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 along with Your Form No. & Complete Test Details.

Do not open this Test Booklet until you are asked to do so / इस परीक्षा पत्रपत्रिका को जब तक न केवल जब तक न करने वाले
1. The time period (T) of an artificial satellite of the earth depends on the density (d) of the earth (assumed constant) as :-

(1) \( T \propto d \)  
(2) \( T \propto \sqrt{d} \)  
(3) \( T \propto \frac{1}{\sqrt{d}} \)  
(4) \( T \propto \frac{1}{d} \)

2. Two magnets A and B are identical and these are arranged as shown in the figure. Their length is negligible in comparison to the separation between them. A magnetic needle is placed between the magnet at point P which gets deflected through an angle \( \theta \) under the influence of magnets. The ratio of distance \( d_1 \) and \( d_2 \) will be :-

(1) \( \frac{2 \tan \theta}{1/3} \)  
(2) \( \frac{2 \tan \theta}{-1/3} \)  
(3) \( \frac{2 \cot \theta}{1/3} \)  
(4) \( \frac{2 \cot \theta}{-1/3} \)

3. Three planets of same density with radii \( R_1, R_2 \) and \( R_3 \) such that \( R_1 = 2R_2 = 3R_3 \) have escape velocities \( v_1, v_2 \) and \( v_3 \) respectively. Then the value of \( v_1 : v_2 : v_3 \) is :

(1) 1 : 2 : 3  
(2) 3 : 2 : 1  
(3) 2 : 3 : 6  
(4) 6 : 3 : 2

4. 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

5. According to Kepler's law, the period of revolution of a planet (T) and its mean distance from the sun (R) are related by the equation:-

(1) \( T^2R = \text{constant} \)  
(2) \( T^2R^3 = \text{constant} \)  
(3) \( TR^3 = \text{constant} \)  
(4) \( T^3R^3 = \text{constant} \)
6. A magnetic needle is made to vibrate in uniform field \( H \), then its time period is \( T \). If it vibrates in the field of intensity \( 4H \), its time period will be :-
(1) \( 2T \)  (2) \( T/2 \)  (3) \( 2/T \)  (4) \( T \)

7. If \( v_0 \) be the orbital velocity of a satellite in a circular orbit close to earth's surface and \( v_e \) is the escape velocity from the earth, then relation between the two is :-
(1) \( v_0 = v_e \)  (2) \( v_e = \sqrt{2v_0} \)  (3) \( v_e = \sqrt{3v_0} \)  (4) \( v_e = 2v_0 \)

8. The earth's magnetic field at a certain place has a horizontal component 0.3 gauss and the total strength 0.5 gauss. The angle of dip is :-
(1) \( \tan^{-1} \frac{3}{4} \)  (2) \( \sin^{-1} \frac{3}{4} \)  (3) \( \tan^{-1} \frac{4}{3} \)  (4) \( \sin^{-1} \frac{3}{5} \)

9. Two identical spheres of same density each with radius \( r \) are placed so that their centres are at a distance of 6r. The gravitational force of attraction between them will be proportional to :-
(1) \( r^4 \)  (2) \( r^2 \)  (3) \( r^6 \)  (4) \( r^2 \)

10. The magnetic field lines due to a bar magnet are correctly shown in :-

11. What should be the angular velocity of earth about own axis so that a person's weight at equator will be \( \frac{3}{5} \) of his weight at poles ?
(1) \( \sqrt{\frac{g}{R}} \)  (2) \( \sqrt{\frac{2g}{3R}} \)  (3) \( \sqrt{\frac{2g}{5R}} \)  (4) \( \sqrt{\frac{3g}{2R}} \)
12. An ionized gas contains both positive and negative ions. If it is subjected simultaneously to an electric field along the +x direction and a magnetic field along the +z direction, then :-
(1) Positive ions deflect towards +y direction and negative ions towards –y direction
(2) All ions deflect towards +y direction
(3) All ions deflect towards –y direction
(4) Positive ions deflect towards –y direction and negative ions towards +y direction

13. Electric charges of 1µC, –1µC and 2µC are placed in air at the corners A, B and C respectively of an equilateral triangle ABC having length of each side 10 cm. The resultant force on the charge at C is
(1) 0.9 N (2) 1.8 N (3) 2.7 N (4) 3.6 N

14. What is the net force on the square coil :-
(1) $25 \times 10^{-7}$ N moving towards wire
(2) $25 \times 10^{-7}$ N moving away from wire
(3) $35 \times 10^{-7}$ N moving towards wire
(4) $35 \times 10^{-7}$ N moving away from wire

15. A charge Q is fixed at a distance d in front of an infinite metal plate. The lines of force are represented by
(1) (2) (3) (4)
16. When a charged particle moving with velocity \( \vec{v} \) is subjected to a magnetic field of induction \( \vec{B} \), the force on it is non-zero. This implies that:-
(1) Angles between \( \vec{v} \) and \( \vec{B} \) can have any value other the zero and 180°
(2) Angle between \( \vec{v} \) and \( \vec{B} \) is either zero or 180°
(3) Angle between \( \vec{v} \) and \( \vec{B} \) is necessarily 90°
(4) Angle between \( \vec{v} \) and \( \vec{B} \) can have any value other than 90°

17. Which of the following is vector quantity
(1) Current density
(2) Current
(3) Wattage current
(4) Power

18. An electron is projected along the axis of a circular conductor carrying some current. Electron will experience force :-
(1) Along the axis
(2) Perpendicular to the axis
(3) At an angle of 4° with axis
(4) No force experienced

19. In the circuit, the potential difference across PQ will be nearest to
(1) 9.6 V
(2) 6.6 V
(3) 4.8 V
(4) 3.2 V

20. A particle of mass \( M \) and charge \( Q \) moving with speed \( \vec{v} \) describes a circular path of radius \( R \) when subjected to a uniform transverse magnetic field of induction \( B \). The work done by the field when the particle completes one full circle is :-
(1) \( BQv2\pi R \)
(2) \( \left( \frac{Mv^2}{R} \right)2\pi R \)
(3) Zero
(4) \( BQ2\pi R \)

21. The potential difference in open circuit for a cell is 2.2 V. When a 4 \( \Omega \) resistor is connected between its two electrodes the potential difference becomes 2 V. The internal resistance of the cell will be :
(1) 1 \( \Omega \)
(2) 0.2 \( \Omega \)
(3) 2.5 \( \Omega \)
(4) 0.4 \( \Omega \)

22. A strong magnetic field is applied on a stationary electron, then:-
(1) The electron moves in the direction of the field
(2) The electron moves in an opposite direction
(3) The electron remains stationary
(4) The electron starts spinning
23. In the circuit shown, the current through the 5Ω resistor is
   (1) \(8\over 3\) A
   (2) \(9\over 13\) A
   (3) \(4\over 13\) A
   (4) \(1\over 3\) A

24. A proton is moving along Z-axis in a magnetic field. The magnetic field is along X-axis. The proton will experience a force along :
   (1) Negative Y-axis
   (2) Positive Y-axis
   (3) Positive Z-axis
   (4) Negative Z-axis

