CLASSROOM CONTACT PROGRAMME
(Academic Session : 2015 - 2016)

LEADER COURSE
PHASE : MLA, MLB, MLC, MLD & MLE
TARGET : PRE-MEDICAL - 2016

Test Type : MAJOR
Test Pattern : AIPMT

TEST DATE : 22 - 02 - 2016

TEST SYLLABUS : SYLLABUS - 01

Important Instructions / महत्वपूर्ण निर्देश

1. A seat marked with Reg. No. will be allotted to each student. The student should ensure that he/she occupies the correct seat only. If any student is found to have occupied the seat of another student, both the students shall be removed from the examination and shall have to accept any other penalty imposed upon them.

2. Duration of Test is 3 Hours and Questions Paper Contains 180 Questions. The Max. Marks are 720.

3. Student cannot use log tables and calculators or any other material in the examination hall.

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

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

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

7. 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 Paper code and Your Form No.

Your Target is to secure Good Rank in Pre-Medical 2016

Corporate Office : ALLEN CAREER INSTITUTE, “SANKALP”, CP-6, Indra Vihar, Kota (Rajasthan)-324005
Phone : +91-744-5156100  info@allen.ac.in  www.allen.ac.in
### PHYSICS
- Basic Mathematics used in Physics, Vectors, Units, Dimensions and Measurement
- Kinematics (Motion along a straight line and Motion in a plane)
- Laws of Motion and Friction
- Work, Energy & Power and Circular Motion, Rotational Motion
- Conservation Laws and Collisions, Centre of Mass

### CHEMISTRY
- Some Basic Concept of Chemistry
- Structure of Atom
- States of Matter: Gases and Liquids
- Thermodynamics
- Equilibrium (Chemical Equilibrium & Ionic Equilibrium)
- Solid State
- Solutions

### BIOLOGY
- **Diversity in the Living World**: (i) The living world
  (ii) Biological Classification (iii) Plant Kingdom
  (iv) Animal Kingdom
- **Structural Organisation in Plants & Animals**: 
  (i) Morphology of Flowering plants (ii) Anatomy of Flowering Plants (iii) Structural Organisation in Animals, Cockroach
- **Structure and Functions**: (i) Cell: The Unit of Life
  (ii) Biomolecules (Protoplasm) (iii) Cell cycle and Cell Division
1. If the units of force, energy and velocity are respectively 10 N, 100 J, 5 m/s, then the units of length, mass and time will be :-
   (1) 10 m, 5 kg, 1 sec  (2) 10 m, 4 kg, 2 sec  
   (3) 10 m, 4 kg, 0.5 sec  (4) 20 m, 5 kg, 2 sec
2. A ball is rolled off the edge of a horizontal table at a speed of 4 m/s. It hits the ground after 0.4 sec. Which statement given below is true ?
   (1) It hits the ground at a horizontal distance 1.6 m from the edge of the table
   (2) The speed with which it hits the ground is 4.0 m/s
   (3) Height of the table is 0.9 m
   (4) It hits the ground at an angle of 60° to the horizontal
3. Three blocks of masses 3 kg, 2 kg and 1 kg are placed side by side on a smooth surface as shown in figure. A horizontal force of 12N is applied to 3 kg block. The net force on 2 kg block is -
   (1) 2 N  (2) 4 N  (3) 6 N  (4) 12 N
4. Check up the only correct statement in the following :-
   (1) A body has a constant velocity and still it can have a varying speed.
   (2) A body has a constant speed but it can have a varying velocity.
   (3) A body having constant speed cannot have any acceleration.
   (4) A body in motion under a force acting upon it must always have work done upon it.
5. A mass of 10 gm moving horizontally with a velocity of 100 cm/s strikes a pendulum bob of mass 10 gm. Length of string is 50 cm the two masses stick together. The maximum height reached by the system now is - (g = 10 m/s²)
   (1) 7.5 cm  (2) 5 cm  (3) 2.5 cm  (4) 1.25 cm
6. According to dimensional analysis which is the incorrect statement?
   (1) Gravitational force + Electrical force
   (2) Acceleration due to gravity + Acceleration due to electric force
   (3) Gravitational field intensity + Electric field intensity
   (4) Gravitational field intensity × Electric field intensity

7. Trajectories of two projectiles are shown in the figure. Let T₁ and T₂ be the time periods and u₁ and u₂ be their speeds of projection. Then -

(1) T₂ > T₁
(2) T₁ > T₂
(3) u₁ > u₂
(4) u₁ < u₂

8. The coefficient of friction between the block m₁ and the inclined plane is μ. If \( m₁ \cos θ = \sin θ \) (shown in figure) then the mass m₁ moves downwards with acceleration:

(1) μg cos θ
(2) \( \frac{μm₁}{m₁+m₂} \) g cos θ
(3) \( \frac{μm₂}{m₁+m₂} \) g cos θ
(4) zero

9. A point P moves in counter clockwise direction on a circular path as shown in figure. The movement of 'P' is such that it sweeps out a length S = t³ + 5, where 'S' is in meter and t is in seconds. The radius of the path is 20 m. The acceleration of 'P' when t = 2 sec. is nearly:

(1) 14 m/s²
(2) 13 m/s²
(3) 12 m/s²
(4) 7.2 m/s²
10. A dancer is taking turns with her arms and legs stretched. When she pulls her arms and legs in -
   (1) The angular velocity decreases
   (2) Her moment of inertia decreases
   (3) The angular velocity remains constant
   (4) The angular momentum increases

11. The angle between the vectors $\vec{A}$ and $\vec{B}$ is $\theta$. Then value of $\vec{A} \cdot (\vec{B} \times \vec{A})$ is :-
   (1) $A^2B$  (2) Zero
   (3) $A^2B\sin\theta$  (4) $A^2B\cos\theta$

12. A ball is projected at an angle $45^\circ$ with horizontal. It passes through a wall of height $h$ at horizontal distance $d_1$ from the point of projection and strikes the ground at a horizontal distance $(d_1 + d_2)$ from the point of projection, then :-
   (1) $h = \frac{2d_1d_2}{d_1 + d_2}$  
   (2) $h = \frac{d_1d_2}{d_1 + d_2}$
   (3) $h = \frac{\sqrt{2}d_1d_2}{d_1 + d_2}$  
   (4) $h = \frac{d_1d_2}{2(d_1 + d_2)}$

13. One end of the massless rope, which passes over a massless and frictionless pulley $P$ is tied to a hook $C$ while the other end is free. Maximum tension that the rope can bear is 360 N with what value of minimum safe acceleration (in ms$^{-2}$) can a monkey of 60 kg move down on the rope -
   (1) 16  
   (2) 6
   (3) 4  
   (4) 8

14. The wheel of a toy car rotates about a fixed axis. It slows down from 400 rps to 200 rps in 2 sec. Then its angular retardation in rad/s$^2$ is :-
   (1) $200\pi$  
   (2) 100
   (3) $100\pi$  
   (4) None of these
15. A thin uniform circular disc of mass $M$ and radius $R$ is rotating in a horizontal plane about an axis passing through its center and perpendicular to its plane with an angular velocity $\omega$. Another disc of same dimension but of mass $\frac{M}{4}$ is placed gently on the first disc coaxially. The angular velocity of the system is:

(1) $\frac{2}{3}\omega$  
(2) $\frac{4}{5}\omega$  
(3) $\frac{3}{4}\omega$  
(4) $\frac{1}{3}\omega$

16. Let the angle between two non-zero vectors $\vec{A}$ and $\vec{B}$ be 120° and its resultant be $\vec{C}$:

(1) $C$ must be equal to $|\vec{A} - \vec{B}|$
(2) $C$ must be less than $|\vec{A} - \vec{B}|$
(3) $C$ must be greater than $|\vec{A} - \vec{B}|$
(4) $C$ may be equal to $|\vec{A} - \vec{B}|$

17. A projectile is thrown into space so as to have maximum horizontal range $R$. Taking the point of projection as origin, the coordinates of the points where the speed of the particle is minimum are:

(1) $(R, R)$  
(2) $\left(\frac{R}{2}, \frac{R}{4}\right)$
(3) $\left(\frac{R}{2}, \frac{R}{4}\right)$  
(4) $\left(\frac{R}{2}, \frac{R}{4}\right)$

18. A constant force $F = m_1g/2$ is applied on the block of mass $m_1$, as shown in fig. The string and the pulley are light and the surface of the table is smooth. The acceleration of $m_1$ is –

(1) $\frac{m_2g}{2(m_1 + m_2)}$ towards right
(2) $\frac{m_2g}{2(m_1 - m_2)}$ towards left
(3) $\frac{m_2g}{2(m_2 - m_1)}$ towards right
(4) $\frac{m_2g}{2(m_2 - m_1)}$ towards left
19. A stone of mass 1 kg tied to a light inextensible string of length \( L = \frac{10}{3} \) m, whirling in a circular path in a vertical plane. The ratio of maximum tension to the minimum tension in the string is 4 the speed of the stone at the highest point of the circle is held constant. (\( g = 10 \) m/s²)

(1) 10 m/s (2) \( 5\sqrt{2} \) m/s (3) \( 10 \) m/s (4) 20 m/s

20. A wheel is subjected to uniform angular acceleration about its axis. Initially its angular velocity is zero. In the first 2 sec. it rotates through an angle \( \theta_1 \), in the next 2 sec. it rotates through an angle \( \theta_2 \). The ratio of \( \frac{\theta_2}{\theta_1} \) is:

