CLASSROOM CONTACT PROGRAMME
(ACADEMIC SESSION 2012-2013)

ACHEIVER COURSE
(Phase : MAW)

TARGET : PRE-MEDICAL 2013

MAJOR TEST # 01

ALLEN NEET-UG

DATE : 16 - 03 - 2013

SYLLABUS # 01

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.

Corporate Office
“SANKALP”, CP-6, Indira Vihar, Kota (Rajasthan)-324005
Trin : +91-744-2435001 Fax : +91-744-2435003
E-Mail: info@allen.ac.in Website: www.allen.ac.in
1. A particle moves through the origin of an x-y coordinate system at \( t = 0 \) with initial velocity \( \vec{u} = (4\hat{i} - 5\hat{j}) \text{ m/s} \). It moves in x-y plane with an acceleration \( \vec{a} = 2\hat{i} \text{ m/s}^2 \). Speed of the particle at \( t = 4 \text{ sec} \) is:

   - (1) 12 m/s
   - (2) \( 8\sqrt{2} \text{ m/s} \)
   - (3) 5 m/s
   - (4) 13 m/s

2. A particle is moving in a circular orbit with constant speed. Select wrong alternate:

   - (1) Its momentum is conserved
   - (2) Its angular momentum about the centre of circle is conserved
   - (3) It is moving with variable velocity
   - (4) It is moving with variable acceleration

3. An object is dropped from the top of a tower, so that it falls freely. Neglecting all the forces except gravity, state which of the following statements are true:

   - (1) change in velocity per unit time remains same.
   - (2) change in velocity in successive equal distance decreases with the increasing distance of fall
   - (3) ratio of distances travelled in successive equal time intervals will follows Galileo's law of odd numbers
   - (4) All of the above

4. The radius of gyration in the following figure will be:

   - (1) \( \sqrt{\frac{45}{12}} \)
   - (2) \( \sqrt{\frac{23}{6}} \)
   - (3) \( \sqrt{\frac{11}{3}} \)
   - (4) 2

1. x-y निर्देशांक के मूल लक्ष्य (प्रक्रमण का प्रारंभिक) \( \vec{v} = (4\hat{i} - 5\hat{j}) \text{ m/s} \) से गति करता है। कह दीए जाने के \( \vec{a} = 2\hat{i} \text{ m/s}^2 \) के तरह से चलता है \( t=4 \text{ sec} \) पर तक की चालों गुण:

   - (1) 12 m/s
   - (2) \( 8\sqrt{2} \text{ m/s} \)
   - (3) 5 m/s
   - (4) 13 m/s

2. एक क्षय निर्धारित लसे बुरा स्व तार का रुकावट में \( \hat{h} \) मरा है। गति का विकार पक्ष चाचा को शेष:

   - (1) इसमें से गति संरक्षित नहीं है।
   - (2) बुरा स्वयं के प्रति पहले वस्तु गति संरक्षित है।
   - (3) यह परिवर्तन नष्ट लेने या गति करता है।
   - (4) यह परिवर्तन नष्ट लेने या गति करता है।

3. किसी भी तार के बीच से एकतर को गिरा दिया है, जिसका कितने मुल तक सीमा गिरता है? गुण श्रेणी के अविनय तक तो कलों के नगण्या नंते है। एक इंजिनियर में से कौन सा को न सकता है?

   - (1) \( \hat{h} \) कस्म के से गति नष्ट न रहे गा।
   - (2) गिते समय, उ तर के बढ़ते हैं, क्रम गति सम तू दी रिमय।
   - (3) क्रम गति सम न समय क्या लाएं, क्रम दी रिमय का अनु पत्त, ते ली दी, ली दी के नियम में खाओं के नियम का पता करता है?
   - (4) उ तर को तो सकते हैं?

4. दिये गये चित्र में \( \hat{h} \) के निज़र बनकर कलो।
5. One-dimensional motion of a particle is described by \( x = t - \sin t \). Which of the following is correct?:

1. \( x > 0 \) for all \( t > 0 \)
2. \( v > 0 \) for all \( t > 0 \)
3. \( a > 0 \) for all \( t > 0 \)
4. \( v \) lies between 10 and 20

6. The MI of disc is minimum about an axis:

1. coinciding with the diameter
2. Tangential to the rim and lying in the plane of disc
3. Passing through centre of mass and perpendicular to the plane of the disc
4. Any axis passing through centre of mass

7. Which of the following statement is incorrect about friction:

1. Limiting static friction is independent of area of contact
2. Kinetic friction is independent of area of contact
3. Kinetic friction is nearly independent of velocity of bodies
4. Kinetic friction is self adjusting

8. A particle is moving along a circular path. The angular velocity, linear velocity, angular acceleration and centripetal acceleration of the particle at any instant respectively are; \( \omega, V, \alpha \) and \( a_c \). Which of the following relation is not correct?

1. \( \omega \perp V \)
2. \( \omega \perp a_c \)
3. \( \omega \perp \alpha \)
4. \( V \perp \alpha \)

9. Rain is falling with a velocity \((-4\hat{i} + 8\hat{j} - 10\hat{k})\) m/s. A person is moving with a velocity of \((6\hat{i} + 8\hat{j})\) m/s on the ground. The speed with which the rain drops hit the person is:

1. 10 m/s
2. \( 10\sqrt{2} \) m/s
3. \( \sqrt{180} \) m/s
4. \( \sqrt{360} \) m/s
10. A car speeds up in a circular path in anti-clockwise manner, which of the following figure illustrates the acceleration of the car?

(1) \[\text{Figure A}\]  (2) \[\text{Figure B}\]  (3) \[\text{Figure C}\]  (4) \[\text{Figure D}\]

11. The position of an object moving along x-axis is given by \(x = a + bt + ct^2\) where \(a = 2m\), \(b = 5m/s\) and \(c = 4m/s^2\). The average velocity between \(t = 1\) sec. and \(t = 3\) sec is:

(1) 49 m/s  (2) 26 m/s  (3) 29 m/s  (4) 21 m/s

12. A mass \(M\) is moving with constant velocity parallel to y - axis. Its angular momentum about the origin:

(1) Zero  (2) Increases  (3) Decreases  (4) Remains constant

13. A car covers a distance of 2km in 2.5 minutes. If it covers half of the distance with speed 40 km/hr, then the rest distance it shall cover with a speed of:

(1) 56 km/hr  (2) 60 km/hr  (3) 48 km/hr  (4) 50 km/hr

14. A disc revolves in a horizontal plane at a steady rate of 3 rev/s. A coin just remains on the disc if kept at a distance of 2 cm from the axis of rotation. What is the coefficient of friction between the coin and the disc? (Assume \(\pi^2 = 10\))

(1) 0.5  (2) 0.65  (3) 0.7  (4) 0.15

15. If the given graph is possible in realistic situations, then y and x-variables may represent respectively.

(1) acceleration & time  (2) velocity & time  (3) velocity & displacement  (4) displacement & time
16. Which of the following quantities do not match with their units:
   (1) Rotational power - Joule/sec
   (2) Torque - Newton meter
   (3) Angular displacement - Radian
   (4) Angular acceleration - Radian/sec

17. For the given speed-time graph find distance travelled during the interval t = 2 to 25 sec.

   \[
   \begin{array}{c|c|c|c|c}
   \text{speed (m/s)} & 0 & 10 & 20 & 10 \\
   \text{t (s)} & 0 & 10 & 20 & 30 \\
   \end{array}
   \]

   (1) 400 m  (2) 415.5 m  (3) 450 m  (4) 500 m

18. If angular velocity v/s time curve of a rotating body is represented by (fig.) then variation of angular acceleration with time is properly represented by:

   \[
   \begin{array}{c|c|c|c}
   \alpha / \sqrt{3} & \alpha / \sqrt{3} & \alpha / \sqrt{3} & \alpha / \sqrt{3} \\
   t & t & t & t \\
   \end{array}
   \]