25. In a metre bridge experiment, resistances are connected as shown in figure. The balancing length \(l_1\) is 55 cm. Now an unknown resistance \(x\) is connected in series with P and the new balancing length if found to be 75 cm. The value of \(x\) is :

\[\begin{align*}
(1) & \frac{54}{12} \Omega \\
(2) & \frac{20}{11} \Omega \\
(3) & \frac{48}{11} \Omega \\
(4) & \frac{11}{48} \Omega
\end{align*}\]

26. The radius of curvature of the path of the charged particle in a uniform magnetic field is directly proportional to :
   (1) The charge on the particle
   (2) The momentum of the particle
   (3) The energy of the particle
   (4) The intensity of the field

27. The resistance of a galvanometer is 25 Ω and it required 50 µA for full deflection. The value of the shunt resistance required to convert it into an ammeter of 5 A is

\[\begin{align*}
(1) & 2.5 \times 10^{-4} \Omega \\
(2) & 1.25 \times 10^{-3} \Omega \\
(3) & 0.05 \Omega \\
(4) & 2.5 \Omega
\end{align*}\]
28. A solid conducting sphere of radius R and total charge q rotates about its diametric axis with constant angular speed \( \omega \). The magnetic moment of the sphere is

\[
(1) \frac{1}{3} qR^3 \omega \\
(2) \frac{2}{3} qR^3 \omega \\
(3) \frac{1}{5} qR^5 \omega \\
(4) \frac{2}{5} qR^3 \omega
\]

29. A potentiometer wire has uniform potential gradient. The specific resistance of the material of the potentiometer wire is \( 10^{-7} \Omega \cdot m \) and the current passing through it is 0.1 A; cross-section of the wire is \( 10^{-6} m^2 \). The potential gradient along the potentiometer wire is:

\[
(1) 10^{-4} V/m \\
(2) 10^{-6} V/m \\
(3) 10^{-2} V/m \\
(4) 10^{-8} V/m
\]

30. A circular loop carrying a current I is placed in the xy plane as shown in the figure. An uniform magnetic field \( \mathbf{B} \) is oriented along the positive Z-axis. The loop tends to:

(1) expand
(2) contract
(3) rotate about x-axis
(4) rotate about y-axis

31. Figure shows electric field lines in which an electric dipole \( \mathbf{P} \) is placed as shown. Which of the following statements is correct:

(1) The dipole will not experience any force.
(2) The dipole will experience a force towards right.
(3) The dipole will experience a force towards left.
(4) The dipole will experience a force upwards.
32. The strength of the magnetic field at a point \( r \) near a long straight current carrying wire is \( B \).

The field at a distance \( r/2 \) will be:

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

33. Refer to the arrangement of charges in Figure and a Gaussian surface of radius \( R \) with \( Q \) at the centre. Then

Gaussian surface

(1) total flux through the surface of the sphere is \( \frac{Q}{\varepsilon_0} \).

(2) field on the surface of the sphere is \( \frac{-Q}{4\pi\varepsilon_0 R^2} \).

(3) flux through the surface of sphere due to \( 5Q \) is zero.

(4) field on the surface of sphere due to \(-2Q \) is same everywhere.

34. A closed loop carrying a current \( I \) lies in the \( xz \) plane. The loop will experience a force if it is placed in a region occupied by uniform magnetic field along:

(1) \( x \)-axis  
(2) \( y \)-axis  
(3) \( z \)-axis  
(4) None of these

35. The acceleration of an electron at a certain moment in a magnetic field \( \vec{B} = 2\hat{i} + 3\hat{j} + 4\hat{k} \) is \( \vec{a} = \hat{x} + \hat{j} - \hat{k} \). The value of \( x \) is:

(1) 0.5  
(2) 1  
(3) 2.5  
(4) 1.5

36. Find the ratio of currents as measured by ammeter in two cases when the key is open and when the key is closed:

(1) 9/8  
(2) 10/11  
(3) 8/9  
(4) None of the above
37. Five charges, \( q \) each are placed at the corners of a regular pentagon. What will be the electric field at \( O \) if the charge \( q \) at \( A \) is replaced by \(-q\)?

\[
\begin{align*}
(1) & \quad \frac{2q}{4\pi \varepsilon_0 a^2} \\
(2) & \quad \text{zero} \\
(3) & \quad \frac{q}{4\pi \varepsilon_0 a^2} \\
(4) & \quad \frac{\sqrt{2}q}{4\pi \varepsilon_0 a^2}
\end{align*}
\]

38. Two concentric conducting spheres of radii \( R \) and \( 2R \) are carrying charges \( Q \) and \(-2Q\) respectively. If the charge on inner sphere is doubled, the potential difference between the two spheres will:

(1) become two times
(2) become four times
(3) be halved
(4) remain same

39. The circuit in Figure shows two cells connected in opposition to each other. Cell \( E_1 \) is of emf 6V and internal resistance 2\( \Omega \); the cell \( E_2 \) is of emf 4V and internal resistance 8\( \Omega \). Find the potential difference between the points \( A \) and \( B \):

\[
\begin{align*}
(1) & \quad 4 \text{ V} \\
(2) & \quad 5.6 \text{ V} \\
(3) & \quad 4.2 \text{ V} \\
(4) & \quad 3.6 \text{ V}
\end{align*}
\]

40. Four dipoles each of magnitudes of charges \( e \) are placed inside a sphere. The total flux of \( \vec{E} \) coming out of the sphere is:

\[
\begin{align*}
(1) & \quad \text{zero} \\
(2) & \quad \frac{4e}{\varepsilon_0} \\
(3) & \quad \frac{8e}{\varepsilon_0} \\
(4) & \quad \text{None of these}
\end{align*}
\]
41. First a set of \( n \) equal resistors of \( R \) each are connected in series to a battery of emf \( E \) and internal resistance \( R \). A current \( I \) is observed to flow. Then the \( n \) resistors are connected in parallel to the same battery. It is observed that the current is increased 10 times. What is ‘\( n \)?’

(1) 8  (2) 4  (3) 6  (4) 10

42. Four positive charges \((2\sqrt{2}-1) Q\) are arranged at the four corner of a square. Another charge \( q \) is placed at the centre of the square. Resulting force acting on each corner charge is zero if \( q \) is:

\[
\begin{align*}
(1) \quad & -\frac{7Q}{4} \\
(2) \quad & -\frac{4Q}{7} \\
(3) \quad & -Q \\
(4) \quad & -(\sqrt{2}+1)Q
\end{align*}
\]

43. Four charges \( q_1 = 1 \mu C, q_2 = 2 \mu C, q_3 = -3 \mu C \) and \( q_4 = 4 \mu C \) are kept on the vertices of a square of side 1 m. Find the electric potential energy of this system of charges.

\[
\begin{align*}
(1) \quad & 0 \\
(2) \quad & -5.1 \times 10^{-2} J \\
(3) \quad & -7.62 \times 10^{-2} J \\
(4) \quad & -9.8 \times 10^{-2} J
\end{align*}
\]

44. The centre of mass of an extended body on the surface of the earth and its centre of gravity:

(1) are always at the same point for any size of the body
(2) are always at the same point only for spherical bodies.
(3) can never be at the same point
(4) is close to each other for objects, say of sizes less than 100 m