(1) 1 (2) 2 (3) 3 (4) 5

21. A body moves so that it follows the following relation

\[
\frac{dv}{dt} = -v^2 + 2v - 1
\]

where \( v \) is speed in m/s and \( t \) is time in second. If at \( t = 0, v = 0 \) then choose the incorrect statement

(1) terminal velocity is 1 m/s
(2) the magnitude of initial acceleration is 1 m/s²
(3) instantaneous speed is \( v = \frac{-1}{1+t} \)
(4) the speed is 1.5 m/s when acceleration is one fourth of its initial value

22. Two particles are projected simultaneously from two points, O and O’ such that \( d \) is the horizontal distance and \( h \) is the vertical distance between them. They are projected at the same inclination \( \alpha \) to the horizontal with the same speed \( v \). The time after which their separation becomes minimum is:

(1) \( d(v \cos \alpha) \)
(2) \( 2d/(v \cos \alpha) \)
(3) \( d/(2v \cos \alpha) \)
(4) \( d/v \)

Koi bhi prashn key filling se galat nahin hona chahiye.
23. Block B moves to the right with a constant velocity $v_0$. The velocity of body A relative to B is:

1. $v_0/2$, towards left
2. $v_0/2$, towards right
3. $3v_0/2$, towards left
4. $3v_0/2$, towards right

24. A projectile is moving at 20 m/s at its highest point. Where it breaks into two equal parts due to an internal explosion. One part moves vertically up at 30 m/s with respect to the ground. Then the other part will move at:

1. 20 m/s
2. $10\sqrt{3}$ m/s
3. 50 m/s
4. 30 m/s

25. The speed of a uniform spherical shell after rolling down an inclined plane of vertical height $h$ from rest is:

1. $\sqrt{\frac{10gh}{7}}$
2. $\sqrt{\frac{6gh}{5}}$
3. $\sqrt{\frac{4gh}{5}}$
4. 2gh

26. A particle is moving along x-axis and graph between square of speed and position of the particle is given in the figure if at $t = 0, x = 0$ m, select incorrect statement –

1. Acceleration of the particle is 15 m/s$^2$ at $t = \frac{1}{2}$ s
2. Acceleration of the particle is 7.5 m/s$^2$ at $t = 1$ s
3. Acceleration of the particle is constant
4. At $t = 1$ s, velocity of particle is 12.5 m/s
27. Two identical heavy spheres of equal mass are placed on a smooth cup of radius 3r where r is radius of each sphere. Then the ratio of reaction force between cup and any sphere to reaction force between two sphere is –

\[
\frac{r}{3r} \quad \frac{r}{3r}
\]

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

28. A block A of mass M rests on a wedge B of mass 2M and inclination \( \theta \). There is sufficient friction between A and B so that A does not slip on B. If there is no friction between B and ground, the compression in spring is -

\[
\frac{Mg \cos \theta}{K} \quad \frac{Mg \cos \theta \sin \theta}{K} \quad \frac{Mg \sin \theta}{K} \quad \text{(4) Zero}
\]

29. Two balls of 5 kg and 10 kg are moving towards each other with velocity 16 m/s and 8 m/s respectively. If after collision they combined, then common velocity of system is :

(1) 15 m/s  (2) 12 m/s  (3) 25 m/s  (4) zero

30. A ring of mass 'm' and radius 'R' has three particles attached to the ring as shown in the figure. The center of the ring has a speed \( V_0 \). The kinetic energy of the system in case of no slipping is -

\[
(1) 6 mV_0^2 \quad (2) 12 mV_0^2 \quad (3) 4 mV_0^2 \quad (4) 8 mV_0^2
\]
31. Figure shows velocity-time graph of a particle which moves along a straight line. Then choose incorrect statement

1. Distance travelled by particle is 212.5 m
2. Distance covered by particle with constant velocity is 100 m
3. Velocity of particle at $t = 25$ sec is 5 m/s
4. Velocity of particle at $t = 15$ sec is 10 m/s

32. In the figure given below, if all surface are assumed to be smooth and the force $F = 100$ N. If acceleration of block B of mass 20 kg is ‘a’ and tension in string connecting block A of mass 20 kg is $T$, then just after when the force $F$ is applied.

1. $T = 0$ and $a = 5\text{m/s}^2$
2. $T = 100\text{ N}$ and $a = 0$
3. $T = 200\text{ N}$ and $a = 5\text{ m/s}^2$
4. None

33. A chain is held on a frictionless table with one-third of its length hanging over the edge. If the chain has a length L and mass M, how much work is required to pull the hanging part back on the table?

1. $MgL$
2. $\frac{MgL}{3}$
3. $\frac{MgL}{9}$
4. $\frac{MgL}{18}$
34. Three rods of the same mass are placed as shown in the figure. What will be the coordinate of centre of mass of the system?

![Image of three rods](image)

(1) \( \left( \frac{a}{2}, \frac{a}{2} \right) \)
(2) \( \left( \frac{a}{\sqrt{2}}, \frac{a}{\sqrt{2}} \right) \)
(3) \( \left( \frac{2a}{3}, \frac{2a}{3} \right) \)
(4) \( \left( \frac{a}{3}, \frac{a}{3} \right) \)

35. Center of mass of two thin uniform rods of same length but made up of different materials & kept as shown, can be if the meeting point is the origin of co-ordinates:

![Image of two rods](image)

(1) \( \left( \frac{L}{2}, \frac{L}{2} \right) \)
(2) \( \left( \frac{2L}{3}, \frac{L}{2} \right) \)
(3) \( \left( \frac{L}{3}, \frac{L}{3} \right) \)
(4) \( \left( \frac{L}{3}, \frac{L}{6} \right) \)

36. A body is thrown vertically upward at \( t = 0 \). It is at a height 80 m at two instants \( t_1 \) and \( t_2 \), then \( t_1 t_2 \) is (Take \( g = 10 \text{ m/s}^2 \)):

(1) 30  
(2) 24  
(3) 16  
(4) 12

37. A uniform chain of mass \( m \) hangs from a light pulley, with unequal lengths hanging from the two sides of the pulley. The force exerted by the moving chain on the pulley is

(1) \( mg \)
(2) \( >mg \)
(3) \( < mg \)
(4) may be any of these depending on the time elapsed

**Use stop, look and go method in reading the question**
38. From a water fall, water is pouring down at the rate of 100 kg per sec. On the blade of a turbine. If the height of the fall be 100 meter, the power delivered to the turbine is approximately equal to—

(1) 100 KW  
(2) 1 W  
(3) 1 KW  
(4) 100 W

39. A man of mass M stands at one end of a plank of length L which lies at rest on a frictionless surface. The man walks to the other end of the plank. If the mass of the plank is \( \frac{M}{3} \), the distance that the man moves relative to the ground is—

(1) \( \frac{3L}{4} \)  
(2) \( \frac{L}{4} \)  
(3) \( \frac{4L}{5} \)  
(4) \( \frac{L}{3} \)

40. Four equal and parallel forces are acting on a rod (as shown in fig.) at distances of 20 cm, 40 cm, 60 cm and 80 cm respectively from one end of the rod under the influence of these forces the rod—

(1) is at rest  
(2) experience a torque  
(3) experience a linear motion  
(4) experience a torque and also linear motion

41. A train travels between two of its station stops with the acceleration schedule shown. \( \Delta t \) is the time interval during which train breaks to stop.

(1) \( \Delta t = 10 \text{ sec} \)  
(2) Distance between two stations is 400 m  
(3) \( \Delta t = 15 \text{ sec} \)  
(4) Distance between two station is 510 m
42. For the arrangement shown in figure the coefficient of friction between the two blocks is \( \mu \). If both the block are identical, then the acceleration of each block is-

\[
(1) \ \frac{F}{2m} - 2\mu g \\
(2) \ \frac{F}{2m} \\
(3) \ \frac{F}{2m} - \mu g \\
(4) \ \text{zero}
\]

43. A body of mass 1 kg is thrown upwards with a velocity of 20 m/s. It momentarily comes to rest after attaining a height of 18 m. How much energy is lost due to air friction ? (\( g = 10 \, \text{m/s}^2 \))

\[
(1) \ 10 \, \text{J} \\
(2) \ 20 \, \text{J} \\
(3) \ 30 \, \text{J} \\
(4) \ 40 \, \text{J}
\]

44. A block 'C' of mass \( m \) is moving with velocity \( V_0 \) and colloids elastically with block A of mass 'm' and connected to another block B of mass '2m' through spring of spring constant K. What is K if \( X_0 \) is compression of spring when velocity of A and B is same ?

\[
(1) \ \frac{mV^2_0}{X^2_0} \\
(2) \ \frac{mV^2_0}{2X^2_0} \\
(3) \ \frac{3mV^2_0}{2X^2_0} \\
(4) \ \frac{2mV^2_0}{3X^2_0}
\]

45. A rigid body can be hinged about any point on the x-axis. When it is hinged such that the hinge is at x, the moment of inertia is given by \( I = 2x^2 - 12x + 17 \), the x-coordinate of center of mass is -

\[
(1) \ x=2 \\
(2) \ x=0 \\
(3) \ x=1 \\
(4) \ x=3
\]
46. At 300 K temperature the standard heat of formation of benzoic acid (s), CO$_2$(g) and H$_2$O(l) are –408, –393 and –286 KJ mol$^{-1}$ respectively. At constant pressure the heat of combustion for benzoic acid will be :-