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

19. A truck starts from rest and accelerates uniformly at 1 m/s\(^2\). At t = 5s, a stone is dropped by a person standing on the top of a truck (10 m high from the ground). Speed of stone at t = 5.5 sec is

   (1) 5 m/s  (2) 5\sqrt{2} m/s  (3) 10 m/s  (4) 10\sqrt{2} m/s
20. A circular plate of diameter d is kept in contact with a square plate of edge d as shown in figure. The density of the material and the thickness are same everywhere. The centre of mass of the composite system will be:

(1) inside the circular plate
(2) inside the square plate
(3) at the point of contact
(4) outside the system

21. A man starts his home at 10:00 a.m., walks with a speed of 10 km h⁻¹ on a straight road upto market 20 km away, stays at the market till 2p.m. and returns home by an auto with speed of 20 km h⁻¹. Average speed over this interval (from home till returning back to home) is:

(1) 5 km h⁻¹
(2) 8 km h⁻¹
(3) 10 km h⁻¹
(4) 20 km h⁻¹

22. A body of mass 3 kg is under a constant force which causes a displacement s in metres in it, given by the relation \( s = \frac{1}{3}t^2 \), where t is in second. Work done by the force in 2 sec is:

(1) \( \frac{5}{19} \) J
(2) \( \frac{3}{8} \) J
(3) \( \frac{8}{3} \) J
(4) \( \frac{19}{5} \) J

23. Mass of a block is 20 kg. A man of mass 60kg raises it with constant velocity as shown in the figure. Force exerted by man on the floor will be:

(1) 400 N
(2) 600 N
(3) 200 N
(4) None of the above

24. An object of mass m slides down a hill of height h of arbitrary shape and after travelling a certain horizontal path stops because of friction. The friction coefficient is different for different segments for the entire path but is independent of the velocity and direction of motion. The work that a force must perform to return the object to its initial position along the same path is:

(1) mgh
(2) 2mgh
(3) 4 mgh
(4) –mgh
25. Among the given cases, in which cases net force on the object will be zero? :-
(a) An ice cube of 50 g mass floating on water
(b) A body moving with uniform velocity in space
(c) A satellite revolving around the earth
(d) A book at rest on a table
(1) a, b and c  (2) only in a  (3) in a, b and d  (4) in all cases

26. Kinetic energy of a particle moving in a straight line varies with time \(t\) as \(K = 4t^2\). The force acting on the particle:
(1) is constant  (2) is increasing  (3) is decreasing  (4) first increases and then decreases

27. A bob of mass 0.5 kg hung from the ceiling of a room by a string 5m long is set into oscillation. Speed of bob at its mean position is 2 ms\(^{-1}\). If the string is cut at extreme position, then the trajectory of the bob will be:-
(1) Circular  (2) Parabola  (3) Straight line  (4) Hyperbola

28. A particle is released from a height \(H\). At certain height its kinetic energy is two times its potential energy. Height and speed of particle at that instant are:-
(1) \(\frac{H}{3}\sqrt{\frac{2gH}{3}}\)  (2) \(\frac{H}{3}\sqrt{\frac{2gH}{3}}\)  (3) \(\frac{2H}{3}\sqrt{\frac{2gH}{3}}\)  (4) \(\frac{H}{3}\sqrt{2gH}\)

29. A helicopter of mass 800 kg rises up with a vertical acceleration of 10 ms\(^{-2}\). The crew and the passengers weight 200 kg. Magnitude and direction of the action force of the rotor of the helicopter on the surrounding air is:-
(1) 1000 N, upwards  (2) 1000 N, downwards  (3) 2000 N, downward  (4) 2000 N, upwards

30. A mass of 2 kg falls from a height of 40 cm on a spring with a force constant of 1960 N/m. The spring is compressed by (Take \(g = 9.8 \text{ m/s}^2\)):
(1) 10 cm  (2) 1.0 cm  (3) 20 cm  (4) 5 cm
31. If the coefficient of kinetic friction between the trolley and surface is 0.1, then tension in the string connecting masses is -\( \text{[Take } g = 10 \text{ m/s}^2] \)

\[
\begin{align*}
\text{30 kg} & \quad \text{6 kg} \\
\end{align*}
\]

(1) 48 N  
(2) 51 N  
(3) 53 N  
(4) 55 N

32. A rod of mass \( m \) and length \( \ell \) is lying on a horizontal table. Work done in making it stand on one end will be :-

\[
\begin{align*}
(1) mg\ell & \quad (2) \frac{mg\ell}{2} \\
(3) \frac{mg\ell}{4} & \quad (4) 2 mg\ell \\
\end{align*}
\]

33. Position-time graph of a body of mass 0.5 kg is shown. Time interval between two consecutive impulses and the magnitude of that impulse is :-

\[
\begin{align*}
\text{x(m)} & \quad \text{t(s)} \\
0 & \quad 5 \\
10 & \quad 15 \\
20 & \quad 25 \\
\end{align*}
\]

(1) 5s, 4N-s  
(2) 10s, 4N-s  
(3) 10s, 2N-s  
(4) 5s, 2N-s

34. If the speed of a vehicle increases by 2 m/s, its kinetic energy is doubled, then original speed of the vehicle is :-

\[
\begin{align*}
(1) \text{1} & \quad (2) 2(\sqrt{2} - 1) \text{m/s} \\
(3) 2(\sqrt{2} + 1) \text{m/s} & \quad (4) \sqrt{2}(\sqrt{2} + 1) \text{m/s} \\
\end{align*}
\]

35. Which of the following statement is correct:-

(1) If force is along velocity, then it can change the direction of motion  
(2) If force is perpendicular to velocity, then it can change the magnitude of velocity  
(3) If force is in the opposite direction of velocity, then it can not change the direction of motion  
(4) If force is perpendicular to velocity, then it can change direction of velocity

\[
\begin{align*}
\text{x(m)} & \quad \text{t(s)} \\
0 & \quad 5 \\
10 & \quad 15 \\
20 & \quad 25 \\
\end{align*}
\]
36. If a body loses half of its velocity on penetrating 3 cm in a wooden block, then how much will it penetrate more before coming to rest?
   (1) 1 cm  (2) 2 cm  (3) 3 cm  (4) 4 cm

37. Mass of particle is 0.50 kg. It is moving initially with the speed of 80 m/s towards east. At t = 0, when particle is at x = 0, a force of 20 N directed towards west is being applied on it for 4 sec. Its position after 5 sec is:
   (1) 80 m  (2) 0  (3) −40 m  (4) −80 m

38. Find the force exerted by 5 kg block on floor of lift, in figure shown (Take g = 10 m/s²)

39. Parallactic second is equal to:
   (1) 9.4605 × 10¹⁵ m  (2) 3.07 × 10¹⁶ m  
   (3) 1.496 × 10¹¹ m  (4) 3 × 10⁸ m

40. Consider the shown arrangement. Assume all surfaces to be smooth. If N represents magnitudes of normal reaction between block and wedge, then acceleration of M along horizontal is equal to:
   (1) \frac{N \sin \theta}{M} along + ve x-axis
   (2) \frac{N \cos \theta}{M} along − ve x-axis
   (3) \frac{N \sin \theta}{M} along − ve x-axis
   (4) \frac{N \sin \theta}{m + M} along − ve x-axis
41. Pressure gradient has the same dimensions as that of: -
   (1) velocity gradient
   (2) potential gradient
   (3) energy gradient
   (4) None of these

42. The position of a particle moving in the xy-plane at any time t is given by \( x = (3t^2 - 6t) \) m, \( y = (t^2 - 2t) \) m. Select the correct statement about the moving particle from the following:
   (1) The acceleration of the particle is zero at \( t = 0 \) s
   (2) The velocity of the particle is zero at \( t = 0 \) s
   (3) The velocity of the particle is zero at \( t = 1 \) s
   (4) The velocity and acceleration of the particle are never zero