45. Find potential difference between A and B in an electric field \( \vec{E} = (2\hat{i} + 3\hat{j} + 4\hat{k}) \frac{N}{C} \) where \( \vec{r}_A = (\hat{i} - 2\hat{j} + \hat{k}) m \) and \( \vec{r}_B = (2\hat{i} + \hat{j} - 2\hat{k}) m \) are the position vector of points A and B respectively:

\[
\begin{align*}
(1) \quad & +1 V \\
(2) \quad & -1 V \\
(3) \quad & +2 V \\
(4) \quad & -2 V
\end{align*}
\]
46. Give the correct order of increasing acidity of the following compounds -

(I) \( \text{OH} \)

(II) \( \text{OH} \)

(III) \( \text{COOH} \)

(IV) \( \text{C}=\text{CH} \)

1. \( \text{II} < \text{I} < \text{IV} < \text{III} \)
2. \( \text{IV} < \text{II} < \text{I} < \text{III} \)
3. \( \text{I} < \text{II} < \text{IV} < \text{III} \)
4. \( \text{IV} < \text{I} < \text{II} < \text{III} \)

47. Stability of following radical is

\( \text{CH}_2=\text{CH}, \quad \text{CH}_2=\text{CH}_2 \)

I II III IV

1. \( \text{II} > \text{III} > \text{II} > \text{IV} \)
2. \( \text{III} > \text{II} > \text{IV} > \text{I} \)
3. \( \text{III} < \text{II} < \text{I} < \text{IV} \)
4. \( \text{I} < \text{IV} < \text{II} < \text{III} \)

48. Identify the correct order of reactivity in electrophilic substitution reaction of the following compounds -

A

B

C

D

1. \( \text{A} > \text{B} > \text{C} > \text{D} \)
2. \( \text{D} > \text{C} > \text{B} > \text{A} \)
3. \( \text{B} > \text{A} > \text{C} > \text{D} \)
4. \( \text{B} > \text{C} > \text{A} > \text{D} \)

49. Which of the following will give a yellow precipitate of iodoform on heating with \( \text{I}_2 \) and dilute \( \text{NaOH} \) ?

(1) \( \text{CH}_3\text{CCH}_2\text{CH}_3 \)

(2) \( \text{Ph–CH–CH}–\text{CH}_2\text{CH}_3 \)

(3) \( \text{CH}_3\text{COOCOCH}_3 \)

(4) \( \text{I}_2\text{CHCOCH}_2\text{CH}_3 \)

50. The strengths of carbon-halogen bonds follow the order -

1. \( \text{R–F} > \text{R–Cl} > \text{R–Br} > \text{R–I} \)
2. \( \text{R–I} > \text{R–Br} > \text{R–Cl} > \text{R–F} \)
3. \( \text{R–F} > \text{R–I} > \text{R–Br} > \text{R–Cl} \)
4. \( \text{R–Cl} > \text{R–Br} > \text{R–I} > \text{R–F} \)

51. \( \text{R}–\text{X} \rightleftharpoons \text{R}–\text{N}=\text{O} \)

The reagent \( Z \) in the above reaction is -

(1) \( \text{NaNO}_2 \)

(2) \( \text{KNO}_2 \)

(3) \( \text{NaNO}_2 + \text{dill. HCl} \)

(4) \( \text{AgNO}_2 \)
52. CH$_3$Br $\xrightarrow{KCN}$ A $\xrightarrow{+4H}$ CH$_3$CH$_2$NH$_2$

IUPAC name of A is -

(1) Methyl cyanide
(2) Methyl isonitride
(3) Acetonitrile
(4) Ethane nitrile

53. Of the following, which is an $S_N^1$ reaction -

(1) (CH$_3$)$_3$CBr + H$_2$O $\rightarrow$
(2) CH$_3$CH$_2$CH$_2$Cl + I$^-$$\rightarrow$
(3) (CH$_3$)$_3$CBr + CN$^-$$\rightarrow$
(4) CH$_3$CHBrCH$_3$ + OH(alc.) $\rightarrow$

54. Consider the following alcohols.

![Alcohols](image)

The order of decreasing reactivities of these alcohols towards nucleophilic substitution with HBr is

(1) III > I > IV > II  (2) III > I > II > IV
(3) I > III > IV > II  (4) I > III > II > IV

55. Which of the following reactions will not give an isocyanide -

(1) CH$_3$CH$_2$Br + AgCN $\rightarrow$
(2) CH$_3$CH$_2$NH$_2$ + CHCl$_3$ + KOH $\xrightarrow{\text{heat}}$
(3) CH$_3$CH$_2$NHC$\equiv$H + POCl$_3$ $\xrightarrow{\text{heat}}$
(4) CH$_3$CH$_2$CONH$_2$ + P$_4$O$_{10}$ $\xrightarrow{\text{heat}}$

56. A vicinal dihalide is not formed in the reaction-

(1) HOCH$_2$-CH$_2$OH $\xrightarrow{\text{PbO}}$
(2) CH$_3$-CH = CH$_2$ $\xrightarrow{\text{Br}}$
(3) CH=CH $\xrightarrow{\text{HBr}}$ HBr
(4) CH$_3$-CH=CHBr $\xrightarrow{\text{HBr, Peroxide}}$
57. Consider the following sequence of reactions:

\[ \text{Mg} \xrightarrow{(i) \text{Mg}(ii) \text{CO} \hline (iii) \text{H} \} \text{B} \xrightarrow{\text{SOCl}_2} \text{C} \xrightarrow{\text{CH}_3\text{Cl}_2\text{CH}_3} \text{D} \]

Identify A, B, C and D:

A B C D
1. –F –COOH –COCH\_3 –COCH\_2\-CH\_3
2. –CHO –COOH –COCl –COCH\_2\-CH\_3
3. –Br –COOH –COCl –COCH\_2\-CH\_3
4. –Br –COOH –COCl –CHO

58. Esterification is fastest in case of:

1. CH\_3COOH (2) HCOOH (3) CH\_3CH\_2COOH (4) (CH\_3\)\_2CHCOOH

59. Among the following alkenes:

I. \text{1-butene}  
II. \text{cis-2-butene}  
III. \text{trans-2-butene}

the order of decreasing stability is:

1. II > I > III  
2. III > I > II  
3. I > II > II  
4. III > II > I

60. Which types of isomerism is shown by 2,3-dichloro butane?

1. structural  
2. geometrical  
3. optical  
4. diastereomerism

61. Consider the acidity of the carboxylic acids:

(i) PhCOOH (ii) o-NO\_2C\_6H\_4COOH (iii) p-NO\_2C\_6H\_4COOH (iv) m-NO\_2C\_6H\_4COOH

which of the following is the correct order of acidity:

1. i > ii > iii > iv  
2. ii > iv > iii > i  
3. ii > iv > i > iii  
4. ii > iii > iv > i

