

163. Find out unmatched –
(A) Jurassic → Origin of First bird
(B) Silurian → Origin of vascular plants
(C) Cambrian → First amphibian dominant
(D) Carboniferous → Origin of Jawless fishes
(E) Cretaceous → Origin of angiosperm
(F) Permian → Origin of mammals like reptiles
(1) A & B (2) C & D (3) A & E (4) D & F

164. Reason of labour pain is :-
(1) High secretion of oxytocin
(2) Low secretion of oxytocin
(3) High secretion of relaxin
(4) Low secretion of relaxin

159. अंग बच्चे उत्पन्न न होने अथवा बच्चे की जान होने वाले भावनाएँ विवरण निम्नलिखित हैं।
(1) छोटी जानें खाना
(2) पूरी तरह से जानें खाना
(3) बड़ी जानें खाना
(4) पूरी तरह से जानें खाना

160. एक जानें खाने के बारे में ज्ञात, युग सारी जानें खाने के साथ, अनुमान लगवाने के लिए जानें खाने से प्राप्त होता है।
(1) ज्ञात, जानें खाना
(2) युग सारी जानें खाना
(3) अनुमान लगवाने के लिए
(4) ज्ञात, जानें खाना

161. एक DNA में ढाई रक्षा की त्रिक्रम इसप्राप्त है: GAG, GAC, CAA, CCA – निम्न में व्यक्त की जानें खाने के साथ, एक ब्रेक- विकेट भूमिका के नहीं करते हैं।
(1) AAG, GAG, GAC, CAA, CCA
(2) AAG, AGG, ACC, AAC, CAA
(3) ACG, GAG, GAC, CAG, CCA
(4) AAG, GCG, GAC, CAG, CCA

162. यह जानें खाने के साथ, शरीर का निदाला रखने के लिए जानें खाने को रखते हैं:–
(a) सेब में भाग नहीं
(b) कुछ जानें खाना
(c) कुछ जानें खाना
(d) ज्ञात, जानें खाना
(1) 1 (2) 2 (3) 3 (4) 4

163. निम्न निम्नलिखित में व्याख्यात के अंग या क्षेत्र के दिग्दर्शन हैं।
(A) जुलै फिक्सा → प्रथम मधमाध में, हां उदय
(B) फिक्स कू फिक्सा → संवहनी पद्धति का उदय
(C) के फिक्स खाना → प्रथम मधमाध में, कृष्ण युग का उदय
(D) को नागरिकांस जानें, 1 विधिन महिलाओं का उदय
(E) फिक्स कू फिक्सा → अवृत्ति घोटाले और दूसरे का उदय
(F) वैषम बना → स्वतंत्र स्वयं खाने का सार्वजनिक उदय
(1) A & B (2) C & D (3) A & E (4) D & F

164. प्रथम प्रत्यक्ष का बारत हैः
(1) अंग की खाने का उदय रूप
(2) रूप की खाने का निदाला रूप
(3) फिक्स कू फिक्सा → अवृत्ति घोटाले का उदय
(4) फिक्स कू फिक्सा → निदाला रूप
165. Which of the following chemicals are responsible for frame shift mutation –
(A) Nitrus acid & mustard gas
(B) DDT & LSD
(C) Proflavin & Acredine
(D) EMS and MMS
(1) Both A & B (2) Only D
(3) Only C (4) Only B

166. Identify stages A, B, C & D respectively :-
(1) Preestrus, Estrus, Metaestrus, Diestrus
(2) Diestrus, Preestrus, Estrus, Metaestrus
(3) Preestres, Diestrus, Metaestrus, Estrus
(4) Diestrus, Estrus, Preestres, Metaestrus

167. Which statement is/are true for stabilising selection:-
(A) It reduces variation.
(B) It does not change the mean value
(C) In stabilising selection evolution is typically very slow
(1) Only A (2) Both A & B
(3) Only C (4) A, B, & C

168. Which type of immunity is provided for the newborn infant from colostrom :-
(1) Active
(2) Passive
(3) Both active & passive
(4) Neither active nor passive

Time Management is Life Management
169. Find out unmatched –
(1) Rhesus  →  Old world monkey
(2) Gibbon  →  Hylobatidae
(3) Neanderthal man  →  Well develop chin present
(4) Homo sapiens sapiens  →  Thumb opposable