43. A body travels uniformly a distance of \((13.8 \pm 0.2) \) m in a time \((4.0 \pm 0.3) \) s. The velocity of the body within error limit is: -
   (1) \((3.45 \pm 0.2) \) ms\(^{-1}\)
   (2) \((3.45 \pm 0.3) \) ms\(^{-1}\)
   (3) \((3.45 \pm 0.4) \) ms\(^{-1}\)
   (4) \((3.45 \pm 0.5) \) ms\(^{-1}\)

44. Velocity and acceleration of a particle at some instant of time are \( \vec{v} = (3\hat{i} + 4\hat{j}) \) m/s and \( \vec{a} = -(6\hat{i} + 8\hat{j}) \) m/s\(^2\) respectively. At the same instant particle is at origin. Maximum x-coordinate of particle will be:
   (1) 1.5m
   (2) 0.75m
   (3) 2.25m
   (4) 4.0m

45. With usual notation, the following equation, said to give the distance covered in the \( nt \)th second. i.e., \( S_{nth} = u + a \left( \frac{2n-1}{2} \right) \) is:
   (1) numerically correct only
   (2) dimensionally correct only
   (3) both dimensionally and numerically only
   (4) neither numerically nor dimensionally correct
46. Calculate the mass of urea required in making 2.5 kg of 0.25 molal aq. solution :-
(1) 36.94 gm  (2) 369.4 gm
(3) 37.5 gm  (4) 0.625 gm

49. A face centered cubic solid of element (atomic mass 60) has a cubic edge of $4 \times 10^{-8}$ cm. If Avogadro's no. is $6 \times 10^{23}$ mole$^{-1}$, then the density of the solid is
(1) 6.25 g/cc  (2) 6.25 kg/m$^3$
(3) $10^{-30}$ g/cc  (4) $64 \times 10^{-10}$ g/cc.

50. At 80°C, the vapour pressure of pure liquid A is 520 mm of Hg and that of pure liquid B is 1000 mm of Hg if a mixture of A and B boils at 80°C and 1 atm pressure, the amount of A in the mixture is
(1) 50 mol%  (2) 52 mol%
(3) 34 mol %  (4) 48 mol %

51. Conjugate base of $[\text{Mg(H}_2\text{O)}_6]^{2+}$ is :-
(1) $[\text{Mg(H}_2\text{O)}_5\text{OH}]^{2+}$  (2) $[\text{Mg(H}_2\text{O)}_3\text{OH}]^{+}$
(3) $[\text{Mg(H}_2\text{O)}_3\text{OH}]^{+}$  (4) $[\text{Mg(H}_2\text{O)}_6]^{2+}$ & (3) both

52. The density of a solution containing 40% by mass of HCl is 1.2 gm/ml. Calculate the molarity of the solution :-
(1) 13.15 M  (2) 1.315 M
(3) 26.30  (4) 0.33 M

53. The acid salts is-
(1) NaH$_2$PO$_4$  (2) Na$_2$HPO$_3$
(3) NaHS  (4) All of these

54. Equal volumes of $\frac{M}{20}$ urea solution and $\frac{M}{20}$ glucose solution are mixed. The mixture will have osmotic pressure :-
(1) Equal to either of solution.
(2) Less than either of the solution.
(3) Higher than either of the solution.
(4) Zero

47. BCC संरचना में संकुल लघु दशा होगी
(1) $\frac{\pi}{6}$  (2) $\frac{\pi}{3\sqrt{2}}$  (3) $\frac{3\pi}{8\sqrt{3}}$  (4) $\frac{3\sqrt{3}}{6}$
55. Which of the following is strongest base :-
   (1) Br\(^-\)  (2) NO\(_3^-\)  (3) Cl\(^-\)  (4) CH\(_3\)COO\(^-\)

56. Match the following
   
<table>
<thead>
<tr>
<th>Solute (Equimolar)</th>
<th>(\pi) (O.P.) ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>(i) Urea, glucose, fructose</td>
<td>(A) 1 : 0.8 : 1</td>
</tr>
<tr>
<td>(ii) NaCl, MgCl(_2), K(_2)SO(_4)</td>
<td>(B) 1 : 2 : 3</td>
</tr>
<tr>
<td>(iii) Al(_2)(SO(_4))(_3), Na(_3)PO(_4), K(_2)Fe(CN)(_6)</td>
<td>(C) 1 : 1 : 1</td>
</tr>
<tr>
<td>(iv) Glucose, NaCl, CaCl(_2)</td>
<td>(D) 2 : 3 : 3</td>
</tr>
</tbody>
</table>

57. The solubility product of CaSO\(_4\) is \(2.4 \times 10^{-5}\) when 100ml of 0·01M CaCl\(_2\) and 100ml of 0·02M Na\(_2\)SO\(_4\) are mixed then :-
   (1) Na\(_2\)SO\(_4\) will precipitate
   (2) CaSO\(_4\) will precipitate
   (3) Both will precipitate
   (4) None will precipitate

58. Which law of chemical combination is illustrated by the following data. 0.5 gm of lime stone on heating gave 0.28 gm of calcium oxide and 112 ml of CO\(_2\) at STP
   (1) Law of definite proportion
   (2) Gaylussac's law
   (3) Law of conservation of mass
   (4) Law of multiple proportion

59. The solution of which salt in water is acidic :-
   (1) Na\(_2\)B\(_4\)O\(_7\)  (2) NaHCO\(_3\)  (3) KCl  (4) CaCl\(_2\)

60. Al, Zn and Fe scraps had the same rate per kg. than for the production of H\(_2\) by action of dilute H\(_2\)SO\(_4\)
   (1) Fe will be cheapest and Al will be costliest
   (2) Al will be cheapest and Zn will be costliest
   (3) Fe will be cheapest and Zn will be costliest
   (4) Zn will be cheapest and Al will be costliest

61. Compute the H\(^+\) concentration for a solution made by 10ml of \(\frac{N}{10}\) CH\(_3\)COOH and 5 ml of \(\frac{N}{10}\) NaOH
   
   \[K_a\ for\ CH_3COOH = 10^{-5}\]
   (1) \(1.42 \times 10^{-9}\)  (2) \(1.42 \times 10^{-8}\)  (3) \(1.42 \times 10^{-7}\)  (4) \(10^{-5}\)
62. The Rydberg’s constant is \(1.097373177 \times 10^7\) m\(^{-1}\). It can be expressed to three significant figures as: (1) \(1.097 \times 10^7\) m\(^{-1}\) (2) \(1.09 \times 10^7\) m\(^{-1}\) (3) \(1.10 \times 10^7\) m\(^{-1}\) (4) \(1.10\) m\(^{-1}\)

63. The solubility product of \(\text{Al(OH)}_3\) and \(\text{Zn(OH)}_2\) are \(8.5 \times 10^{-23}\) and \(1.8 \times 10^{-14}\) at room temperature respectively. If the solution contains \(\text{Al}^{3+}\) and \(\text{Zn}^{2+}\) ions, the ion first precipitated by adding \(\text{NH}_4\text{OH}\) is: (1) \(\text{Al}^{3+}\) (2) \(\text{Zn}^{2+}\) (3) Both (4) None

64. The atomic weight of a triatomic gas is \(a\). The correct formula for the number of moles of atoms of gas in its \(W_g\) is: (1) \(\frac{3W}{a}\) (2) \(\frac{W}{3a}\) (3) \(\frac{W}{a}\) (4) None of these

65. For which of the following gaseous equilibrium at constant temperature. Doubling the volume would cause a shift of equilibrium to the right:- (1) \(2\text{CO} + \text{O}_2 \rightleftharpoons 2\text{CO}_2\) (2) \(\text{N}_2 + 3\text{H}_2 \rightleftharpoons 2\text{NH}_3\) (3) \(\text{N}_2 + \text{O}_2 \rightleftharpoons 2\text{NO}\) (4) \(\text{PCl}_3 \rightleftharpoons \text{PCl}_5 + \text{Cl}_2\)

66. 4g of an impure sample of \(\text{CaCO}_3\) on treatment with excess of \(\text{HCl}\) produces 0.88 g \(\text{CO}_2\). What is percent purity of \(\text{CaCO}_3\) sample? (1) 50 (2) 22 (3) 20 (4) 100