62. Which of the following on heating with aqueous KOH, produces acetaldehyde?

1. CH\_3COCl  
2. CH\_3CH\_2Cl  
3. CH\_2CICH\_2Cl  
4. CH\_3CHCl\_2

63. The increasing order of the rate of HCN addition to compounds A – D is:

(A) HCHO  
(B) CH\_3COCH\_3  
(C) PhCOCH\_3  
(D) PhCOCH\_3

(A) D < B < C < A  
(B) D < C < B < A  
(C) C < D < B < A  
(D) A < B < C < D

57. **निम्न अंकों के फिस्स**

\[ \text{A} \xrightarrow{(i) \text{Mg}(ii) \text{CO} \hline (iii) \text{H} \} \text{B} \xrightarrow{\text{SOCl}_2} \text{C} \xrightarrow{\text{CH}_3\text{Cl}_2\text{CH}_3} \text{D} \]

A, B, C और D के फिस्स नहीं है।

58. **किस एंट्री के मामले में क्रम हो गा?**

(1) CH\_3COOH  
(2) HCOOH  
(3) CH\_3CH\_2COOH  
(4) (CH\_3\)\_2CHCOOH

59. **निम्न एर्ब ने के रूप से विचार गया क्रम होगा?**

1-डू टॉन -सिस-डू टॉन -ट्रांस-डू टॉन

I II III

(1) II > I > III  
(2) III > I > II  
(3) I > II > II  
(4) III > II > I

60. **2,3-डिच्लोरो बुटने के क्रम किस तरीके से बचत हो?**

(1) से रचना  
(2) जवाब दें  
(3) प्र क्रम  
(4) विचार

61. का बारे में किस संक्षेप आ लाया की आ ले या विचार के लिए जिन?

(i) PhCOOH  
(ii) o-NO\_2C\_6H\_4COOH  
(iii) p-NO\_2C\_6H\_4COOH  
(iv) m-NO\_2C\_6H\_4COOH

निम्न निःक्रियात्मकता क्रमांक में आ लाया की निःक्रियात्मकता क्रम होता है:

(1) i > ii > iii > iv  
(2) ii > iv > iii > i  
(3) ii > iv > i > iii  
(4) ii > iii > iv > i

62. **निम्न में से किस के लिए KOH के साथ गमन करने वाले विद्युत्तल हैं?**

(1) CH\_3COCl  
(2) CH\_3CH\_2Cl  
(3) CH\_2CICH\_2Cl  
(4) CH\_3CHCl\_2

63. **A – D के गर्मी HCN या का कर का बढ़ता क्रम है।**

(A) HCHO  
(B) CH\_3COCH\_3  
(C) PhCOCH\_3  
(D) PhCOCH\_3

(A) D < B < C < A  
(B) D < C < B < A  
(C) C < D < B < A  
(D) A < B < C < D
64. CHO $\xrightarrow{\text{NaOH}}$ CHO

(1) CH$_3$OH (2) CH$_3$OH

(3) COONa (4) All of these

65. Which of the following alkenes is most suitable for the preparation butanone by ozonolysis?

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

66. The name of the compound NH$_2$-CH$_2$-C=CH$_2$ is

(1) Diacetone (2) Acetonamine

(3) Diacetonamine (4) Aminoacetone

67. The conversion CH$_3$CH$_2$CHO $\rightarrow$ CH$_3$CH$_2$CH$_2$OH can not be done by:

(1) NaBH$_4$ (2) Zn/HCl

(3) H$_2$/Ni (4) Na + alcohol

68. The product (A) and (B) of the reaction CH$_3$CH$_2$NH$_2$ + CH$_3$MgBr $\rightarrow$ A + B are:

(1) CH$_3$CH$_2$CH$_3$ and NH$_2$MgBr

(2) CH$_3$CH$_2$NHCH$_3$ and MgBr$_2$

(3) CH$_3$CH$_2$N(CH$_3$)$_2$ and MgBr$_2$

(4) CH$_3$CH$_2$NHMgBr and CH$_4$

69. How many primary amines are possible for the formula C$_4$H$_{11}$N?

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

70. CH$_3$NH$_2$ + CHCl$_3$ + 3KOH $\rightarrow$ X + Y + 3H$_2$O; compounds X and Y are:

(1) CH$_3$CN + 3KCl

(2) CH$_3$NC + 3KCl

(3) CH$_3$CONH$_2$ + 3KCl

(4) CH$_3$CN + K$_2$CO$_3$
71. Which of the following reactions does not yield an amine?
   (1) RX + NH₃ →
   (2) RCH=NOH → Na\(\text{C}_2\text{H}_4\text{OH}\)
   (3) RCN + H₂O → H\(^+\)
   (4) RCONH₂ → Na\(\text{C}_2\text{H}_4\text{OH}\)

72. The product formed in the reaction
   \[\text{NH}_2\text{NaNO}_2\text{dil. HCl, 0ºC}\]
   (1) OH
   (2) CH₃OH
   (3) OH
   (4) all of the above

73. Which has acidic H?
   (1) CH₃-C≡C-CH₃
   (2) CH₂=CH₂
   (3) CH₃=CH
   (4) CH₃-CH=CH₂

74. Which of the following compounds will give silver mirror test?
   (1) CH₃COOH
   (2) HCOOH
   (3) CH₃CO.COOH
   (4) None

75. Give systematic name of the following:
   CH₃-CH=CHO
   (1) 2-cyclobutyl propanal
   (2) 2-cyclobutyl-2-methyl ethanal
   (3) 2-cyclobutyl propane-3-al
   (4) cyclobutane propane-1-al

76. Which one of the following is the strongest base in aqueous solution?
   (1) Trimethylamine
   (2) Aniline
   (3) Dimethylamine
   (4) Methylamine

77. A liquid was mixed with ethanol and a drop of concentrated H₂SO₄ was added. A compound with a fruity smell was formed. The liquid was:
   (1) CH₃COCH₃
   (2) CH₃COOH
   (3) CH₃OH
   (4) HCHO

78. Which cannot show tautomerism?
   (1) CH₃NO₂
   (2) CH₃CH₂NO₂
   (3) CH₃-CH-NO₂
   (4) CH₃-C-NO₂

---

71. निम्न में से कौन सा अभ्यासिक से फ्री न नहीं बनते हैं
   (1) RX + NH₃ →
   (2) RCH=NOH → Na\(\text{C}_2\text{H}_4\text{OH}\)
   (3) RCN + H₂O → H\(^+\)
   (4) RCONH₂ → Na\(\text{C}_2\text{H}_4\text{OH}\)

72. निम्न अभ्यासिक में उत्पन्न बनते हैं
   \[\text{NH}_2\text{NaNO}_2\text{dil. HCl, 0ºC}\]
   (1) OH
   (2) CH₃OH
   (3) OH
   (4) उसे बता करें

73. किसके आकार में हैं?
   (1) CH₃-C≡C-CH₃
   (2) CH₂=CH₂
   (3) CH₃=CH
   (4) CH₃-CH=CH₂

74. निम्न में से कोनसा बौनी शर्क और पर्यावरण देने गए?
   (1) CH₃COOH
   (2) HCOOH
   (3) CH₃CO.COOH
   (4) कोई नहीं

75. निम्न का क्रमबद्ध मान है?
   CH₃-CH=CHO
   (1) 2-सिस लेन यू टो लाइन पेन ने ला
   (2) 2-सिस लेन यू टो फ्रीशल लाई पेन ने ला
   (3) 2-सिस लेन यू टो अच्युन देन पेन
   (4) सिस लेन यू टो टप्पों पेन