(1) –2629 KJ (2) –2751 KJ (3) –2808 KJ (4) –3201 KJ

47. $K_b$ for the hydrolysis reaction,

$$B^+ + H_2O \rightleftharpoons BOH + H^+$$

is $1.0 \times 10^{-6}$, the hydrolysis constant of the salt is :-

(1) $10^{-6}$ (2) $10^{-7}$ (3) $10^{-8}$ (4) $10^{-9}$

48. The osmotic pressure of 1M UREA solution at 27$^\circ$C is :

(1) 2.46 atm (2) 24.6 atm (3) 1.21 atm (4) 12.1 atm

49. Hydrolysis of K$_2$S gives solution in which pH > 7 then which of the following ion will hydrolysed

(1) $K^+$ (2) S$^{2-}$

(3) both $K^+$ and S$^{2-}$ (4) HS$^+$

50. The heat evolved in neturalizing a solution of HCN with a strong alkali is 3.0 kcal/mol. The enthalpy of dissociation of HCN is

$(\Delta H_{neutralization}$ of (SA + SB) $= -13.7$ kcal/eq)

(1) 10.2 kcal (2) 13.7 kcal (3) 10.7 kcal (4) 16.7 kcal

51. Total number of atoms present in 1.5 gram molecule of potassium dichromate is :-

(1) 4.5 $N_A$ (2) 1.5 $N_A$ (3) 16.5 $N_A$ (4) 15 $N_A$

52. For a solid with the following structure, the co-ordination number of the point B is :-

(1) 3 (2) 4 (3) 5 (4) 6
53. Aluminium metals form a cubic face centred close packed crystal structure. Its atomic radius is $125 \times 10^{-12}$ m. The length of the side of unit cell is:

(1) 354 pm  
(2) 385 pm  
(3) 250 pm  
(4) 54 pm

54. In an irreversible process $\Delta S_{sys} + \Delta S_{surr}$ is:

(1) $> 0$  
(2) $< 0$  
(3) $\geq 0$  
(4) $= 0$

55. The solubility of Calcium phosphate in water is $x$ mol L$^{-1}$ at 25°C. Its solubility product is equal to:

(1) $108x^2$  
(2) $36x^3$  
(3) $36x^5$  
(4) $108x^5$

56. Which of the following 0.05 M aqueous solution will have the lowest freezing point?

(1) Potassium iodide  
(2) Sodium sulphate  
(3) Sucrose  
(4) Aluminium oxalate

57. The occurrence of a reaction is impossible if:

(1) $\Delta H$ is $+$ ve; $\Delta S$ is also $+$ ve but $\Delta H < T\Delta S$  
(2) $\Delta H$ is $-$ ve; $\Delta S$ is also $-$ ve but $\Delta H > T\Delta S$  
(3) $\Delta H$ is $-$ ve; $\Delta S$ is $+$ ve  
(4) $\Delta H$ is $+$ ve; $\Delta S$ is $-$ ve

58. The solubility product of Pb(OH)$_2$ in water is $1.2 \times 10^{-15}$. The solubility of Pb(OH)$_2$ in a buffer solution of pH = 8 is:

(1) $1.2 \times 10^{-15}$ M  
(2) $1.2 \times 10^{-6}$ M  
(3) $1.2 \times 10^{-3}$ M  
(4) $3.46 \times 10^{-7}$ M

59. Heat of neutralisation of NaOH and HCl is $-57.3$ KJ equivalent$^{-1}$. The heat of ionisation of water per mol in KJ is:

(1) $+57.3$ KJ  
(2) $-57.3$ KJ  
(3) $+57.3 \times 2$ KJ  
(4) $-57.3 \times 2$ KJ

60. The ratio of the difference in energy of electron between the first and second Bohr’s orbits to that between second and third Bohr’s orbit is:

(1) $\frac{1}{3}$  
(2) $\frac{27}{5}$  
(3) $\frac{9}{4}$  
(4) $\frac{4}{9}$
61. The presence of electron in interstitial sites developed by removal of an anion from its lattice point of a crystal lattice is called :-
   (1) Schottky defect
   (2) Frenkel defect
   (3) Metal excess defect
   (4) Metal deficiency defect

62. Which of the following sets of quantum numbers represent the highest energy of an electron :-
   (1) $n = 3$, $\ell = 1$, $m = 1$, $s = + 1/2$
   (2) $n = 3$, $\ell = 2$, $m = 1$, $s = + 1/2$
   (3) $n = 4$, $\ell = 0$, $m = 0$, $s = + 1/2$
   (4) $n = 3$, $\ell = 0$, $m = 0$, $s = + 1/2$

63. The entropy change (In KJ/mol x k) and free energy change (in KJ per mole) when liquid water boils at 1 atm are respectively :
   (latent heat of water = 2.0723 KJ gm$^{-1}$)
   (1) 0, 0 (2) 0.1, 0.1 (3) 0.1, 0 (4) 0, 0.1

64. The density of KBr is 2.73 gm cm$^{-3}$. The length of the unit cell is 654 pm (atomic mass K = 39 and Br = 80) The number of formula units of KBr per unit will are :
   (1) 1 (2) 2 (3) 3 (4) 4

65. The volume of a gas increases by a factor of 2 while the pressure decreases by a factor of 3. Given that the number of moles is unaffected, the factor by which the temperature changes is :
   (1) $\frac{3}{2}$ (2) $3 \times 2$ (3) $\frac{2}{3}$ (4) $\frac{1}{2} \times 3$

66. First separation energy for Li$^{+2}$ ion is :-
   (1) 122.4 eV (2) 3.4 eV
   (3) 10.2 eV (4) 30.6 eV

67. Which aqueous solution has minimum freezing point :-
   (1) 0.01 M NaCl
   (2) 0.005 M C$_2$H$_5$OH
   (3) 0.005 M MgI$_2$
   (4) 0.005 M MgSO$_4$
68. Xenon crystallizes in FCC lattice and edge length of the unit cell is 620 pm. The radius of an atom of Xenon is :
   (1) 219.24 pm  (2) 310 pm
   (3) 259.8 pm  (4) 424.32 pm

69. How many gm-atoms are present in 1.4 gm of Nitrogen?
   (1) 1  (2) 0.1  (3) 0.01  (4) 0.5

70. 12 mole of each A and B allowed to react as given
    \(3A + 2B \rightarrow C + \frac{1}{2}D\). If 60 gm of D is produced then calculate the atomic mass of D :-
    (1) 30  (2) 45  (3) 60  (4) 15

71. Which one of the following has minimum number of molecules :-
   (1) 16 g SO\(_3\) gas
   (2) 12.3 g phosphorous acid
   (3) 12 g propyne gas
   (4) 4.48 L CO gas at STP

72. Using following data, what is the heat released in the formation of CH\(_3\)COCH\(_3\) :-
   \([\text{C–H}] = 99, \quad [\text{C–C}] = 83, \quad [\text{C=O}] = 180 \text{ kcal./mole}\)
   (1) 920  (2) 940  (3) 1000  (4) Can't predict

73. Calculate the work done during reversible isothermal expansion of one mole of an ideal gas from 10 atm to 1 atm at 300 K.
   (1) –1382 Cal  (2) –1382 Joule
   (3) –13.82 KJ  (4) –1.382 Cal

74. The amount of Zinc needed to produce 112 ml of H\(_2\) at STP on reaction with dil H\(_2\)SO\(_4\) will be:
   (1) 0.65 gm  (2) 0.325 gm
   (3) 6.5 gm  (4) 3.25 gm

75. Which mixture forms a buffer when dissolved in 1 lit of water :-
   (1) 0.2 mol NaOH and 0.2 mol HBr
   (2) 0.2 mol NaCl and 0.3 mol HCl
   (3) 0.4 mol HNO\(_2\) and 0.2 mol NaOH
   (4) 0.5 mol NH\(_3\) and 0.5 mol HCl

68. यदि जिनान फलक केन्द्रीय घन का क्रिस्टल्लीक आकृति है जिसकी क्रिस्टलों की लम्बाई 620 pm है तब जिनान परमाणु की व्यास होगी :-
   (1) 219.24 pm  (2) 310 pm
   (3) 259.8 pm  (4) 424.32 pm

69. 1.4 gm नाइट्रोजन में उपस्थित ग्राम परमाणु की संख्या होगी :-
   (1) 1  (2) 0.1  (3) 0.01  (4) 0.5

70. 12 मोल A तथा 12 मोल B को निम्न समीकरण द्वारा क्रिया करने पर 60 gm D प्राप्त होगा। D का परमाणु भार होगा :-
    \(3A + 2B \rightarrow C + \frac{1}{2}D\)
    (1) 30  (2) 45  (3) 60  (4) 15

71. निम्न में से किसमें न्यूटन संख्या में अगुण उपस्थित है :-
   (1) 16 ग्राम SO\(_3\) गैस
   (2) 12.3 ग्राम फर्लिफोरस अम्ल
   (3) 12 ग्राम प्रोपान गैस
   (4) STP पर 4.48 लीटर CO गैस

72. निम्न त्रिकोणों से CH\(_3\)COCH\(_3\) के निर्माण में मुक्त हुई ऊर्जा का परिकलन कीजिए :-
   \([\text{C–H}] = 99, \quad [\text{C–C}] = 83, \quad [\text{C=O}] = 180 \text{ kcal./mole}\)
   (1) 920  (2) 940  (3) 1000  (4) जलत नहीं कर सकते

73. एक मौल आदर्श गैस को 300 K पर उत्क्रमणीय सम्पादीय प्रसार करने पर दब 10 atm से 1 atm हो जाता है, तब किया गया कार्य होगा :-
   (1) –1382 Cal  (2) –1382 Joule
   (3) –13.82 KJ  (4) –1.382 Cal