67. What is [\(\text{NH}_4^+\)] in a solution is 0.02 M \(\text{NH}_3\) and 0.01 M \(\text{NaOH}\) (\(K_b\) of \(\text{NH}_3 = 1.8 \times 10^{-5}\)) (1) \(3.6 \times 10^{-5}\) M (2) \(1.8 \times 10^{-5}\) M (3) \(0.9 \times 10^{-5}\) M (4) \(7.2 \times 10^{-5}\) M

68. A power company burns approximately 474 tons of coal per day to produce electricity. If the sulphur content of the coal is 1.30% by weight, how many tons of \(\text{SO}_2\) are dumped into the atmosphere each day? (1) 12.3 (2) 6.16 (3) 3.08 (4) 0.19

69. 0.1 M formic acid gets 1% ionised. If it is ionise 10 times, its concentration will be: (1) 0.001 (2) 0.01 (3) 0.0001 (4) 0.1

70. Which of the following has the least surface tension? (1) Benzene (2) Acetic acid (3) Diethyl ether (4) Chlorobenzene

71. \(\text{For which of the following gaseous equilibrium}\) (1) \(2\text{CO} + \text{O}_2 \rightleftharpoons 2\text{CO}_2\) (2) \(\text{N}_2 + 3\text{H}_2 \rightleftharpoons 2\text{NH}_3\) (3) \(\text{N}_2 + \text{O}_2 \rightleftharpoons 2\text{NO}\) (4) None of these

72. If 9.001 M \(\text{HCl}\) is added to 0.01 M \(\text{NaOH}\), the final concentration will be: (1) 9.001 (2) 0.01 (3) 4.500 (4) 0.19

73. 0.1 M \(\text{HCl}\) is added to 0.2 M \(\text{NaOH}\), the final concentration will be: (1) 0.1 (2) 0.01 (3) 0.001 (4) 0.1

74. If the sulphur content of the coal is 1.30% by weight, how many tons of \(\text{SO}_2\) are dumped into the atmosphere each day? (1) 12.3 (2) 6.16 (3) 3.08 (4) 0.19
71. At a certain temperature equilibrium constant \(K_{p}\) is 16 for the reaction
\[\text{SO}_2(g) + \text{NO}_2(g) \rightleftharpoons \text{SO}_3(g) + \text{NO(g)}\]
If we take 1 mol of each of the four gases in 0.2 lit. container, what would be the equilibrium concentration of NO :-
(1) 8 mol/lit  (2) 1.6 mol/lit  
(3) 4 mol/lit  (4) 0.2 mol/lit

72. A given volume of ozonised oxygen (containing 60% oxygen by volume) required 220 sec to effuse while an equal volume of oxygen took 200 sec only under the same conditions. If density of \(\text{O}_2\) is 1.6 g/l then find density of \(\text{O}_3\) (approx).
(1) 1.5 g/l  (2) 2.0 g/l 
(3) 2.4 g/l  (4) 3.2 g/l

73. For a gas Rxn,
\[3\text{H}_2(g) + \text{N}_2(g) \rightleftharpoons 2\text{NH}_3 (g)\] the partial pressure of \(\text{H}_2\) and \(\text{N}_2\) are 0.8 and 1.6 atm respectively at equation & the total pressure of the entire system is 3.2 atm. What will be the value of \(K_p\) :-
(1) 0.58 atm  (2) 0.78 atm  
(3) 0.88 atm  (4) 0.48 atm

74. The compressibility factor for \(\text{N}_2\) at 330 K and 800 atm is 1.90 and at 570 K and 200 atm is 1.10. A certain mass of \(\text{N}_2\) occupies a volume of 1 dm\(^3\) at 330 K and 800 atm. Calculate volume occupied by same quantity of \(\text{N}_2\) gas at 570 K and 200 atm :
(1) 1L  (2) 2L  (3) 3 L  (4) 4L

75. For the reaction \(\text{A} + 2\text{B} \rightleftharpoons 2\text{C} + \text{D}\), initial concentration of \(\text{A}\) is \(a\) and that of \(\text{B}\) is 1.5 times that of \(\text{A}\). Concentration of \(\text{A}\) and \(\text{D}\) are same at equilibrium. What should be the concentration of \(\text{B}\) at equilibrium :-
(1) \(\frac{a}{4}\)  (2) \(\frac{a}{2}\)  
(3) \(\frac{3a}{4}\)  (4) All of the above

76. A system undergoes a process in which \(\Delta E = + 300 \text{ J}\) while absorbing 400 J of heat energy and undergoing an expansion against 0.5 bar. What is the change in the volume (in L)?
(1) 4  (2) 5  (3) 2  (4) 3
77. If the de-Broglie wave length of a particle of mass m is 100 times its velocity, then its value in terms of its mass (m) and Planck's constant (h) is:-(1) \( \frac{1}{10} \sqrt{\frac{m}{h}} \) (2) \( 10 \sqrt{\frac{h}{m}} \) (3) \( \frac{1}{10} \sqrt{\frac{h}{m}} \) (4) \( 10 \sqrt{\frac{m}{h}} \)

78. During an adiabatic process, the pressure of gas is found to be proportional to the cube of its absolute temperature. The ratio of \( \frac{C_{p,m}}{C_{v,m}} \) for gas is:-(1) \( \frac{3}{2} \) (2) \( \frac{5}{3} \) (3) \( \frac{7}{2} \) (4) \( \frac{4}{3} \)

79. Which one of the following set of quantum numbers is not possible for 4p electron:-(1) \( n = 4, \ell = 1, m = +1, s = +1/2 \) (2) \( n = 4, \ell = 1, m = 0, s = +1/2 \) (3) \( n = 4, \ell = 1, m = 2, s = +1/2 \) (4) \( n = 4, \ell = 1, m = -1, s = +1/2 \)

80. The work done in adiabatic compression of 2 mole of an ideal monoatomic gas against constant external pressure of 2 atm starting from initial pressure of 1 atm and initial temperature of 300 K (R = 2 cal/mol-degree) is:(1) 360 cal (2) 720 cal (3) 800 cal (4) 1000 cal

81. Which of the following orbitals will have zero probability of finding the electron in the yz plane:-(1) px (2) py (3) pz (4) dz\(^y\)

82. At 5 \( \times 10^6 \) bar pressure density of diamond and graphite are 3g/cc and 2g/cc respectively, at certain temperature \( T \). Find the value of \( \Delta U - \Delta H \) for the conversion of 1 mole of graphite to 1 mole of diamond at temperature \( T \):-(1) 100 kJ/mol (2) 50 kJ/mol (3) -100 kJ/mol (4) None of these

83. Which of the following are isoelectronic and isostructural \( \text{NO}_3^-, \text{CO}_3^{2-}, \text{ClO}_3^-, \text{SO}_3^- \)(1) \( \text{NO}_3^- \) and \( \text{CO}_3^{2-} \) (2) \( \text{SO}_3^- \) and \( \text{NO}_3^- \) (3) \( \text{ClO}_3^- \) and \( \text{CO}_3^{2-} \) (4) \( \text{CO}_3^{2-} \) and \( \text{SO}_3^- \)
84. At 25°C, AG° for the process H₂O(ℓ) ⇌ H₂O(g) is 8.6 kJ. The vapour pressure of water at this temperature, is nearly : [use log₂ \(0.031 = -3.5\)]
   (1) 24 torr (2) 285 torr
   (3) 32.17 torr (4) 100 torr

85. Which one of the following explains light both as a stream of particles and as wave motion :-
   (1) Diffraction (2) λ = h/p
   (3) Interference (4) Photoelectric effect

86. Heat of combustion of ethanol at constant pressure and at temperature T K is found to be
   –q J mol⁻¹. Hence, heat of combustion (in J mol⁻¹) of ethanol at the same temperature at constant
   volume will be :
   (1) RT − q (2) −(q + RT)
   (3) q −RT (4) q + RT