76. निम्न में से कोने फाजी चालक में प्रबल क्स होते हैं
   (1) तू इंच दिल लेन (2) फ्री लेन
   (3) टू इंच दिल लेन (4) इंच लेन

77. क्फलवाला ठंडा का छोटे नह है तो स्थान मिश्रण करने के फल तो उसके क्फल स्वस्थ हो गये। क्फलों जस गांध वाले योगिया बन आ गये। वह तल पदा ठंडा
   (1) CH₃COCH₃
   (2) CH₃COOH
   (3) CH₃OH
   (4) HCHO

78. कौन चला बनता नहीं दाँत ते हैं
   (1) CH₃NO₂
   (2) CH₃CH₂NO₂
   (3) CH₃-CH-NO₂
   (4) CH₃-C-NO₂
79. H\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_-BrCl is :-

(1) R–  (2) S–  (3) E–  (4) Z–

80. \( \begin{array}{c}
\text{CH}_3\text{Cl} \\
\text{Alc. KOH}
\end{array} \)

\( \xrightarrow{\text{CHCl}_3} \)

\( A \xrightarrow{\text{Zn}} B \)

A and B are :-

(1) \( \text{OH} \text{COOH} \), \( \text{COOH} \)

(2) \( \text{OH} \text{CHO} \), \( \text{CHO} \)

(3) \( \text{OH} \text{CHO} \), \( \text{CHO} \)

(4) \( \text{OH} \text{COOH} \), \( \text{COOH} \)

81. \( \text{CH}_3\text{O–CH}_3 + \text{CH}_3\text{C–Cl} \xrightarrow{\Delta} ? \)

(1) \( \text{CH}_3\text{C–OC}_2\text{H}_5 \)

(2) \( \text{CH}_3\text{C–CH}_3 \)

(3) \( \text{CH}_3\text{C–OCH}_3 \)

(4) \( \text{CH}_3\text{C–CH}_2\text{Cl} \)

82. \( \begin{array}{c}
\text{O} \\
\text{N} \equiv \\
\text{C}
\end{array} \)

\( \xrightarrow{\text{LiAlH}_4} \)

\( B \)

B is :-

(1) \( \phi\text{CH}_2\text{NH}_2 \)

(2) \( \phi\text{–NH}_2 \)

(3) \( \phi\text{NHCH}_3 \)

(4) \( \phi\text{CN} \)

83. \( \text{C}_6\text{H}_5\text{–Cl} + \text{Na} + \text{CH}_3\text{Cl} \xrightarrow{\text{dry ether}} ? \)

(1) \( \phi\text{CH}_2\text{Cl} \)

(2) \( \phi\text{CH}_3 \)

(3) \( \phi\text{CH}_2\text{CH}_3 \)

(4) \( \phi\text{CH}_2\text{CH}_2\text{Cl} \)

84. Which gives racemic mixture with Cl\textsubscript{2}/light :-

(1) \( \text{CH}_3\text{CH}_2\text{CH}_3 \)

(2) \( \text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_3 \)

(3) \( \text{CH}_3\text{–C–CH}_3 \)

(4) \( \text{CH}_3\text{CH}_3 \)

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\text{O} \\
\text{N} \equiv \\
\text{C}
\end{array} \)

\( \xrightarrow{\text{LiAlH}_4} \)

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(2) \( \phi\text{CH}_3 \)

(3) \( \phi\text{CH}_2\text{CH}_3 \)

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(3) \( \text{CH}_3\text{–C–CH}_3 \)

(4) \( \text{CH}_3\text{CH}_3 \)
85. \[
\begin{align*}
\ce{CH3} + \ce{BH3 /H2O2/ OH} & \rightarrow ? \\
(1) \ce{CH3OH} & \\
(2) \ce{CH3O} & \\
(3) \ce{CH3} & \\
(4) \ce{HOCH3} &
\end{align*}
\]

86. \[
\begin{align*}
\ce{C6H5H + CH2=CH2 /AlCl3} & \rightarrow ? \\
(1) \ce{-CH2CH3} & \\
(2) \ce{-CH2CH2Cl} & \\
(3) \ce{-CH=CH2} & \\
(4) \ce{-CH=CH2} &
\end{align*}
\]

87. In the chemical reactions
\[
\begin{align*}
\ce{NH2 + H2O2 / HCl, 278 K} & \rightarrow A \\
\ce{CuCN \Delta} & \rightarrow B,
\end{align*}
\]
the compounds A and B respectively are:
(1) Fluorobenzene and phenol
(2) Benzene diazonium chloride and benzonitrile
(3) Nitrobenzene and chlorobenzene
(4) Phenol and bromobenzene

88. Nitrobenzene is purified by:
(1) Simple distillation
(2) Fractional distillation
(3) Vacuum distillation
(4) Steam distillation

89. Which cannot give Lassign's test of nitrogen?
\[
\begin{align*}
(1) \ce{NH2} & \\
(2) \ce{NH2NH2} & \\
(3) \ce{CH3NH2} & \\
(4) \ce{NHNH2} &
\end{align*}
\]

90. \[
\begin{align*}
\ce{Na/NH3} & \rightarrow ? \\
(1) \ce{NH2} & \\
(2) \ce{NH2NH2} & \\
(3) \ce{CH3NH2} & \\
(4) \ce{NHNH2} &
\end{align*}
\]

रचना रहे, मस्त रहे तथा फूँका ईंट, अंक तरहे।
91. In flowering plants meiosis occurs during the formation of :-
(1) Gametophyte from sporophyte
(2) Sporophyte from gametophyte
(3) Sporophyte from sporophyte
(4) Gametophyte from gametophyte

92. In a tetrahybrid plant with genotype AaBbTtRr, two genes are completely linked and two genes show independent assortment. How many types of gametes will be formed by this plant.
(1) One (2) Four
(3) Five (4) Eight

93. In Angiosperm, pollen grain is best defined as:-
(1) Spore mother cell
(2) Male sperm cell
(3) Mature female gametophyte
(4) Immature male gametophyte

94. Mendelian ratio is :-
(1) 3 : 1 (2) 1 : 2 : 1
(3) 1 : 1 : 1 : 1 (4) 2 : 1

95. Consider the following four statements (A-D) and select the options which includes all the correct ones only :-
(A) A haploid parent produces gametes by mitotic division
(B) In seed plants pollen grains are the carriers of male gametes
(C) In Angiosperms internal fertilization take place
(D) Fruit germinate under favourable conditions to produce new plants
(1) A, C, D (2) B, C, D
(3) A, B, C (4) A, B, C, D

96. Which of the following is an example of autosomal dominant character :-
(1) Albinism (2) Colourblindness
(3) Phenyl Ketonuria (4) Poly dactyly

97. Which of the following cell absent in mature pollen grain of angiosperms ?
(1) Generative cell (2) Vegetative cell
(3) Tube cell (4) None of these

98. Among the offspring of a trihybrid cross, the ratio of individual heterozygous for all genes to those having other genotypes is :-
(1) 1 : 8 (2) 1 : 3
(3) 3 : 1 (4) 3 : 2
99. Which of the following structure represents megasporangia :
(1) Pollen sac  (2) Nucellus  (3) Ovules  (4) Ovary