74. यदि जिंक तनु H\(_2\)SO\(_4\) में क्रिया करके 112 ml H\(_2\) गैस (STP पर) देता है। तब क्रिया का प्रयुक्त शुद्ध भार होगा :-
   (1) 0.65 gm  (2) 0.325 gm
   (3) 6.5 gm  (4) 3.25 gm

75. निम्न में से कौन सा मिश्रण 1 लीटर जल में मिलाने पर बफर बनायेगा :-
   (1) 0.2 mol NaOH तथा 0.2 mol HBr
   (2) 0.2 mol NaCl तथा 0.3 mol HCl
   (3) 0.4 mol HNO\(_2\) तथा 0.2 mol NaOH
   (4) 0.5 mol NH\(_3\) तथा 0.5 mol HCl
76. An acidic buffer solution can be obtained by mixing of solutions of :-
(1) Ammonium hydroxide and ammonium chloride
(2) Barium cyanide and Hydrogen cyanide
(3) Sulphuric acid and sodium sulphate
(4) Sodium hydroxide and sodium chloride

77. What is the potential energy of the electron in the L-shell of the hydrogen atom ?
(1) –13.6 eV (2) –6.8 eV (3) –10.2 eV (4) –3.4 eV

78. Conjugate acid of HF₂⁻ is
(1) HF (2) H₂F₂ (3) F₂⁻ (4) H⁺

79. Which has lowest boiling point at 1 atm pressure ?
(1) 0.1 M KCl (2) 0.1 M Urea (3) 0.1 M CaCl₂ (4) 0.1 M AlCl₃

80. Real gases tend to show maximum deviation from ideal gas behaviour at :-
(1) high temp and high pressure (2) low temp and low pressure
(3) high temp and low pressure (4) low temp and high pressure

81. The maximum number of electrons in an atom having n = 4, m = +1 and s = –1/2 is :-
(1) 1 (2) 2 (3) 3 (4) 6

82. For a salt of strong acid and weak base \( \frac{K_a \times K_b}{K_w} \) is equal to
(1) 1 (2) 0 (3) 2 (4) Ka

83. Assuming complete ionisation, the pH of 0.1 M HCl is 1. The molarity of H₂SO₄ with the same pH is :
(1) 0.1 (2) 0.2 (3) 0.05 (4) 2

86. किन विलयनों को मिलाने पर अम्ली या ब्याप्त विलयन जन्तु जो आकर है :-
(1) अम्लीय हाइड्रोक्साइड तथा अम्लीय क्लोराइड
(2) बेलय क्लोराइड तथा हाइड्रोजन साइडाइड
(3) सल्फर्यूरिक अम्ल तथा सोडियम सल्फेट
(4) सोडियम हाइड्रोक्साइड तथा सोडियम क्लोराइड

77. व्हाइड्रोजन अम्ल के L कोश में इलेक्ट्रॉन की स्थितिज ऊज़ति होती है :-
(1) –13.6 eV (2) –6.8 eV (3) –10.2 eV (4) –3.4 eV

78. HF₂⁻ का संयुक्तीय अम्ल होगा-
(1) HF (2) H₂F₂ (3) F₂⁻ (4) H⁺

79. एक व्हाइड्रोमण्डलीय दाब पर निम में से किस विलयन का क्वांटम निग्रम होगा ?
(1) 0.1 M KCl (2) 0.1 M Urea (3) 0.1 M CaCl₂ (4) 0.1 M AlCl₃

80. एक वाल्यूशन नैश आधार पर निम में से किस विलयन का क्वांटम निग्रम होगा :-
(1) उच्च ताप तथा उच्च दाब (2) कम ताप तथा कम दाब
(3) उच्च ताप तथा कम दाब (4) कम ताप तथा उच्च दाब

81. किसी परमाणु में n = 4, m = +1 तथा s = –1/2 वाले अधिकतम इलेक्ट्रॉनों की संख्या है :-
(1) 1 (2) 2 (3) 3 (4) 6

82. एक व्हाल्यूशन तथा दुर्बल धार के लिए \( \frac{K_a \times K_b}{K_w} \) का मान होगा-
(1) 1 (2) 0 (3) 2 (4) Ka

83. \( 0.1 \) M HCl का pH 1 हो तथा समान pH के लिए H₂SO₄ की सार्वजनिक विस्तार होगी- (माने दोनों अम्ल पूर्ण विविधित हैं)
(1) 0.1 (2) 0.2 (3) 0.05 (4) 2
84. Work for the following process ABCD on a monoatomic gas is:

\[
\begin{align*}
(1) \ w & = -2 P_0 V_0 \ln 2 \\
(2) \ w & = -2 P_0 V_0 \\
(3) \ w & = -P_0 V_0 (1 + \ln 2) \\
(4) \ w & = -P_0 V_0 \ln 2
\end{align*}
\]

85. The mole fraction of a given sample of I\(_2\) in C\(_6\)H\(_6\) is 0.2. The molality of I\(_2\) in C\(_6\)H\(_6\) is:

(1) 0.32 (2) 3.2 (3) 0.032 (4) 0.48

86. For the reactions,

\[
\begin{align*}
A & \rightleftharpoons B; \ K_c = 2 \\
B & \rightleftharpoons C; \ K_c = 4 \\
C & \rightleftharpoons D; \ K_c = 6
\end{align*}
\]

K\(_c\) for the reaction, \(A \rightleftharpoons D\) is:

(1) \(2 + 4 + 6\) (2) \(2 \times 4\)/6 (3) \((4 \times 6)/2\) (4) \(2 \times 4 \times 6\)

87. An isotope of \(^{76}\)Ge is:

(1) \(^{77}\)Ge (2) \(^{73}\)As (3) \(^{77}\)Se (4) \(^{78}\)Sc

88. The ratio of the radii of the first three Bohr orbit in H-atom is:

(1) \(1 : \frac{1}{2} : \frac{1}{3}\) (2) \(1 : 2 : 3\) (3) \(1 : 4 : 9\) (4) \(1 : 8 : 27\)

89. 50 mL of 5.6% KOH (w/v) is added to 50 mL of a 5.6% HCl (w/v) solution. The resulting solution will be:

(1) neutral (2) alkaline (3) strongly alkaline (4) acidic

90. The enthalpy change (\(\Delta H\)) for the reaction, \(N_2(g) + 3H_2(g) \to 2NH_3(g)\) is -92.38 KJ at 298 K. The internal energy change (\(\Delta U\)) at 298 K is:

(1) -92.38 KJ (2) -87.42 KJ (3) -97.34 KJ (4) -89.9 KJ
91. Identify the parts labelled as A, B, C and D in given figure of *Funaria* ::-

![Diagram of Funaria with parts A, B, C, D labelled](image)

**Option:**

<table>
<thead>
<tr>
<th>Part -A</th>
<th>Part -B</th>
<th>Part -C</th>
<th>Part -D</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Capsule</td>
<td>main axis</td>
<td>Leaves</td>
<td>Rhizoids</td>
</tr>
<tr>
<td>(2) Gemma cup</td>
<td>Branch</td>
<td>Leaves</td>
<td>Rhizome</td>
</tr>
<tr>
<td>(3) Strobilus</td>
<td>Stem</td>
<td>Thallus</td>
<td>Roots</td>
</tr>
<tr>
<td>(4) Capsule</td>
<td>Seta</td>
<td>Leaves</td>
<td>Main axis</td>
</tr>
</tbody>
</table>

92. "The biggest spin off in biological knowledge was the recognition of the sharing of similarities among living organisms both horizontally and vertically." Here what is the meaning of horizontally similarities among living organisms ::-

(1) Similarities between different members of same taxonomic ranks
(2) Similarities between different members of different taxonomic ranks
(3) Similarities between different species and genera of same families
(4) Similarities between classes and divisions of plantae kingdom.

**विकल्प:**

<table>
<thead>
<tr>
<th>भाग -A</th>
<th>भाग -B</th>
<th>भाग -C</th>
<th>भाग -D</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) क्रेप्सूल</td>
<td>सूक्ष्म अक्ष</td>
<td>पतियाँ</td>
<td>मूलाभ</td>
</tr>
<tr>
<td>(2) जेमा कप</td>
<td>शाखा</td>
<td>पतियाँ</td>
<td>राइजोम</td>
</tr>
<tr>
<td>(3) स्ट्रोबिलस</td>
<td>तान</td>
<td>शैलस</td>
<td>जंगड़े</td>
</tr>
<tr>
<td>(4) क्रेप्सूल</td>
<td>सीटा</td>
<td>पतियाँ</td>
<td>मूक अक्ष</td>
</tr>
</tbody>
</table>

91. पर्नेरिया के दिखे में A, B, C और D से नामांकित भागों को पहचानिए ::-

"जीव विज्ञानीय ज्ञान का सबसे बड़ा प्रचुरक अंशों द्वारा उच्चामृत्व एवं क्षेत्रीय दोनों ही समानताओं के भागीदारी को मानना था।" यहाँ पर जीवों के मध्य क्षेत्रीय समानताओं के पाये जाने का क्या अर्थ है ?