87. The electrons identified by quantum numbers n and ℓ :-
   (i) n = 2, ℓ = 1
   (ii) n = 4 , ℓ = 0
   (iii) n = 3, ℓ = 2
   (iv) n = 3, ℓ = 1
   Can be placed in order of increasing energy as
   (1) i < ii < iii < iv
   (2) i < ii < iii < iv
   (3) i < ii < iii < iv
   (4) i < iii < ii < iv

88. Substance AₓBᵧ(g) can undergo decomposition to from two set of products :

   \[
   Aₓ_Bᵧ(g) \rightarrow Aₓ(g) + Bᵧ(g); \Delta H° = 40 \text{ kJ/mol}
   \]

   If the molar ratio of Aₓ(g) to A(g) is 5 : 3 in a set of product gases, then the energy involved in
   the decomposition of 1 mole of AₓBᵧ(g) is :
   (1) 48.75 kJ/mol (2) 43.75 kJ/mol
   (3) 46.25 kJ/mol (4) None of these

89. The enthalpy of combustion of propane (CₓHᵧ) gas in terms of given data is :
   Bond energy (kJ/mol)
   \[
   e_{C-H} \quad e_{O=O} \quad e_{C=O} \quad e_{O-H} \quad e_{C-C}
   \]
   Resonance energy of CO₂ is –z kJ/mol and
   \[\Delta H_{\text{vaporization}}[H₂O(ℓ)] = y\] kJ/mol
   (1) 8x₁ + 2x₂ + 5x₃ – 6x₄ – 8x₅ – 4y – 3z
   (2) 6x₁ + x₂ + 5x₃ – 3x₄ – 4x₅ – 4y – 3z
   (3) 8x₁ + 2x₂ + 5x₃ – 6x₄ – 8x₅ – y – z
   (4) 8x₁ + 2x₂ + 5x₃ – 6x₄ – 8x₅ – 4y + 3z

90. Enthalpy of neutralization of H₃PO₄ acid is
   –106.68 kJ/mol using NaOH. If enthalpy of neutralization of HCl by NaOH is –55.84 kJ/mol.
   Calculate \(\Delta H_{\text{ionization}}^\circ\) of H₃PO₄ into its ions:
   (1) 50.84 kJ/mol (2) 5 kJ/mol
   (3) 2.5 kJ/mol (4) None of these
91. Choose the incorrect statement of following :-
(1) Dinoflagellates have stiff cellulose plates on the outer surface
(2) Euglenoids have two flagella one lies longitudinally and the other transversely
(3) Slime mould's spores are dispersed by air current
(4) In diatoms the cell wall from two thin overlapping shells

92. Fats and oils are glycerides, in which fatty acids are esterified with :-
(1) Glycerole  (2) Amino acid  (3) Fatty acid  (4) Sugar

93. The gametophyte of pteridophytes requires to grow-
(1) Warm, damp and shady place  (2) Cool, damp and shady place
(3) Warm, dry and shady place  (4) Cool, dry and place of well sunshine

94. Which of the following compound is/are substituted purines :-
(1) Adenine, Thymine  (2) Guanine, Cytosine  (3) Adenine, Guanine  (4) Uracil, Cytosine

95. Flexibility of euglenoid body is due to :-
(1) Plasma membrane  (2) Cellulosic membrane  (3) Pellicle  (4) Glycocalyx

96. Among the following which biomolecule behave as carrier molecule of lipids in blood:-
(1) \[ R - \overset{\text{O}}{\text{C}} - \overset{\text{O}}{\text{CH}}_2 - \overset{\text{O}}{\text{CH}}_2 - \overset{\text{O}}{\text{C}} - \overset{\text{R}}{\text{C}} \]
(2) \[ \overset{\text{CH}}{\text{CH}}_3 - \overset{\text{O}}{\text{CH}}_2 - \overset{\text{O}}{\text{CH}}_2 - \overset{\text{O}}{\text{C}} - \overset{\text{R}}{\text{C}} \]
(3) \[ \overset{\text{N}}{\text{NH}}_2 - \overset{\text{N}}{\text{NH}}_2 \]
(4) \[ \overset{\text{CH}}{\text{CH}}_2 - \overset{\text{O}}{\text{NH}}_2 \]

97. The correct name for the following structures is :-
(1) \[ \overset{\text{N}}{\text{N}} - \overset{\text{N}}{\text{N}} \]
(2) \[ \overset{\text{N}}{\text{N}} - \overset{\text{N}}{\text{N}} \]
(3) \[ \overset{\text{N}}{\text{N}} - \overset{\text{N}}{\text{N}} \]
(4) \[ \overset{\text{CH}}{\text{CH}}_2 - \overset{\text{NH}}{\text{NH}}_2 \]

98. Your Target is to secure Good Rank in Pre-Medical 2013
97. Eubacterial flagellum is made up of :-
(1) Basal body, hook and pili
(2) Cell membrane, hook and filament
(3) Basal body, cell membrane and filament
(4) Basal body, hook and filament

98. Given below are the structure of two different amino acids

\[
\text{H–C–NH}_2 \quad \text{COOH} \quad \text{H–C–NH}_2 \quad \text{COOH} \\
\text{CH}_3 \quad \text{CH}_3 \text{OH}
\]

These amino acids show which type of nature respectively :-
(1) Acidic, Alkaline
(2) Alkaline, Neutral
(3) Neutral, Neutral
(4) Alkaline, Alkaline

99. Which option creates the difference between Gram − and Gram + bacterial :-
(1) Cell membrane constitution
(2) Rings of flagellum
(3) Unit of RNA
(4) Function of flagella

100. Palmitic acid is an example of :-
(1) Essential amino acid
(2) Non essential amino acid
(3) Saturated fatty acid
(4) Unsaturated fatty acid

101. Choose the correct match :-
(1) Mesosomes - Cell respiration
(2) Plasmid - bear photosynthetic pigments
(3) Flagella - help in formation of conjugation tube
(4) Capsula - help in locomotion

102. Myricyl cerotate is also known as :-
(1) Lanoline
(2) Bee wax
(3) Ear wax
(4) Carnauba

103. When scientific nomenclature are hand written they are underlined to indicate :-
(1) Their latin origin
(2) Wild species
(3) They are found in botanical garden
(4) Now they are extinct

104. Arabans and xylans are :-
(1) Pentose sugar
(2) Polymers of pentose sugar
(3) Polymer of hexose sugar
(4) Hexose sugar
105. The speed of binary fission in *Escherichia coli* is :-
   (1) Considerably slower than mitosis of advanced organism
   (2) Considerably faster than mitosis of advanced organism
   (3) Essentially the same speed as mitosis in advanced organism
   (4) Considerably slower than meiosis of advanced organism.

106. Cu**+** ions can be reduced to Cu*+* by sugar having:
   (1) Free – CHO group
   (2) Free > C = O group
   (3) Free aldehyde or ketone group
   (4) Neither aldehyde nor ketone group

107. Which statement is false? Bacteria are involved in:
   (1) Food digestion in animals
   (2) Nitrogen processing in the soil
   (3) Alcohol production in beer
   (4) Decomposing dead organic matter

108. Element located in centre of porphyrin ring of cytochrome
   (1) K  (2) Mn  (3) Mg  (4) Fe

109. In above diagram identify the a, b, c and d
   (1) a - Strobilus, b - Node, c - Internode, d - Rhizods
   (2) a - Cone, b - Stem, c - leaves, d - Rhizods
   (3) a - Strobilus, b - leaves, c - stem, d - Rhizome
   (4) a - Strobilus, b - Internode, c - Node, d - Rhizome
110. Unsaturated fats are made saturated by :-  
(1) Polymerisation  (2) Hydrogenation  
(3) Dehydrogenation  (4) Hybridization  

111. Which one of the following statement is correct: -  
(1) All bacteria are parasites  
(2) All bacteria are saprotrophs  
(3) Many bacteria are heterotrophs  
(4) Some bacteria are heterotrophs  

112. Given structure exhibit  

(1) A nucleoside of RNA  
(2) A nucleotide of RNA  
(3) A nucleoside of DNA  
(4) A nucleotide of DNA  

113.  