170. Which pairs are correct :-
(a) Corpus luteum – Progesterone
(b) Corpus albicans – Progesterone
(c) Theca interna – Estrogen
(d) Sertoli cells – Inhibin
(1) a, b, c  (2) a, c, d  (3) a, b  (4) a, b, c, d

171. The breeds of fowl Japanes onaga dori derived from :-
(1) Mallus mallus  (2) Gallus gallus
(3) Gazella gazella  (4) None of these

172. Read the following statements :-
(A) Relaxin is secreted by ovary
(B) Parturition is induced by a complex neuroendocrine mechanism
(C) The embryo with 8 to 16 blastomeres is called a morula.
(D) Cyclic menstruation extends between menarche and menopause.
How many of the above statements are correct:-
(1) 2  (2) 1  (3) 4  (4) 3

173. Which are homologous organs –
(1) Wing of bat, wing of butterfly
(2) Nose of rabbit, gills of Rohu
(3) Pectoral fin of Rohu, fore limb of horse
(4) Wing of grasshopper, wing of crow

174. Extraembryonic membranes in chick are shown in the given figure. Amnion, chorion and yolksac are labelled in the figure respectively as :-

(i) (ii) (iii) (i) (ii) (iii) (i) (ii) (iii) (i) (ii) (iii)
175. 'Founder effect' is related to:
   (1) Gene recombination and Natural selection
   (2) Genetic drift and origin of new species
   (3) Isolation and Natural selection
   (4) Hybridization and origin of new species

176. Which of the following pairs are correctly matched?
   (i) Blastocoel - blastula of insect
   (ii) Blastopore - blastula of frog
   (iii) Blastocyst - blastula of man
   (iv) Blastodisc - blastula of bony fish
   Codes:
   (1) (ii), (iii) & (iv)
   (2) (i), (iii) & (iv)
   (3) (i), (ii) & (iv)
   (4) (i), (ii) & (iii)

177. If a part of the chromosome get detached and lost during the cell division, this type of mutation is called
   (1) Deletion
   (2) Euploidy
   (3) Inversion
   (4) Transcription

178. Match list-I with list-II:

<table>
<thead>
<tr>
<th>List-I</th>
<th>List-II</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Amnion</td>
<td>(i)</td>
</tr>
<tr>
<td>B. Chorion</td>
<td>(ii)</td>
</tr>
<tr>
<td>C. Allantois</td>
<td>(iii)</td>
</tr>
</tbody>
</table>

   Codes:
   (i) Somatopleure protects the embryo from mechanical shocks
   (ii) Splanchnopleure supplies O₂ and nutrients to the foetus
   (iii) Splanchnopleure develops villi
   (iv) Somatopleure develops villi

   A B C
   (1) (ii) (iv) (i)
   (2) (ii) (i) (iii)
   (3) (i) (iii) (ii)
   (4) (i) (iv) (ii)
179. Testes may be :-

(i) Intra abdominal
(ii) Withdrawn after breeding season, into the body cavity
(iii) Permanently retained in the scrotum.

Examples of these conditions of the testes listed at (i), (ii) and (iii) are to be found in :-

<table>
<thead>
<tr>
<th></th>
<th>(i)</th>
<th>(ii)</th>
<th>(iii)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Chiroptera</td>
<td>Monotremata</td>
<td>Primates</td>
</tr>
<tr>
<td>2</td>
<td>Metatheria</td>
<td>Chiroptera</td>
<td>Most carnivores</td>
</tr>
<tr>
<td>3</td>
<td>Monotremata</td>
<td>Chiroptera</td>
<td>Primates</td>
</tr>
<tr>
<td>4</td>
<td>Metatheria</td>
<td>Some carnivores</td>
<td>Primates</td>
</tr>
</tbody>
</table>

180. Consider the following :-

(I) Vitelline - Primary envelope secreted by the egg itself
(II) Albumen (egg white) - Secondary envelope secreted by the follicle cells.
(III) Outer calcareous shell - Tertiary envelope secreted by the oviduct.

Select the correct answer using the codes given below :-

Codes :
(1) I & II   (2) II & III   (3) I & III   (4) I, II, III