(1) समान स्तर के वर्गों को रैंक के विभिन्न सदस्यों के मध्य समानता का पाया जाना
(2) विभिन्न रैंकों (रैंक) के विभिन्न सदस्यों के मध्य समानता का पाया जाना
(3) समान प्रजातियों के विभिन्न जातियों एवं वर्गों के मध्य समानता का पाया जाना
(4) पदार्थ ज्ञात के वर्गों व प्रभागों के मध्य समानता का पाया जाना

😊 हमेशा युक्तरात्रे रहें 😊
93. Study the given statements carefully and give the answer :-

(A) Both Phaeophyceae and Rhodophyceae are primarily found in marine habitats.
(B) Gemmae are green and multicellular buds, produced on ventral surface of thallus for sexual reproduction.
(C) In pteridophytes spores germinate to give rise to inconspicuous, small but multicellular and free living nonvascular gametophyte.
(D) In gymnosperms formation of pollen tube is there for carrying male gametes i.e. siphonogamy.

Which of the following options is most correct form the following ?
(1) A,B - correct & C,D - incorrect
(2) C,D - correct & A,B - correct
(3) A,C,D - correct & B - incorrect
(4) A,B,C - correct & D - incorrect

94. Sexual reproduction oogamous type and accompanied by complex post fertilization can be seen in :-
(1) Chlorophyceae (2) Phaeophyceae
(3) Cyanophyceae (4) Rhodophyceae

95. Lateral root arises from & origin in nature is –
(1) Endodermis & exogenous
(2) Pericycle & endogenous
(3) Hypodermis & exogenous
(4) Epidermis & endogenous

96. Originating in bone marrow, circulating in blood for 1-2 days, migrating to connective tissue and forming macrophages is d characteristic of :-
(1) Eosinophils (2) Basophils
(3) Monocytes (4) Lymphocytes

97. Classification of phylum Porifera is based on :-
(1) Nutrition (2) Spicules
(3) Locomotion (4) Reproduction

98. Scientific name of rohu is :-
(1) Anabas testudineus (2) Catla catla
(3) Labeo rohita (4) Naja naja
99. Sequence of nucleotide on DNA segment from 5' _____ 3' is ATG GTG TAA TTT It's complementary DNA produce mRNA through transcription. If third Nitrogenous base of fourth codon of mRNA changes to UUU to UUC by wobble process. Than find out the sequence of Amino acid in polypeptide Chain after translation process by this m-RNA,

N
(1) Methionine
C
Valine
N
(2) Methionine
Valine
C
Phenylalanine
N
Valine
(3) Methionine
Phenylalanine
C
Valine
N
(4) Phenylalanine
Valine
C
Methionine

100. Read the following four statements (a-d)
(a) Leptotene → Chromosome longest → Boquet stage
(b) Zygotene → Bivalent → Synaptonemal complex
(c) Pachytene → Tetrad → Non sister chromatid exchange their part
(d) Diplotene → Terminilisation complete
How many statements are correct?
(1) One  (2) Three  (3) Two  (4) Four

101. Which of the following is true about the kingdom protista?
(1) All organisms are Photosynthetic
(2) All organisms are Heterotrophic
(3) All organisms are Eukaryotic
(4) All organisms are Prokaryotic.
102. Find the correct statements from the followings:

(a) Biology is the science of life forms and living processes
(b) Biology is the story of life on earth
(c) Biology is the story of evolution of living organisms on earth
(d) Biology is the story of all characters and processes of animate forms

(1) Only (a) and (b)  (2) Only (c) and (d)  (3) (a), (b) & (c)  (4) (a), (b), (c) & (d)

103. Identify the (a), (b) & (c) :-

<table>
<thead>
<tr>
<th></th>
<th>a</th>
<th>b</th>
<th>c</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Megasporangium</td>
<td>Egg</td>
<td>Embryo</td>
</tr>
<tr>
<td>2</td>
<td>Male gametophyte</td>
<td>Pollen tube</td>
<td>Female gametophyte</td>
</tr>
<tr>
<td>3</td>
<td>Male gametophyte</td>
<td>mega–sporangium</td>
<td>pollen grain</td>
</tr>
<tr>
<td>4</td>
<td>Microspore (pollen grain)</td>
<td>Male gametophyte</td>
<td>Embryo</td>
</tr>
</tbody>
</table>

104. Choose the incorrect statement :-

(1) Gametophyte of Gymnosperm are always Dioecious.
(2) Sporophyte of Gymnosperm are always heterosporous.
(3) Sporophyte of pteridophytes may be monoecious or dioecious
(4) Gametophyte of pteridophytes may be monoecious or dioecious.
105. Character of buliform cell is –
   (1) Large  (2) Empty
   (3) Colourless  (4) All

106. Ligament is :-
   (1) Modified white fibrous connective tissue
   (2) Modified yellow elastic fibrous tissue
   (3) Inelastic white fibrous tissue
   (4) Mucoid connective tissue

107. Which of the following does not belong to phylum coelenterata :-
   (1) Sea pen
   (2) Sea feather
   (3) Sea cucumber
   (4) Sea fan

108. Axolotl larva of Ambystoma normally fails to metamorphose due to :-
   (1) Lack of Ca and Mg ions in water
   (2) Absence of phosphorus in water
   (3) Lack of iodine in water or diet
   (4) High concentration of iodine in body

109. Find out the correct match from following columns I, II, III

<table>
<thead>
<tr>
<th>Column-I</th>
<th>Column-II</th>
<th>Column-III</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Helicase</td>
<td>a gyrase</td>
<td>i Break-H-bond between nitrogenous base</td>
</tr>
<tr>
<td>2 Topoisomerase II</td>
<td>b Unwindase</td>
<td>ii Remove supercoil away from replication fork</td>
</tr>
<tr>
<td>3 DNA Pol I</td>
<td>c 3'-5' exonuclease activity</td>
<td>iii Removal of primer</td>
</tr>
<tr>
<td>4 DNA pol III</td>
<td>d 5'-3' exonuclease activity</td>
<td>iv Proof reading</td>
</tr>
</tbody>
</table>

(1) 1 - b - i; 2 - a - ii; 3 - d - iii; 4 - c - iv
(2) 1 - a - ii; 2 - b - iii; 3 - c - iv; 4 - d - i
(3) 1 - c - iii; 2 - b - iv; 3 - a - i; 4 - d - ii
(4) 1 - d - iv; 2 - c - iii; 3 - a - ii; 4 - d - i
110. Following features represent phase of cell division, identify the correct match
(A) Compact mitotic chromosome, GB, ER disappear
(B) Centromere towards equator, Arms towards pole
(C) Centromere split
(D) Chromosome cluster at each pole

<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>Late prophase</td>
<td>Late metaphase</td>
<td>Anaphase</td>
<td>Telophase</td>
</tr>
<tr>
<td>2</td>
<td>Late metaphase</td>
<td>Late prophase</td>
<td>Telophase</td>
<td>Anaphase</td>
</tr>
<tr>
<td>3</td>
<td>Late prophase</td>
<td>Telophase</td>
<td>Metaphase</td>
<td>Anaphase</td>
</tr>
<tr>
<td>4</td>
<td>Anaphase</td>
<td>Late prophase</td>
<td>Late metaphase</td>
<td>Telophase</td>
</tr>
</tbody>
</table>

111. Identify the following figures :

![Daughter colony](image1)
![Parent colony](image2)

(A) Daughter colony
(B) Frond

112. Study the following statements carefully :-
(A) All plants, animals, fungi and microbes exhibit metabolism
(B) Perhaps, the most obvious and technically complicated feature of all living organisms is the ability to sense their surroundings or environment and respond
(C) All organisms have consciousness but the human has self consciousness and not the consciousness
(D) Living organisms are self replicating, and evolving but not self regulating

Find the most correct option from the followings:
(1) A, B and C are correct and D is incorrect
(2) A and B are correct and C and D are incorrect
(3) A and B are incorrect and C and D are correct
(4) A is correct and B, C and D are incorrect
113. Find the incorrect from the following :-
(1) Sporophyte of moss is more elaborate than that in liver worts
(2) Spores of bryophytes germinate to form free living sporophytes
(3) Funaria, Polytrichum & Sphagnum are moss plants
(4) After meiosis spores are produced within the capsule of bryophytes

114. Choose the incorrect statement regarding Mycoplasma :-
(1) They lack cell wall.
(2) They are smallest living cells.
(3) They can survive without oxygen.
(4) They are sensitive to penicillin

115. Which of the following option gives the correct categorisation of six plants according to the type of placentation (A, B, C) :-

<table>
<thead>
<tr>
<th>A Axile</th>
<th>B Free Central</th>
<th>C Basal</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Dianthus, Tomato</td>
<td>Primrose, Marigold</td>
<td>Lemon, Sunflower</td>
</tr>
<tr>
<td>(2) Tomato, Lemon</td>
<td>Dianthus, Primrose</td>
<td>Sunflower, Marigold</td>
</tr>
<tr>
<td>(3) Dianthus, Primrose</td>
<td>Sunflower, marigold</td>
<td>Tomato, Lemon</td>
</tr>
<tr>
<td>(4) Dianthus, Sunflower</td>
<td>Primrose, Marigold</td>
<td>Lemon, Tomato</td>
</tr>
</tbody>
</table>

116. Match the following :-

<table>
<thead>
<tr>
<th>Type of leucocytes</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>(A) Neutrophils</td>
<td>(1) Heparin and histamine secretion</td>
</tr>
<tr>
<td>(B) Basophils</td>
<td>(2) Antibodies formation</td>
</tr>
<tr>
<td>(C) Acidophils</td>
<td>(3) Scavanger</td>
</tr>
<tr>
<td>(D) Monocytes</td>
<td>(4) Phagocytes</td>
</tr>
<tr>
<td>(E) Lymphocyte</td>
<td>(5) Antiallergic and healing of arounds</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>3</td>
<td>1</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>(2)</td>
<td>1</td>
<td>4</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>(3)</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>(4)</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>4</td>
</tr>
</tbody>
</table>
117. Ephyra is the stage in the life cycle of :-
   (1) Frog  (2) Obelia  (3) Aurelia  (4) Sea anemone