100. Reverse genetics is :
(1) DNA → phenotype  (2) Phenotype → DNA  (3) Phenotype to phenotype  (4) All the above

101. Which of the following structures represents megasporangia :
(1) Pollen sac  (2) Nucellus  (3) Ovules  (4) Ovary

102. Backcross is used for determining :
(1) Purity of gametes  (2) Mutant gene  (3) Genotype of dominant parent  (4) Sibling relationship

103. Given below is the diagram of pollination in plants. Which type of pollination represented through this diagram ?

(1) Anemophily  (2) Entomophily  (3) Hydrophyly  (4) Ornithophily

104. Consider the cross : AaBbCcDdEe x aabbccddee. What proportion of the progeny will phenotypically resemble the first parent :
(1) 9/128  (2) 18/128  (3) 27/128  (4) 55/64

105. Read the following four statements [A - D] carefully :
(A) Stigma serves as landing platform for pollen grains  
(B) Hilum represents the junction between ovule and funicle  
(C) Cells of nucellus have reserve food materials  
(D) Wind pollinated flowers are colourful  
How many of the above statements are correct?
(1) One  (2) Two  (3) Four  (4) Three
106. The modified allele (recessive allele) could be responsible for the production of :-
(1) Less efficient enzyme
(2) Non functional enzyme
(3) No enzyme
(4) All the above

107. Match the column-I (Plants) with column-II (Pollinating agents) and select the correct option:-

<table>
<thead>
<tr>
<th>Column-I (Plant)</th>
<th>Column-II (Pollinating agents)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(A) Callistemon</td>
<td>i. Ants</td>
</tr>
<tr>
<td>(B) Zeamays</td>
<td>ii. Bats</td>
</tr>
<tr>
<td>(C) Kigelia</td>
<td>iii. Sun bird</td>
</tr>
<tr>
<td>(D) Acacia</td>
<td>iv. Air</td>
</tr>
</tbody>
</table>

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

108. A pure tall plant is reared in soil poor in nutrition and reached the size of dwarf plant. This dwarf plant is crossed with another dwarf plant. The phenotype in F_2 generation is most likely to be:-
(1) All dwarf
(2) 50% tall; 50% dwarf
(3) 75% tall; 25% dwarf
(4) Data insufficient

109. After fertilization, seed coat of seed develop from :-
(1) Fruit wall
(2) Embryosac
(3) Chalaza
(4) Integuments

110. Microinjection and gene gun methods the part of:-
(1) Direct gene transfer
(2) Indirect gene transfer
(3) PCR-technique
(4) DNA test

111. In Angiosperms, soon after Fertilization, Zygote becomes ready :-
(1) To store food material
(2) To degenerate
(3) To produce embryo
(4) To produce seed

112. Improvement of human race by using gene therapy, medical engineering, is known as :-
(1) Euphenics
(2) Euthenics
(3) Eugenics
(4) None
Endosperm in Angiosperms is formed from secondary nucleus:
(1) Before fertilization
(2) At the time of fertilization
(3) During fertilization
(4) After fertilization

Main basis of DNA test is:
(1) RFLP (2) VNTR (3) Intron (4) SCID

Which type of entry of pollen tube into the embryosac represented by diagram given below:

113. Your Target is to secure Good Rank in Pre-Medical 2013

114. In Nicotiana 4-alleles \( S_1, S_2, S_3 \) and \( S_4 \) governed self sterility. Which of the following genotype is not possible in progenies:
(1) \( S_2S_3 \) (2) \( S_1S_2 \) (3) \( S_3S_3 \) (4) \( S_3S_4 \)

115. In Angiosperm number of chromosomes 12 in megaspore mother. What shall be the number of chromosomes in its endosperm?
(1) 24 (2) 36 (3) 18 (4) 12

116. 'TETRA' and 'ANDI' are:
(1) Cloned monkey (2) Cloned sheep
(3) Cloned cat (4) Transgenic sheep

117. Which theory states that life came out of decaying and rotting matter like straw, mud etc.
(1) Special creation (2) Spontaneous generation
(3) Panspermia (4) Biogenesis

118. Inactive repressor is formed in:
(1) Inducible operon (2) Repressible operon
(3) Lac-operon (4) All the above

119. During chemical evolution, the conditions on earth were:
(1) High temperature (2) Volcanic storms
(3) Reducing atmosphere (4) All of the above
122. Passenger DNA mostly used in the form of:
(1) R-DNA (2) c-DNA
(3) S-DNA (4) r-DNA

123. In some animals, the same structure developed along different directions due to adaptations to different needs. This is called as:
(1) Parallel evolution (2) Divergent evolution
(3) Convergent evolution (4) Mega evolution

124. Most commonly used cloning vector of Escherichia coli is:
(1) Ti-plasmid (2) Ri-plasmid
(3) PBR322 (4) PUC19

125. The thorn and tendrils of Bougainvillea and cucurbita represent:
(1) Homology (2) Divergent evolution
(3) Convergent evolution (4) (1) & (2) both

126. Mostly animal cloning is performed by:
(1) Somatic fusion (2) Nuclear transplantation technique
(3) Embryo splitting (4) None

127. Which one is an example of analogy:
(1) Wings of butterfly and mosquito (2) Sweet potato and potato
(3) Wings of bat and birds (4) Fore limbs of man and horse

128. Severo ochoa enzyme (polynucleotide phosphorylase) was helpful in:
(1) Polymerising DNA in a template independent manner
(2) Polymerising RNA in a template independent manner
(3) Enzymatic synthesis of protein (4) Synthesis of lipid

129. Which of the following is an example of analogy:
(1) Eyes of octopus and mammals (2) Potato and sweet potato
(3) Wings of butterfly and birds (4) All of these
130. Arabidopsis is advantageous for plant genetic research because:
(1) It is commercially important as a food crop
(2) It is an endangered species
(3) It is close relative of corn
(4) It is a small plant with a small genome size

131. Homology is based on:
(1) Divergent evolution
(2) Convergent evolution
(3) Parallel evolution
(4) None of these

132. Which statement is true:
(1) Non disjunction is the exception of dominance
(2) Genetic drift is operates in large population
(3) Secondary sexual characters are the example of sex limited characters
(4) In virus both DNA and RNA act as genetic material

133. Which of the following is an example of adaptive radiation:
(1) Different varieties of marsupial in Australia
(2) Different variety of finches that Darwin found in Galapagos Island
(3) Different variety of eutherian mammals
(4) All of these

134. Strength of linkage is more in:
(1) Euchromation part
(2) Heterochromation part
(3) Both (1) & (2)
(4) None

135. Man has bred selected plants and animals for agriculture, horticulture, sport and security. Man has domesticated many improved race of animals and plants. This intensive breeding programme is known as:
(1) Natural selection
(2) Artificial selection
(3) Sexual selection
(4) Reproductive isolation
136. Which of the following statement is true for lac operon in \textit{E. coli} :-
(a) Lac operon consists of one regulatory gene and three structural genes
(b) The i gene codes for inducer
(c) The y-gene codes for permease, which increases permeability of cell to $\beta$-galactosidase
(d) A very low level of expression of lac operon has to be present in cell all the time
(1) a, b, c, d (2) a, c, d (3) a, d (4) c, d