Identify the above diagram :-  
(1) A - Volvox, B - Chlamydomonas, C - Fucus,  
D - Porphyra  
(2) A - Volvox, B - Fucus, C - Porphyra, D - Chara  
(3) A - Chlorella, B - Fucus, C - Laminaria,  
D - Dictyota  
(4) A - Volvox, B - Laminaria, C - Fucus,  
D - Prophyra  

114. In a nucleotide which type of bond is found :-  
(1) C–O–C glycosidic bond  
(2) C–N–C glycosidic bond  
(3) Ester bond  
(4) (2) & (3) both  

110. अनुसार तूफान अंतर्राष्ट्रीय केंद्र अंतर्राष्ट्रीय केंद्र तूफान अंतर्राष्ट्रीय  
(1) तूफान केंद्र  (2) तूफान नेता  
(3) तूफान नेता  (4) तूफान नेता  

111. निम्नलिखित में से कौन सा क्रम सही है  
(1) सभी जैव वस्तु पक्षी हो जाते हैं  
(2) सभी जैव वस्तु पक्षी हो जाते हैं  
(3) अंश वस्तु तत्त्व के जैव वस्तु विभाजन पक्षी हो जाते हैं  
(4) कुछ जैव वस्तु विभाजन पक्षी हो जाते हैं  

112. दी गयी संरचना द्वारा ती है :-  

113.  

दिखाये गये चित्रों के क्रमांकों ।  
(1) A - वा त्वचम, B - खण्ड लेता त्वचम, C - मात्रकस,  
D - पेय रक्षा खा  
(2) A - वा त्वचम, B - मात्रकस - C - पेय रक्षा - D - प्रेरणा खा  
(3) A - का में है - B - मात्रकस - ले भिन्न भिन्न  
D - डिली बटों वे ता  
(4) A - वा त्वचम, B - सले त्वचम - C - मात्रकस - D - पेय रक्षा खा  

114. - सूचीं को फ़ेले टाइड में कौन सा क्रम पवन जात है  
(1) C–O–C सूची लेता सिंदूर कांक्ष  
(2) C–N–C सूची लेता सिंदूर कांक्ष  
(3) फ्लैटर कांक्ष  
(4) (2) व (3) दो नामें
115. Which of the following is true for alternation of generation :-
(1) The sporophyte undergoes syngamy to produce spore
(2) The gametophyte undergoes syngamy to produce spore
(3) The sporophyte undergoes meiosis to produce spore
(4) The gametophyte undergoes meiosis to produce gametes

116. Outer membrane
Inner membrane

(i) Identify the above diagram
(ii) Label A and B
(iii) What is the function of B?
Choose the correct combination of answers :-
(1) (i) - Longitudinal section of mitochondrion
   (ii) - (A) Intermembrane space
         (B) - Matrix
   (iii) - Protein synthesis
(2) (i) - Transverse section of mitochondrion
   (ii) - (A) - Ribosome , (B) - Cisternae
   (iii) - Lipid synthesis
(3) (i) - Longitudinal section of mitochondrion
   (ii) - (A) - Matrix , (B) - Crista
   (iii) - Increase in surface area
(4) (i) - Golgi apparatus ,
   (ii) (A) - vesicle , (B) - Tubule
   (iii) packaging

117. Select out the incorrect match :-
(1) Euglenoids- Fresh stagnant water
(2) Diatoms - Marine water
(3) Dinoflagellates - Damp soil
(4) Slime mould - Lumbers and plant waste
118. Match the following :-

- (A) Dictyosome i. Hydrolysis
- (B) Aleuroplast ii. Photosynthesis
- (C) Endoplasmic iii. Stacks of Cisternae reticulum
- (D) Lysosome iv. Detoxification
- (E) Chromatophore v. Store proteins

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

119. Bacterial structure and behaviour are respectively:-

(1) Simple, Simple
(2) Complex, Simple
(3) Simple, Complex
(4) Complex, Complex

120. Read the following statements regarding ribosomes:-

(i) 0.001 M concentration of calcium ion is required for the binding of subunits
(ii) The dimer of eukaryotic ribosome (80 S) is 120 S.
(iii) Also known as organelle within organelle.
(iv) 5 S r-RNA is common to both 70 S and 80 S ribosomes.
(v) All the components of ribosome are synthesised in nucleolus.

How many statements are incorrect?

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

121. Identify the A, B, C and D respectively :-

(1) Seta, Leaves, Capsula, Rhizoids
(2) Leaves, Capsule, Seta, Rhizoids
(3) Capsule, Seta, leaves, Rhizome
(4) Capsule, Seta, leaves, Rhizoids
122. Which of the following microbodies is related to the degradation of fat in animal cells?
(1) Microbody related to the lipid storage.
(2) Microbody which contain catalase enzyme.
(3) Microbody related to yolk formation.
(4) Microbody related to glyoxylate cycle.

123. Which is not true about agar :-
(1) It is obtained from red algae
(2) It is used to grow microbes
(3) It is used to make ice-cream and jellies
(4) It is used to food supplement even by space travellers

124. Nucleosome = _A_ + _B_ + Linker DNA + H1 histone.
(i) 'B' is a group of histone proteins. It contains how many types of histone proteins?
(ii) What is 'A'?
Choose the correct answer :-
(1) (i)-8 types, (ii)-Deoxyribonucleic acid.
(2) (i)-2 types, (ii)-Ribonucleic acid.
(3) (i)-6 types, (ii)-Ribonucleic acid.
(4) (i)-4 types, (ii)-Deoxyribonucleic acid.

125. Bacteria can not move with the help of Pilis because :-
(1) They are smaller then cilia and flagella
(2) They are found on surface
(3) They are made up of non-contractile protein
(4) They help in conjugation

126. Centrioles are differ from cilia or flagella :-
(a) in number of subtubules in each peripheral microtubule.
(b) in number of radial spokes.
(c) in arrangement of microtubules.
(d) in containing proteinaceous central hub.
(e) in being surrounded by double membrane.
Choose the correct statements:-
(1) a, c and d
(2) a, b, c and d
(3) a, b and c
(4) b, c, d and e

127. Read the following statement :-
(A) Possess chlorophyll a, c, carotenoids and xanthophylls
(B) Cell wall usually covered by gelatinous coating of algin
(C) Gametes are pyriform and bear two laterally attached flagella
(D) Members are found primarily in marine habitats.
All these information are related with group
(1) Phaeophyceae
(2) Chlorophyceae
(3) Rhodophyceae
(4) Cyanophyceae

128. निम्न विकल्पों में से किस विकल्प को 'तापमान' कहते हैं?
(1) तापमान वह संयोग है जहाँ जल-अम्ल नहीं होता।
(2) तापमान वह संयोग है जहाँ जल नहीं होता।
(3) तापमान वह संयोग है जहाँ जल और अम्ल नहीं होता।
(4) तापमान वह संयोग है जहाँ जल और अम्ल नहीं होता।

129. ताप-'संयोग'-का विकल्प ना होने के घरेलू जीव का विकल्प है :-
(a) हाथी, बाज़ारी, गर्मी, कृषि, और वनस्पति।
(b) हाथी, गर्मी, कृषि, और वनस्पति।
(c) हाथी, कृषि, गर्मी, कृषि, और वनस्पति।
(d) हाथी, कृषि, गर्मी, कृषि, और वनस्पति।

130. निम्नलिखित तकनीकों का उपयोग क्या है?
(A) जहां हिदायत के रूप में विद्युत उपकरण का उपयोग किया जाता है।
(B) जहां विद्युत उपकरण का उपयोग किया जाता है।
(C) जहां विद्युत उपकरण का उपयोग किया जाता है।
(D) जहां विद्युत उपकरण का उपयोग किया जाता है।

131. निम्नलिखित जीवों का उपयोग क्या है?
(1) सर्दियों में वायुक्रिया के लिए तापमान का उपयोग किया जाता है।
(2) यह तापमान का उपयोग किया जाता है।
(3) यह तापमान का उपयोग किया जाता है।
(4) यह तापमान का उपयोग किया जाता है।
128. Many cells in adult animals exit ‘A’ to enter an inactive stage called ‘B’. Cells in this stage remain metabolically ‘C’ and ‘D’. Choose the correct match:

1. A = Karyokinesis, B = G$_0$ phase, C = inactive, D = divide
2. A = G$_1$ phase, B = G$_0$ phase, C = inactive, D = not divide
3. A = Cytokinesis, B = Polyteny, C = active, D = divide
4. A = G$_1$ phase, B = Quiescent stage, C = active, D = not divide

129. Identify the A, B, C and D

1. A - Equisetum, B - Paramoecium, C - Funaria, D - Sphagnum
2. A - Euglena, B - Agaricus, C - Ginkgo, D - Nostoc
3. A - Agaricus, B - Ginkgo, C - Euglena, D - Equisetum
4. A - Nostoc, B - Euglena, C - Agaricus, D - Ginkgo

Time Management is Life Management
130. Which one of the following is a event of pachytene?
(1) Clearly appearance of tetrads
(2) Synapsis
(3) Dissolution of Synaptonemal complex
(4) In Oocytes of Vertebrates, can last for Months or Year

131. (I) Fertilization
(II) Liberation of spores
(III) Prothallus formation
(IV) Embryo formation
Arrange the above events in a correct sequence in the life cycle of Pteridophytes:-
(1) II, III, I, IV
(2) IV, III, II, I
(3) I, II, III, IV
(4) I, IV, III, II

132. Nucleolus is -
(1) Spherical structure found in cytoplasm near nucleus
(2) Spherical structure inside nucleus and having r RNA
(3) Rod shaped structure in cytoplasm near the nucleus
(4) Rod shaped structure inside nucleus and having m-RNA

133. A feature common in gametophyte and sporophyte of Mosses and ferns is :-
(1) Independent existance
(2) Photosynthetic nature
(3) Presence of vascular tissue
(4) Unbranched habit

134. A biochemist measured the amount of DNA in cells growing in the laboratory and found the quantity of DNA in a cell doubled. When this quantity increased -
(1) During the M phase of the cell cycle
(2) Between prophase and metaphase of Mitosis
(3) Between the G1 and G2 phase of the cell cycle
(4) Between prophase I and prophase II of meiosis

135. Sexual reproduction in fungi may occur by means of :-
(1) Sporangiospore, Oospore and Ascospore
(2) Zoospore, Oospore and Ascospore
(3) Sporangiospore, Ascospore and Basidiospore
(4) Oospore, Ascospore and Basidiospore
136. Given below is the diagrammatic sketch of a certain type of connective tissue.

![Collagen fibres](image)

The above tissue is found in:
(1) Ligament
(2) Tendon
(3) Dermis of the skin
(4) All of these

137. Which one of the following is mismatched:
(1) *Penicillium* - Source of antibiotics
(2) *Albugo* - Parasitic fungi on legume
(3) *Neurospora* - Used in biochemical and genetic work
(4) *Agaricus* - Edible fungus

138. Which of the following epithelial tissue is incorrectly matched with its location?
(1) Simple squamous epithelium - Air sacs of lungs
(2) Simple cuboidal epithelium - ducts of glands
(3) Ciliated epithelium - inner surface of fallopian tubes
(4) Compound epithelium - lining of stomach

139. Identify the diagram and a, b and c:
(1) *Chara*; a - Branches, b - Stipe, c - Fronds
(2) *Dictyota*; a - Frond, b - Midrib, c - Stipe
(3) *Laminaria*; a - Frond, b - Stipe, c - Holdfast
(4) *Fucus*; a - Air bladder, b - Midrib, c - stipe

140. In which of the following white fibrous cartilage is present?
(1) Tip of nose
(2) Outer ear joints
(3) Between adjacent bones of vertebral column
(4) Limbs and hands in adults
141. Binomial system of nomenclature means that every organism has:
(1) One scientific nomenclature consisting of two specific epithet
(2) A name given by two scientists
(3) One scientific nomenclature consisting of one specific epithet
(4) A number in an international catalogue by which an organism is identified

142. Given below is the diagrammatic sketch of a certain type of connective tissue. Identify the parts labelled A, B, C and D and select the right option about them:

   A
   B
   C
   D

(1) Macrophage Collagen fibres Mast cell Fibroblast
(2) Macrophage Fibroblast Collagen fibres Mast cell
(3) Mast cell Fibroblast Macrophage Collagen fibres
(4) Mast cell Macrophage Collagen fibres Fibroblast

143. Which of the following option is related with protist and plantae but not in monera:
(1) Cell wall and cell membrane
(2) Ribosome and flagella
(3) Mode of nutrition
(4) Cellular grade of organization

144. Blood sample of a person was taken and examined and following results were obtained:
RBC - 5 - 5.5 million mm\(^{-3}\)
WBC - 15000 - 20000 mm\(^{-3}\)
Platelets - 80,000 mm\(^{-3}\)
Haemoglobin - 14 gm/100 ml of blood
Which of the above components are normal?
(1) RBC and platelets
(2) WBC and haemoglobin
(3) RBC and haemoglobin
(4) RBC, WBC and platelets

145. Which option is not related with Cycas:
(1) Unbranched stem
(2) Symbiosis with cyanobacteria
(3) More than one archegonia
(4) Monoecious sporophyte

141. ना मकरण की दिखा ना मकरण पहुचना आता हैं प्रति घर कई च रखत ता हे:
(1) एक जातीय निकाल मकरण जो दो मजिस्ट्रेट्स के तपथ से मिलकर मना है
(2) दो मजिस्ट्रेट्स निकाल मकरण नाम दिया गया है
(3) एक जातीय मकरण जो एक मजिस्ट्रेट्स के तपथ से मिलकर मना है
(4) अति ग्रंथ ती मौसूम चीज का एक काल्पनिक उस संख्या के फ्रेम ना रखत है

142. नीचे दिया जा रहा एक अरे खो चित्र में एक विशेष ग्रंथ वार का चित्र, जो तथा से वे घटित च गया है। इसके, C तथा D ना मां क्रिया 11 गया - 5 य है, इसलिए यमेरा घट चु निए -

143. निम्न में से कौन सा विक्ष क्या टर्म स्टो से तो है लेकिन यस ने गाई नहीं
(1) को पिंहा पिंहा पिंहा व को पिंहा पिंहा होली
(2) र इत्यादि मध्य कहाँ बिधा का
(3) पांच का अर्थ नहीं
(4) को की वसंत गन का प्रार्थ

144. एक वर्ग तथा वर्ग र र नया ना ले कर जैव चा गत तालिका निम्नलिखित निष्कर्षों पर पहुँचता है
RBC - 5 - 5.5 मिलियन निकाल न मिमी
WBC - 15000 - 20000 मिलियन प्रति न मिमी
Platelets - 80,000 मिलियन प्रति न मिमी
Haemoglobin - 14 gm/100 ml of blood
Which of the above components are normal?
(1) RBC and platelets
(2) WBC and haemoglobin
(3) RBC and haemoglobin
(4) RBC, WBC and platelets

145. Which option is not related with Cycas:
(1) Unbranched stem
(2) Symbiosis with cyanobacteria
(3) More than one archegonia
(4) Monoecious sporophyte
146. A... are phagocytic cells which destroy foreign organisms entering the body while B... are involved in inflammatory reactions.