118. Order squamata consist of :-
   (1) Bats  (2) Crocodiles  (3) Turtle  (4) Lizards

119. Identify the correct match from the column I, II and III :-

<table>
<thead>
<tr>
<th>Column-I</th>
<th>Column-II</th>
<th>Column-III</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Tertiary structure of protein</td>
<td>a Radiolabelled- 32-P</td>
<td>i Biological Active</td>
</tr>
<tr>
<td>2 Hershey chase</td>
<td>b S-S-bond Ionic bond, Hydrophobic bond</td>
<td>ii Proved DNA as genetic material</td>
</tr>
<tr>
<td>3 Derived lipid</td>
<td>c Derived lipid</td>
<td>iii egg, yolk</td>
</tr>
<tr>
<td>4 Phospholipid</td>
<td>d Phospholipid</td>
<td>iv Help in Vitamin D Formation</td>
</tr>
</tbody>
</table>

(1) 1 - b - i; 2 - a - ii; 3 - d - iii; 4 - c - iv
(2) 1 - b - ii; 2 - a - i; 3 - d - iv; 4 - c - iii
(3) 1 - b - iv; 2 - a - iii; 3 - d - iii; 4 - c - i
(4) 1 - b - iii; 2 - a - iv; 3 - d - i; 4 - c - iv

120. Cytokinesis in animal cell and plant cell takes place by :-
   (1) Animal cell - Cell plate - Centripetal
       Plant cell - Furrowing - Centrifugal
   (2) Animal cell - Furrowing - Centrifugal
       Plant cell - Cell plate - Centripetal
   (3) Animal cell - Furrowing - Centripetal
       Plant cell - Cell plate - Centrifugal
   (4) Animal cell - Furrowing - Centrifugal
       Plant cell - cell plate - centrifugal

121. The predominant stage of the life cycle of Moss is gametophyte, which consists of two stages that are respectively :-
   (1) Protonema, Prothallus
   (2) Spore mother cell, protonema
   (3) Protonema, leafy stage
   (4) Protonema, zygote
122. Who called viruses as contagium vivum fluidum?
(1) D. Ivanowski
(2) M.W. Beijerinck
(3) W.M. Stanley
(4) F.W. Twort

123. Diplontic life cycle is found in :-
(1) Thallophyta & Bryophyta
(2) Gymnosperms & Angiosperms
(3) Bryophyta & Pteridophyta
(4) Both (2) & (3)

124. Conduction of water is done by
(1) Heart wood
(2) Duraman
(3) Both (1) and (2)
(4) Sapwood

125. Which one of the following option gives the correct categorisation of six plants according to types of flower on the basis of insertion of floral parts on thalamus?

<table>
<thead>
<tr>
<th></th>
<th>A Hypogynous</th>
<th>B Perigynous</th>
<th>C Epigynous</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>Apple, Datura</td>
<td>Plum, Peach</td>
<td>Mustard, China-rose</td>
</tr>
<tr>
<td>(2)</td>
<td>Mustard, China-rose</td>
<td>Plum, Peach</td>
<td>Guava, Cucumber</td>
</tr>
<tr>
<td>(3)</td>
<td>Peach, Mustard</td>
<td>China-rose, Rose</td>
<td>Sunflower, Cucumber</td>
</tr>
<tr>
<td>(4)</td>
<td>Onion, Rose</td>
<td>Pea, Petunia</td>
<td>Apple, Banana</td>
</tr>
</tbody>
</table>

126. The head of cockroach lacks :-
(1) Cardo
(2) Gene
(3) Trochanter
(4) Frons

127. Tabeworm does not possess digestive system as it :-
(1) Does not require solid food
(2) Obtains food through general surface
(3) Does not require food
(4) Lives in intestine

128. Most favourable land adaptation for reptile is :-
(1) Moist skin
(2) Scales on body
(3) Pulmonary respiration
(4) Presence of tongue
129. Which of the following carbohydrate is represented by the following structure.

(a) Amylopectin C α(1-4) and D α(1-6) glycosidic bond
   (a) glycogen A α(-16) glycosidic bond and B α-(1-4)-glycosidic bond
(b) Amylopectin C α(1-4) and D α(1-6) glycosidic bond
   (b) glycogen A α(1-4) and B α(1-6) glycosidic bond
(c) Amylopectin C α(1-6) and D α(1-4) glycosidic bond
   (a) Glycogen A α, (1-3) and B β(1, 6) glycosidic bond
(d) Amylopectin C α(1-6) and D α(1-4) glycosidic bond
   (a) Glycogen A α, (1-4) and B β(1, 4) glycosidic bond
   (b) Amylopectin C α(1-6) and D α(1-4) glycosidic bond

(1) (b) Amylopectin C α(1-4) and D α(1-6) glycosidic bond
   (a) glycogen A α(-16) glycosidic bond and B α-(1-4)-glycosidic bond
(2) (a) Amylopectin C α(1-4) and D α(1-6) glycosidic bond
   (b) glycogen A α(1-4) and B α(1-6) glycosidic bond
(3) (b) Amylopectin C α(1-6) and D α(1-4) glycosidic bond
   (a) Glycogen A α, (1-3) and B β(1, 6) glycosidic bond
(4) (a) Glycogen A α, (1-4) and B β(1, 4) glycosidic bond
   (b) Amylopectin C α(1-6) and D α(1-4) glycosidic bond
130. If the n = 8 in plant cell than what is possible in pachytene of meiosis
(1) 8 Tetrads; (b) 2 Pair centriole; (c) 16 pair sister chromatid
(2) 16 Tetrads; (b) 1 Pair centriole; (c) 8 pair sister chromatid
(3) 8 Tetrads; (b) 2 Pair centriole; (c) 16 sister chromatid
(4) 16 Tetrads; (b) 2 Pair centriole; (c) 16 sister chromatid

131. Which option is not related with Pteridophytes?
(1) Free living gametophytes
(2) Mainly monoecious sporophytes
(3) Precursor to seed habit
(4) Zygote produces a multicellular well-differentiated sporophyte.

132. Study the following characters carefully and give answer :-
(A) Bacterial structure is very simple because they are prokaryotic and unicellular
(B) Bacteria as a group show most extensive metabolic diversity
(C) Based on shape, bacteria are grouped into two categories only.
(D) Most of the bacteria do not have cell wall.
(1) A,B-correct ; C,D-incorrect
(2) C,D-correct ; A,B-incorrect
(3) A,D-correct ; B,C-incorrect
(4) B,C-correct ; A,D-incorrect

133. Find the incorrect from the followings :-
(1) Zygote produces a sporophyte in mosses
(2) In pteridophyte water is necessary to transfer male gametes to archegonium
(3) Majority of pteridophytes are heterosporous
(4) In bryophytes male sex organ is antheridium

134. Read the following five statements (a-e)
(a) Bark is non technical term
(b) Gridling is not possible in monocot stem
(c) Secondary phloem and periderm are included in bark
(d) In dicot root vascular cambium is primary in origin
(e) In dicot root primary pith rays is primary in origin
How many statement are wrong?
(1) Two (2) Three (3) Four (4) One
135. Match from the following table:

<table>
<thead>
<tr>
<th>Column-I (family)</th>
<th>Column-II (floral formula)</th>
<th>Column-III (Type of inflorescence)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(I) Brasseaceae</td>
<td>Ebr ‡ K₄C₁₂A₄G₃₊₁</td>
<td>Racemose</td>
</tr>
<tr>
<td>(II) Fabaceae</td>
<td>K₅C₁₂A₅G₉</td>
<td>Racemose</td>
</tr>
<tr>
<td>(III) Solanaceae</td>
<td>K₅C₁₂₅A₅G₉</td>
<td>Cymose</td>
</tr>
<tr>
<td>(IV) Liliaceae</td>
<td>Br ‡ P₃₆A₄G₂</td>
<td>Cymose</td>
</tr>
</tbody>
</table>

Options:
(1) I & II only  
(2) III & IV only  
(3) II & III only  
(4) I & IV only  

136. Each eye of cockroach consists of:
(1) 2000 pentagonal ommatidia  
(2) 2000 hexagonal ommatidia  
(3) 2000 octagonal ommatidia  
(4) 1000 hexagonal ommatidia

137. See the following figure. Identify the animal which has this body plan:

- **Body wall**
- **Parechyma**
- **Alimentary canal**

(1) Earthworm  
(2) Planaria  
(3) Roundworm  
(4) Cockroach

138. Preen gland occurs in:
(1) Pisces  
(2) Aves  
(3) Reptilia  
(4) Mammalia

139. Which of the following elements are present in negligible amount in Human body and very little amount in earth crust:
C, O, N, S, Na, Ca, Mg, Si
(1) C, N  
(2) Si, O, Ca  
(3) Si, N  
(4) Mg, Si

140. How many following cell organelle, are devoid of cell membrane and organelle with single membrane are?
Ribosome, Lysosome, Centrosome, Chloroplast Golgibody, Nucleolus, ER
(1) 3, 3  
(2) 2, 2  
(3) 4, 1  
(4) 3, 1

135. दी गयी सारणी में सही निर्देश कॉलन्ज़ी विकल्पों का प्रयोग करते हुए, निम्नलिखित विकल्पों में से सही निर्देश कॉलन्ज़ी विकल्प का प्रयोग करते हुए:

<table>
<thead>
<tr>
<th>कॉलन्ज़ी-I (वर्ग)</th>
<th>कॉलन्ज़ी-II (पूर्ण सूत्र)</th>
<th>कॉलन्ज़ी-III (पूर्ण सूत्र का प्रयोग अंतर्विषय)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(I) जैक्सिसी</td>
<td>Ebr ‡ K₄C₁₂A₄G₃₊₁</td>
<td>आल्बिलासी</td>
</tr>
<tr>
<td>(II) फैबासी</td>
<td>K₅C₁₂A₅G₉</td>
<td>आल्बिलासी</td>
</tr>
<tr>
<td>(III) सोलासी</td>
<td>K₅C₁₂₅A₅G₉</td>
<td>सससिसी</td>
</tr>
<tr>
<td>(IV) लिलिसी</td>
<td>Br ‡ P₃₆A₄G₂</td>
<td>सससिसी</td>
</tr>
</tbody>
</table>

विकल्प:
(1) कॉलन्ज़ी I व II  
(2) कॉलन्ज़ी III व IV  
(3) कॉलन्ज़ी II व III  
(4) कॉलन्ज़ी I व IV

136. कॉक्रोच की प्रत्येक आँख में उपस्थित होतीं हैं :-
(1) 2000 पंचभुजीय ओमेटाइडिया  
(2) 2000 अष्टभुजीय ओमेटाइडिया  
(3) 2000 षडभुजीय ओमेटाइडिया  
(4) 1000 षडभुजीय ओमेटाइडिया

137. निम्न चित्र के देखरेख जन्तु का नाम बताइए जिसमें इस प्रकार की शरीर प्रणाली पाई जाती है :-

(1) केंदुआ  
(2) प्लेनीडिया  
(3) गोलक्रूम  
(4) कॉक्रोच

138. प्रौन्त्र प्राप्त पायी जाती है :-
(1) मर्मर में  
(2) पक्ष्यों में  
(3) सरीयुप में  
(4) सन्त में

139. निम्न में से कौन सा/स की प्रणाली में गणना मात्र में और earth crust में बहुत कम मात्रा में पाया जाते है :
C, O, N, S, Na, Ca, Mg, Si
(1) C, N  
(2) Si, O, Ca  
(3) Si, N  
(4) Mg, Si

140. निम्न में से कितने कोशिकीय अंगं कोशिकीय हिल्ली अनुपस्थित हैं, एवं कितने कोशिकीय अंगं एकल हिल्ली बनाते हैं ?
राइफोलीम, लाइफोलीम, सेंट्रोसोम, हरितलक, गाल्जिकाय, कोशिका, ER
(1) 3, 3  
(2) 2, 2  
(3) 4, 1  
(4) 3, 1
141. The members of rhodophyceae are commonly called red algae because :-
(1) They are found in greater concentrations in warmer area of Ocean.
(2) They have floridean starch as a stored food.
(3) They show predominance of r-phycoerythrin in their body.
(4) They show complex post fertilization developments.

142. *Chlorella, Chlamydomonas* and *Paramoecium, Amoeba* were earlier placed with plants and animals respectively but after Whittaker's 5 kingdom classification, they should be brought together in:-
(1) Monera
(2) Protista
(3) Plantae
(4) Animalia

143. A plant shows sporophyte as a main generation. Its gametophyte shows rhizoids and is haploid. It needs water to complete its life cycle because the male gametes are motile. Identify the group to which it belongs :-
(1) Pteridophytes
(2) Gymnosperms
(3) Monocots
(4) Bryophytes

144. Find out the correct sequence of labelling.

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Subsidiary cells</td>
<td>Epidermal cells</td>
<td>Guard cells</td>
</tr>
<tr>
<td>2</td>
<td>Subsidiary cells</td>
<td>Guard cells</td>
<td>Epidermal cells</td>
</tr>
<tr>
<td>3</td>
<td>Epidermal cells</td>
<td>Guard cells</td>
<td>Subsidiary cells</td>
</tr>
<tr>
<td>4</td>
<td>Guard cells</td>
<td>Subsidiary cells</td>
<td>Epidermal cells</td>
</tr>
</tbody>
</table>
145. The colour in the brown fat is due to :-
   (1) Its larger capacity for generating heat
   (2) Larger number of mitochondria present
   (3) A high concentration of iron containing cytochrome pigments
   (4) Presence of chromatophores

146. What external changes are visible after the last moult of a cockroach nymph :-
   (1) Labium developed
   (2) Mandible becomes harder
   (3) Anal cerci develop
   (4) Both fore wings and hind wings develop

147. Which one of the following statements about certain animals is correct ?
   (1) Flat worms are coelomates
   (2) Round worms are pseudocoelomate
   (3) Molluscs are acoelomate
   (4) Insects are pseudocoelomate

148. Which is the correct combination of amino acid regarding initiation of translation in prokaryote and eukaryote.

   \[
   \begin{align*}
   &\text{(1)} \quad \text{NH}_4 - C - COOH, \text{NH}_2 - C - COOH \\
   &\text{H} \quad \text{H} \\
   &\text{CH}_2 - \text{CH}_2 - S - \text{CH}_2, \quad \text{CH}_2 - \text{CH}_2 - S - \text{CH}_2, \\
   &\text{H} \quad \text{H} \quad \text{H} \quad \text{H} \\
   &\text{CHO} - N - C - COOH, \text{NH}_2 - C - COOH \\
   &\text{H} \quad \text{H} \\
   &\text{OH} \quad \text{CH}_2 - \text{CH}_2 - \text{COOH}, \text{NH}_2 - C - COOH \\
   &\text{H} \quad \text{H} \\
   &\text{NH}_2 - C - COOH, \text{NH}_2 - C - COOH \\
   &\text{H} \quad \text{H} \\
   &\text{H} \quad \text{CH}_3 \\
   \end{align*}
   \]

   \[
   \begin{align*}
   &\text{(2)} \quad \text{CHO} - N - C - COOH, \text{NH}_2 - C - COOH \\
   &\text{H} \quad \text{H} \\
   &\text{CH}_2 - \text{CH}_2 - S - \text{CH}_2, \quad \text{CH}_2 - \text{CH}_2 - S - \text{CH}_2, \\
   &\text{H} \quad \text{H} \quad \text{H} \quad \text{H} \\
   \end{align*}
   \]
149. Read the following statements :-
(a) Fatty acid are saturated or unsaturated (One or more than one $C = C$ bonds)
(b) M.P. of oils are less (Gingely oil) hence they remain liquid in winter
(c) The molecular weight of lipid do not exceed 800 dalton but they are present in Acid in soluble pool.
(d) Glycerol is a compound lipid which is trihydroxy propane

How many statement are correct ?
(1) a, b, d  (2) a, b, c  (3) a, b, c, d  (4) a, b

150. Which of the following is correct regarding structure of a section of cillia and flagella ?

<table>
<thead>
<tr>
<th>Peripheral microtubule</th>
<th>Radial Spoke</th>
<th>Interdoublet bridge</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>9</td>
<td>18</td>
</tr>
<tr>
<td>(2)</td>
<td>9</td>
<td>18</td>
</tr>
<tr>
<td>(3)</td>
<td>18</td>
<td>1</td>
</tr>
<tr>
<td>(4)</td>
<td>18</td>
<td>1</td>
</tr>
</tbody>
</table>

151. Choose the incorrect statement of following :-
(1) Chlorella and Spirullina are protein rich unicellular algae.
(2) Mosses reduce the impact of falling rain and prevent soil erosion.
(3) In pteridophytes, gametophytic generation is highly reduced and is confined to only a limited number of cells.
(4) In gymnosperm the nuclellus is protectd by envelopes and the composite structure is called as ovule.

152. Fungi lacking crosswalls in the mycelium belong to:-
(1) phycomycetes
(2) Ascomycetes
(3) Basidiomycetes
(4) Deuteromycetes
153. Few statements are given as under which of them are true for pteridophytes :-
(A) Dominant phase in their life cycle is gametophyte
(B) Their sporophyte is differentiated into foot seta and capsule
(C) Their sporophyte body has well differentiated vascular tissues
(D) Their prothallus is small but multicellular free living and mostly photosynthetic
(1) A & B (2) B & C (3) C & D (4) B & D

154. Annual rings are formed due to the activity of :-
(1) Cork cambium
(2) Procambium
(3) Vascular cambium
(4) Wound cambium

155. Polymorphonuclear leucocytes are :-
(1) Monocytes
(2) Lymphocytes
(3) Granulocytes
(4) Agranulocytes

156. Deuterostomes are :-
(1) Platyhelminthes
(2) Echinodermata
(3) Arthropoda
(4) Annelida

157. Botryoidal tissue is found in :-
(1) Rabbit (2) Ascaris
(3) Hirudinaria (4) Earthworm

158. Read the following statements (a - d)
(a) Each protein is a polymer of amino acid
(b) A protein is a heteropolymer and not a homopolymer
(c) Dietary protein are the source of essential amino acid
(d) Haemoglobin is the most abundant protein in whole of biosphere
How many of the above statements are right?
(1) 2 (2) 3 (3) 4 (4) 1
159. What is the correct order of procedure of RNA processing in eukaryote?