137. When more than one adaptive radiation appeared to have occurred in an isolated geographical area. It is called as :-
(1) Divergent evolution (2) Homology (3) Convergent evolution (4) Atavism

138. Which of the following organisation in India related to GM-research and safety of introducing GM organisms for public services :-
(1) BLAST (2) NCBI (3) GEAC (4) RFLP

139. Regarding comparative anatomy and morphology, mark the wrong entry :-
(1) Pattern of bones of forelimbs of whales and bats
(2) Thorn and tendrils of Bougainvillea and curcubita
(3) Flippers of penguins and Dolphins
(4) Heart of vertebrates

140. Which of the following molecular techniques are used for early diagnosis of disease :-
(1) Polymerase chain reaction (PCR)
(2) Recombination DNA technique
(3) ELISA
(4) All the above

141. Which of the following regarding evolution of man is true :-
(1) Dryopithecus was more man like while Ramapithecus was more ape like
(2) The brain capacity of Homohabilis was about 650-800 cc
(3) Homoerectus probably did not eat meat
(4) Fossils of Homoerectus have been discovered in Ethiopia and Tanzania

142. Which of following organism female gamete contain either X or Y chromosome :-
(1) Human (2) Birds (3) Drosophila (4) Honey bee
143. Prehistoric cave art developed by man about ...... years ago :-
(1) 10,000
(2) 18,000
(3) 75,000-1,00,000
(4) 40,000

144. How many barr bodies are present in female Drosophila with genotype 2A + XXX :-
(1) One
(2) Two
(3) Three
(4) Absent

145. Which one of these is correctly identified in the options given along with its cranial capacity and feature belong to him :-

<table>
<thead>
<tr>
<th>Name</th>
<th>Cranial capacity</th>
<th>Feature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homo-habilis</td>
<td>900 c</td>
<td>Hunted with stone weapons</td>
</tr>
<tr>
<td>Australo-pithecus</td>
<td>650-800 cc</td>
<td>They were hairy and walked like gorillas and chimpanzee</td>
</tr>
<tr>
<td>Neander-thal man</td>
<td>1400 cc</td>
<td>They used hides to protect their body and buried their dead</td>
</tr>
<tr>
<td>Homoer-ctus</td>
<td>650-800 cc</td>
<td>Arose before 1.5 million years, probably ate meat</td>
</tr>
</tbody>
</table>

146. In most of the insects, method of sex determination is :-
(1) XX – XY
(2) XX – XO
(3) n – 2n
(4) Environmental

147. Which one of the following options gives one correct example each of convergent evolution and divergent evolution :-

<table>
<thead>
<tr>
<th>Divergent evolution</th>
<th>Convergent evolution</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Bones of forelimbs of whale and cheetah</td>
<td>Eyes of octopus and mammals</td>
</tr>
<tr>
<td>(2) Wings of butterfly and sparrow</td>
<td>Brain and heart of vertebrates</td>
</tr>
<tr>
<td>(3) Potato and sweet potato</td>
<td>Thorn of bougainvillea tendril of cucumber</td>
</tr>
<tr>
<td>(4) Flippers of penguins and Dolphins</td>
<td>Wings of butterfly and birds</td>
</tr>
</tbody>
</table>

143. का नवने प्रा में तिता फिक फा चित्रत बीि...रतिमा लगभग पूरे बीि
(1) 10,000
(2) 18,000
(3) 75,000-1,00,000
(4) 40,000

144. फ्र 2ए + XXX जेन प्रा मानाली मादा डूंर से फिल में कितना बार- का यह परंपरा 171 तत्त्व गौ बीि
(1) फ्र
(2) दो
(3) तीन
(4) अदृश्य परंपरा त

145. का नवने दिया सके संदर्भ में दिया गया विषय घं उस से खोज गया है, उसे दिमा गी क्ष मा और रट से संबंध विश्लेषण के अंतर फ्र-:

<table>
<thead>
<tr>
<th>नाम</th>
<th>दिमा गी क्ष मा</th>
<th>लक्षण</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) हो में हे फिकिरि c</td>
<td>फ्र बाये के हें था बीं च से निकल बढ़ा 11</td>
<td></td>
</tr>
<tr>
<td>(2) एर डू लेख्स 800 ए</td>
<td>बी देश ले से बी गु र और गी लिख आ और चंपा जे जे ज चालन शे ो ।</td>
<td></td>
</tr>
<tr>
<td>(3) निए-डिसर स्था ए</td>
<td>बी देश ले से बी गु र और गी लिख आ और चंपा जे जे ज चालन शे ो ।</td>
<td></td>
</tr>
<tr>
<td>(4) हो में हे डेस 800 ए</td>
<td>लगभग 800 मिलिक</td>
<td>बां धर उ र म हु ए ए संसार्यता मान संख्या ।</td>
</tr>
</tbody>
</table>

146. अक खंबे बीं टों में दिया विश्वास-संस श की विश्वास है
(1) XX – XY
(2) XX – XO
(3) n – 2n
(4) वात बंधी य

147. निम्न में से कोई नस एक विषय बीच का अभिलाषित विषय साँच और असंय संघ संबंध सही उदी है:- है

<table>
<thead>
<tr>
<th>असंय संघ विषय स</th>
<th>अभिलाषित विषय स</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) देहल और रोय चेत के खार अवट फाँस र स्नान के आ पार के अनुप्रयोग । ने नै नै</td>
<td>नै नै नै नै नै</td>
</tr>
<tr>
<td>(2) तिलु के रो गाँ रंग के पक्ष ले के नानापक्ष के पंख</td>
<td>और रोइ</td>
</tr>
</tbody>
</table>
148. Dosage compensation of the X-Chromosome in fruit fly is by :-
(1) The formation of Barr bodies in female
(2) The formation of Barr bodies in males
(3) Hyperactivity of the X-chromosome in males
(4) Reduced activity of the autosomes in males

149. Key concept of Darvin's theory of evolution are:-
(1) Branching descent
(2) Natural selection
(3) Use and disuse of organs
(4) Both (1) & (2)

150. In Lathyrus odoratus gene A and B are essential in dominant form to produce purple colour then which of the following cross produce only coloured off spring :-
(a) AaBb × aabb (b) aaBB × AAbb
(c) AABB × aabb (d) aaBB × aaBb
(1) a and c (2) a, b
(3) only a (4) b and c

151. In which type of natural selection more individuals acquire peripheral character value at both ends of distribution curve ?
(1) Stabilising selection
(2) Direction selection
(3) Disruptive selection
(4) None of these

152. In Morgan's experiment what is the % of recombinants in case of body colour and eye colour :-
(1) 37.2% (2) 12.5% (3) 2.5% (4) 1.3%

153. Which of the following statement is true regarding point mutation ?
(1) Change in a single base pair of DNA
(2) Deletion of base pair of DNA
(3) Insertion of base pair of DNA
(4) Loss or gain of a segment of DNA

154. In a completely liked trihybrid test cross, phenotypic ratio will be :-
(1) 3 : 1
(2) 1 : 1
(3) 1 : 1 : 1 : 1
(4) 1 : 1 : 1 : 1 : 1 : 1 : 1

155. Name the antibiotic used in the Lederberg's replica plating experiment :-
(1) Neomycin (2) Pencillin
(3) Streptomycin (4) Erythromycin