1. A-Eosinophils and neutrophils b-basophils
2. A-Monocytes and neutrophils b-eosinophils
3. A-Monocytes and neutrophils b-basophils
4. A-Monocytes and lymphocytes b-neutrophils

147. Choose the incorrect statement regarding decomposer.

1. They are may be prokaryotes or eukaryotes
2. They are may be unicellular or multicellular
3. They are essentially present in every food chain
4. They play a great role in ecology

148. Given below are some incomplete statements Fill their a, b, c and d with respect to earthworm and find out the correct answer:

(i) Blood vascular system......(a).......  
(ii) Excretory organs .......(b).......  
(iii) First body segment .......(c).......  
(iv) Fertilisation .......(d)....... 

a b c d

1. Open Nephridia Prostomium External
2. Open Malpighian Peristomium in cocoon tubules
3. Closed Malpighian Peristomium internal tubules
4. Closed Nephridia Peristomium in cocoon

149. Albugo, Agaricus, Alternaria, Aspergillus. Which option is common in all above organism

1. All have chitinous cell wall
2. All have sexual reproduction
3. They all act as decomposer in nature
4. They all are heterotrophic eukaryotes

150. Given below is the diagrammatic sketch of head region of cockroach Identify the parts labelled A, B, C and D and select the right option about them.
151. Which one of the following animals is exceptionally an oviparous?

(1) 

(2) 

(3) 

(4) 

152. Read the following three statements (A-C) and answer as asked next to them.

(A) In a mature earthworm, segments 16-18 are covered by a dark band of glandular tissue called clitellum

(B) In Periplaneta mouth parts are biting and sucking type

(C) In frog during aestivation and hibernation gaseous exchange takes place through skin mainly.

How many of the above statements are wrong?

(1) Three  (2) Two  (3) One  (4) None

153. Pick the odd pair out:-

(1) Cellular level : Scypha

(2) Tissue level : Ancylostoma

(3) Organ level : Fasciola

(4) Organ system level : Nereis
154. Consider the following four statements (a-d) with respect to frog and select the option which includes all the correct ones only:
(a) Their body temperature varies with the temperature of the environment
(b) Female frog can be distinguished by the presence of sound producing vocal sacs
(c) It is a ureotelic animal
(d) In male urethra acts as urinogenital duct
Options:
(1) Statements (a), (d)
(2) Statements (b), (c)
(3) Statements (a), (c)
(4) Statements (a), (c) and (d)

155. Animals possess various type of symmetry, select the correctly matched:
(1) Echinodermates possess radial symmetry
(2) Arthropods possess bilateral symmetry
(3) Sponges are mostly asymmetrical
(4) All of these

156. Which structure is shown in above diagram:
(1) Monocot root
(2) Dicot root
(3) Dicot stem
(4) Monocot stem

157. The correct set for porifera is:
(1) Acoelomates, Fresh water, Zooplanktonic, Triploblastic, Cell aggregate body plan
(2) Eucoelomates, Marine, Sedentary, diploblastic, blind sac body plan
(3) Celluar level of organisation, Marine, Sedentary, diploblastic
(4) Acoelomates, Marine, Sedentary, diploblastic, blind sac body plan
158. Which of the following is true?

(1) Shoot apical meristem is the part of lateral meristem
(2) Intra fascicular, inter fascicular cambium and cork cambium are lateral meristem which are secondary in origin
(3) Permanent tissue cell does not have capability to divide
(4) (1) and (3) both

159. The phyla showing radial symmetry:

(1) Echinodermata, Coelenterata and Ctenophora
(2) Porifera, Coelenterata and Echinodermata
(3) Protozoa, Coelenterata and Ctenophora
(4) Coelenterata, Ctenophora and Annelida

160. The cells arranged in multiple layer between epidermis and pericycle form:

(1) Hypodermis
(2) Ground tissue
(3) Cortex
(4) Pith

161. The biological name and their popular common name of animals are given below, select the correctly matched among following:

(1) Ancylostoma - Pin worm
(2) Octopus - Squid
(3) Antedon - Sea Lily
(4) Laccifer - Locust

162. The first formed primary phloem consist of narrow sieve tube and referred to:

(1) Prophloem
(2) Protophloem
(3) Metaphloem
(4) Ray initial

163. In which one of the following organisms its respiratory organs are correctly matched?

(1) Ophura - Gills
(2) Limulus - Book gills
(3) Sepia - Book lungs
(4) Earthworm - Tracheal system

164. Drup fruit present in mango and coconut is formed from:

(1) Monocarpellary unilocular ovary
(2) Monocarpellary bilocular ovary
(3) Bicarpellary unilocular ovary
(4) (1) and (3) both

165. Which one of the following statements about certain given animals is correct?

(1) Sea squid shows metamerism
(2) Flat worms are pseudocoelomates
(3) Insects are coelomates
(4) Adult Star Fish are bilaterally symmetrical
166. Sclereid is a common feature of:–
(1) Fruit wall of nut
(2) Seed coat of legume
(3) Fruit pulp of pear
(4) All of the above

167. Which one of the following phyla is correctly matched with its general characteristics?
(1) Porifera - Cellular level of organisation and external fertilisation
(2) Coelenterata - Diploblastic and mostly segmented
(3) Aschelminthes - Pseudocoelomates and dioecious
(4) Hemichordata - Coelomates and closed circulatory system

168. Inferior ovary is commonly present in:–
(1) Plum
(2) Rose
(3) Cucumber
(4) China rose

169. Select the incorrect statement from the following:–
(1) Members of phylum ctenophora have ciliary comb plate.
(2) When any plane passing through the central axis of the body divides the organism into two identical halves, is called radial symmetry
(3) Earthworm and Nereis are monoecious
(4) Hemichordates body is composed of proboscis, collar and trunk

170. Cambium activity is controlled by:–
(1) Physiological factor
(2) Environmental factor
(3) Physiological and environmental factor both
(4) It is unregulated process

171. Which one of the following is a matching pair of a body feature and the animal possessing it?
(1) Canal system - Asterias
(2) Metagenesis - Nereis
(3) Dorsal nerve cord - Pheretima
(4) Muscular pharynx - Ascaris

172. When leaflet are attached to simple point it is known as ........(A)........ and it is present in ........(B)....... A and B are respectively:–
(1) Pinnately compound leaf, Neem
(2) Whorl phylloxytax, Alstonia
(3) Palmately compound leaf, Silk cotton
(4) Simple leaf, Silk cotton

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(2) Whorl phylloxytax, Alstonia
(3) Palmately compound leaf, Silk cotton
(4) Simple leaf, Silk cotton
173. Which one of the following pairs is correctly matched?
   (1) Physalia - Portuguese man of war
   (2) Ascaris - Flat worm
   (3) Wuchereria - Pin worm
   (4) Ancylostoma - Eye worm

174. Which of the following contribute to the formation of primary plant body?
   (1) Apical meristem and intercalary meristem
   (2) Apical and lateral meristem
   (3) Lateral and intercalary meristem
   (4) Primary and secondary Meristem

175. Consider the following characteristics of organisms
   A. Diploblastic body
   B. Possessing cnidocytes
   C. Presence of both intracellular and intercellular digestion. Which of the above are characteristics of organism of Ctenophore?
   (1) A and B
   (2) B and C
   (3) A and C
   (4) A, B and C

176. Direct elongation of radicle leads to formation of:
   (1) Primary root
   (2) Secondary root
   (3) Tertiary root
   (4) None of the above

177. Consider the following statements:
   During the alternation of generation or Metagenesis in dimorphic coelenterates, the polyp are necessarily:
   A. Free living
   B. Sedentary
   C. Polyp form the medusae asexually
   D. form the polyps sexually
   (1) A, C and D are correct
   (2) A and D are correct
   (3) A and C are correct
   (4) B and C are correct

178. The body cavity which is lined by mesoderm and called coelom, if the mesoderm is present as scattered pouches in between the ectoderm and endoderm, such a body cavity is called pseudocoelom select the pseudocoelomata creature:
   (1) Pheretima
   (2) Locusta
   (3) Asterias
   (4) Wuchereria
179. In the evolutionary history of the animal kingdom, which of the following features have evolved for the first time in phylum platyhelminthes?
A. Metameric segmentation
B. Organ level of organisation
C. Closed circulatory system
D. True coelom
E. Bilateral symmetry
Select the correct answer -
(1) B and E  (2) A, B, C and D  
(3) A, C and D  (4) only A and B

180. In which phylum the organ grade of organisation is first time appeared during evolution:-
(1) Aschelmenthes  (2) Annelida  
(3) Arthropoda  (4) Platyhelminthes

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