1. Guanylation transferase → 5' end 7 methyl Guanosine
   Small nuclear ribonucleoprotein → Spliceosomal complex
   Ribonuclease → Removal of Non-coding Part
   (Adenine → Poly A tail 3' end)

2. Guanylation transferase → 5' end 7 methyl Guanosine
   Adenine → Poly A tail 3' end
   Small nuclear ribonucleoprotein → Spliceosomal complex
   Ribonuclease → Removal of Non-coding Part

3. Adenine → Poly A tail 3' end
   Small nuclear ribonucleoprotein → Spliceosomal complex
   Guanylation transferase → 5' end 7 methyl Guanosine
   Ribonuclease → Removal of Non-coding Part

4. Small nuclear ribonucleoprotein → Spliceosomal complex
   Adenine → Poly A tail 3' end
   Ribonuclease → Removal of Non-coding Part
   Guanylation transferase → 5' end 7 methyl Guanosine

160. Consider the following four statements:

(a) Golgi apparatus principally perform the function of packaging material and help in middle lamella formation.

(b) Quasi-fluid nature of lipid enables lateral movement of protein within the overall bilayer.

(c) U,V,L shape of chromosome is seen anaphase.

(d) RNA contains 5 methyluracil.

How many statements are correct?

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

161. The correct sequence of taxonomic categories is:

(1) Division → Class → Family → Tribe → Order → Genus → Species
(2) Division → Class → Order → Family → Tribe → Genus → Species
(3) Phylum → Order → Class → Tribe → Family → Genus → Species
(4) Division → Class → Order → Tribe → Family → Genus → Species

162. Which statement about fungal nutrition is not true?

(1) Some fungi are active predators
(2) Some fungi form mutualistic associations with other organisms
(3) Fungi can make some of the compounds that are vitamins for animals
(4) Faculative parasites always require a host for their growth.
163. In *Mangifera indica*, *Solanum nigrum*, and *Panthera pardus*, all the three names, *indica*, *nigrum* and *pardus* represent the :-
(1) Names of species
(2) Names of specific epithets
(3) Names of genus
(4) Names of generic epithet

164. Read following four statement (A-D) and answer as asked next to them.
(a) Vascular cambium and cork cambium are involved in secondary growth.
(b) In dicot stem entire vascular cambium is secondary in origin
(c) Some monocots shows abnormal secondary growth
(d) Fusiform initials produce secondary xylem and secondary phloem

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

165. The type of muscles present in our :-
(1) Thigh are striated and voluntary
(2) Upper arm are smooth muscle fibres fusiform in shape
(3) Heart are involuntary and unstriated smooth muscles
(4) Intestine are striated and involuntary

166. Coelom is cavity between Alimentary canal and body wall enclosed by :-
(1) Ectoderm and endoderm
(2) Mesoderm and ectoderm
(3) Ectoderm on both sides
(4) Mesoderm on both sides

167. Bilateral symmetry, metameric segmentation coelom and open circulatory system are the characters of :-
(1) Annelida  (2) Arthropoda
(3) Mollusca  (4) Echidermates

168. Orientation of pentose sugar at first carbon is ___ and it blends with nitrogenous base with ___ :-
(1) $\gamma$ Form, N glycosidic bond
(2) $\alpha$ Form, N glycosidic bond
(3) $\beta$ Form, N glycosidic bond
(4) $\beta$ Form, N Phosphodiester bond
169. Given diagram represent the component of a transcription unit select the correct answer regarding bacterial transcription

![Diagram]

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>Terminator ρ factor bind with RNA Pol-I</td>
<td>Promotor TATAAT Sequence</td>
<td>Template strand for 5'-3' RNA synthesis</td>
</tr>
<tr>
<td>(2)</td>
<td>Terminator ρ factor bind with RNA Pol.</td>
<td>Promotor TATAAG sequence</td>
<td>Template strand for 3'-5' RNA synthesis</td>
</tr>
<tr>
<td>(3)</td>
<td>Terminator ρ factor bind with RNA Pol.</td>
<td>Promotor TATAAT sequence</td>
<td>Template strand for 5'-3' RNA synthesis</td>
</tr>
<tr>
<td>(4)</td>
<td>Terminator σ factor bind with RNA pol</td>
<td>Promotor TATAAT sequence</td>
<td>Template strand for 5'-3' RNA synthesis</td>
</tr>
</tbody>
</table>

170. Identify the corect match from column I, II & III:

<table>
<thead>
<tr>
<th>Column-I</th>
<th>Column-II</th>
<th>Column-III</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 PEROXISOME</td>
<td>b Plant cell Animal Cell</td>
<td>(i) ATP Synthesis</td>
</tr>
<tr>
<td>2 NUCLEUS</td>
<td>b Plant cell Animal Cell</td>
<td>(ii) Photo respiration</td>
</tr>
<tr>
<td>3 MITOCHONDRIA</td>
<td>c Plant cell</td>
<td>(iii) Suberin deposition in cork cell</td>
</tr>
<tr>
<td>4 SPHEROSOME</td>
<td>b Plant cell Animal Cell</td>
<td>(iv) Controll center of cell</td>
</tr>
</tbody>
</table>

(1) 1 - b - ii; 2 - b - iv; 3 - b - i; 4 - c - iii
(2) 1 - b - i; 2 - b - ii; 3 - b - iii; 4 - c - iv
(3) 1 - b - iii; 2 - b - i; 3 - b - ii; 4 - c - iv
(4) 1 - b - iv; 2 - b - iii; 3 - b - i; 4 - c - ii
171. Which one of the following scientific name represents both trinomial nomenclature and autonyms.
(1) Acaiza nilotica indica
(2) Brassica oleracea botrytis
(3) Corvus splendens splendens
(4) Naja naja

172. Select the correct statement :-
(1) Sporangiospores are exogenously produced in sporangium
(2) Conidia after germination produced conidiophore.
(3) In basidiomycetes asexual spores are generally not found.
(4) Alternaria is an example of ascomycetes

173. Some members are given here. They all belong to how many genus, species and kingdom. Lion, Tiger, Potato, Brinjal, Mango, Wheat.

<table>
<thead>
<tr>
<th>Genus</th>
<th>Species</th>
<th>Kingdom</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>Four</td>
<td>Two</td>
</tr>
<tr>
<td>(2)</td>
<td>Four</td>
<td>One</td>
</tr>
<tr>
<td>(3)</td>
<td>Six</td>
<td>Two</td>
</tr>
<tr>
<td>(4)</td>
<td>Three</td>
<td>Three</td>
</tr>
</tbody>
</table>

174. Depict picture is a L.S. of phloem tissue. In which labelled structures X, Y, Z are respectively ?

(1) Sieve plate, Companion cell, Phloem parenchyma
(2) Sieve tube element, Phloem parenchyma, Companion cell
(3) Sieve cell, Phloem fibres, Companion cell
(4) Sieve tube element, Companion cell, Phloem parenchyma
175. See the following figures.

![Image](A) ![Image](B) ![Image](C)

Figure A & B indicate glands while figure C indicate specific type of tissue, identify A, B & C:

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>Unicellular gland</td>
<td>Goblet gland</td>
<td>Pseudo stratified epithelium</td>
</tr>
<tr>
<td>(2)</td>
<td>Multicellular gland</td>
<td>Unicellular gland</td>
<td>Pseudo stratified epithelium</td>
</tr>
<tr>
<td>(3)</td>
<td>Unicellular gland</td>
<td>Multicellular gland</td>
<td>Pseudo stratified epithelium</td>
</tr>
<tr>
<td>(4)</td>
<td>Unicellular gland</td>
<td>Multicellular gland</td>
<td>Compound epithelium</td>
</tr>
</tbody>
</table>

176. A list of animals in given below. Identify the animals with open circulatory system and choose the correct answer:

(A) Ascidia (B) Cockroach (C) Earthworm (D) Prawn (E) Silver fish (F) Snail (G) Squid.

(1) B, D, F
(2) A, B, D, F
(3) C, D, E, G
(4) B, D, E, F

177. Echinodermata tube fat are related with:

(1) Excretory system
(2) Ambulacral system
(3) Reproductive system
(4) Respiratory system

178. The messelson and stahl's experiment is continued for four generation in bacteria the ratio of:

$N^{15}N^{15}:N^{15}N^{14}:N^{14}N^{14}$ Containing DNA and no of band in fourth generation would be

(1) $1:1:O, 2$
(2) $1:4:0, 2$
(3) $0:1:3, 2$
(4) $0:1:7, 2$
179. Identify A, B, C, D in the given diagram depicting cell cycle steps and select the correct option:

<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>G₁ DNA Replication</td>
<td>S Cell organalle Double</td>
<td>G₂ Tubulin protein synthesis</td>
<td>M</td>
</tr>
<tr>
<td>2</td>
<td>G₁ Cell organalle double</td>
<td>S DNA Replication</td>
<td>G₂ Tubulin protein synthesis</td>
<td>M</td>
</tr>
<tr>
<td>3</td>
<td>S DNA Replication</td>
<td>G₁ Cell organalle double</td>
<td>G₂ Tubulin protein synthesis</td>
<td>M</td>
</tr>
<tr>
<td>4</td>
<td>G₂ Tubulin Protein synthesis</td>
<td>S DNA Replication</td>
<td>G₁ Cell organalle Double</td>
<td>M</td>
</tr>
</tbody>
</table>

180. Read the following four statements. How many statements are correct?

(a) Nucleosome = Binding DNA + Histone octamer + Linker DNA + H₁ histone
(b) Primary cell wall is capable of growth which is formed by intusucception
(c) According to Schleiden all plants are composed of different kinds of cells which form the tissues of the plants
(d) DNA should not be able to generate its replicate

(1) a, b, c  (2) b, c, d  (3) c, d  (4) b, c