148. In a completely liked trihybrid test cross, 153.
In Morgan's experiment what is the % of 152.
(1) 37.2% (2) 12.5% (3) 2.5% (4) 1.3%

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(1) Neomycin (2) Pencillin
(3) Streptomycin (4) Erythromycin
156. Which is correct regarding IUCD?
   (1) It is placed in uterus
   (2) It was invented by Graffenberg
   (3) It release Cu²⁺ ion
   (4) All of the above

157. The atmosphere of earth at the time of origin of life was :-
   (1) Oxidizing
   (2) Reducing
   (3) Neither oxidizing nor reducing
   (4) None of these

158. The method of sterilisation is :-
   (1) Loop
   (2) IUCD
   (3) Diaphragm
   (4) Tubectomy

159. In the following pair which is not correctly matched:-
   (1) Protopterus – Connecting link between fishes and reptiles
   (2) Neoplinia – Connecting link between mollusca and annelida
   (3) Platypus – Connecting link between reptiles and mammals
   (4) Archaeopterys – Connecting link between reptiles and birds

160. Which of the following is used to control the human population :-
   (1) Estrogen and progesterone
   (2) IUCD and MTP
   (3) Tubectomy and Vasectomy
   (4) All of the above

161. Which of the following statement is correct
   (1) Homoerectus is the direct ancestor of homo sapians
   (2) Cro-magnon man’s fossils has been found in Ethiopia
   (3) Australopithecus is the real ancestor of Modern man
   (4) Neanderthal man is the direct ancestor of Homoerectus

162. When the environmental conditions are favourable, then population growth curve will be :-
   (1) Sigmoid
   (2) J-shape
   (3) S-shape
   (4) Both 1 and 3
163. In the following pairs, which is not correctly matched:–
(A) Theory of special creation – Father Suarez
(B) Theory of Autogenesis – Aristotle
(C) Cosmozoic theory – Xenophanes
(D) Cosmic panspermia theory – Arrhenius
(E) Big-Bang theory – Lemaitre
(1) A & E (2) B & D
(3) D & E (4) Only C

164. Which pair is not correct:–
(a) Prostate gland - Madeup of 5 lobes
(b) Cowper's glands - It's fluid destory the acidity of urethra
(c) Rectal gland - Found only in male
(d) Seminal vesicle - It's fluid has fructose
(1) a, b (2) b, c
(3) Only c (4) Only c & d

165. The wing of a bird and wing of a butterfly are:–
(1) Homologous but not analogous
(2) Analogous but not homologous
(3) Homologous and analogous
(4) Neither homologous and nor analogous

166. Keeping a normal sexually mature woman in her mid twenties on continuous high doses of progesterone will:–
(1) Causes her to ovulate repeatedly with in each menstrual cycle.
(2) Stimulate the production of mature follicle
(3) Prevent her from producing mature follicle and ovulating
(4) Cause the endometrial lining of her uterus to slough off

167. Paster succeeded in disproving the theory of spontaneous generation because:–
(1) The laboratory was clean
(2) He pulled out the neck of flask into a tube
(3) He was lucky
(4) Yeast used in flask were dead

168. Which of the following would not be present in the body or life style of a terrestrial male animal the reproduce sexually:–
(1) Internal fertilization
(2) A secondary sexual organ
(3) Synchrony of reproductive physiology with the female
(4) Oogenesis
169. Find out unmatched –
(a) Origin of dinosaurs – Jurassic Period
(b) Evolution of Archaeopteryx – Jurassic period
(c) Age of reptiles – Mesozoic area
(d) Age of fishes – Devonian period
(e) Origin of vascular plant – Permian period

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

170. Identify the given type of blastula in above diagram and select correct option related with it's properties:

<table>
<thead>
<tr>
<th>Blastula</th>
<th>Examples</th>
<th>Blastocoel</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) (A) Coeloblastula</td>
<td>Reptiles</td>
<td>Very large</td>
</tr>
<tr>
<td>(2) (D) Periblastula</td>
<td>Insect</td>
<td>Absent</td>
</tr>
<tr>
<td>(3) (C) Discoblastula</td>
<td>Neries</td>
<td>Very Narrow</td>
</tr>
<tr>
<td>(4) (B) Amphiblastula</td>
<td>Mollusca</td>
<td>Absent</td>
</tr>
</tbody>
</table>

171. Given diagram represents which type of chromosomal aberration –

(P Q R S) → (T U V W)

(1) Reverse duplication
(2) Paracentric inversion
(3) Reciprocal translocation
(4) Crossing over

172. Read the following statements: –
(A) Rapid secretion of LH leading to its maximum level during the mid-cycle called LH surge
(B) The presence of 'x' or 'y' chromosome in the sperm determines the sex of the embryo.
(C) Fertilisation takes place at ampullary - isthmic junction.
(D) The tertiary follicle further changes into the Graafian follicle.

How many of the above statements are wrong? -
(1) 2  (2) Zero  (3) 4  (4) 1
173. Darwin's theory of natural selection was partly based on observation of finches on the Galapagos Islands. These birds provide an example of –
(1) Adaptive radiation
(2) Ecological succession
(3) Hybridisation
(4) Convergent evolution

174. In human, fertilization occurs :-
(1) When the egg is in the metaphase of the first meiotic division
(2) When the egg is in the metaphase of the second meiotic division
(3) After the completion of both the meiotic divisions
(4) Before the meiotic divisions

175. A Scientist kept 72 generations of *Drosophila* in darkness even after that the flies had normal eyes, this disproves the law of :-
(1) Synthetic theory.
(2) Natural selection
(3) Use and disuse theory
(4) Acquired characters are inherited

176. A fate map can be use to map out the tissue and organs that the germ layers will become in a frog blastula. What is the fate of the dorsal lip of the blastopore ?
(1) The lining of the gut
(2) Notochord
(3) The epidermal layer of skin
(4) Heart

177. As per the theory of biogenesis, the :-
(1) Spontaneous generation is the key of evolution
(2) Present day organisms have developed from pre-existing living ones
(3) Plants have evolved from animals
(4) Animals have evolved from plants

178. Which of the following statements above human pregnancy and foetal development is false :-
(1) The blastocyst is a stage in foetal development that appears early during the third trimester
(2) A vital connection between the foetal and maternal blood supplies occurs at the placenta
(3) Most of the growth in foetal size occurs during the second and third trimesters
(4) All major organ system have formed by the end of the foetus's first three month of life.
179. Consider the following statements :-
Placenta present in mammals acts as an endocrine tissue and produces.
(a) HCG (b) Oestrogen
(c) Progesterone (d) Testosterone
(1) a & d (2) a & b
(3) a, b & c (4) b, c & d

180. Consider the following :-
(i) Endothelium of foetal blood capillaries
(ii) Connective tissue surrounding foetal blood capillaries
(iii) Foetal epithelium
(iv) Maternal epithelium
(v) Connective tissue surrounding maternal blood capillaries
(vi) Endothelium of maternal blood capillaries
In the case of humans; the placenta comprises which of the above :-
(1) i, ii, iii, iv, v & vi (2) i, v & vi
(3) i, ii & iii (4) ii & vi

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