

# NEET Mock Test for Class XI

## Important Instructions:

1. The test is of 3 hours duration and **Test Booklet** contains 180 questions. Each question carries **4 marks**. For each correct response, the candidate will get 4 marks. For each incorrect response, one mark will be deducted from the total scores. The maximum marks are 720
2. Use **Blue/Black Ball Point Pen** only for writing particulars on this page/markings responses.
3. Rough work is to be done on the space provided for this purpose in the Test Booklet only.
4. One completion of the test, the candidate must hand over the Answer Sheet to the invigilator before leaving the Room/Hall. Candidates are allowed to take away this **Test Booklet** with them.
5. The candidates should ensure that the Answer Sheet is not folded. Do not make any stray marks on the Answer Sheet. Do not write your **Roll No.**, anywhere else except in the specified space in the Test Booklet / Answer Sheet
6. Use of white fluid for correction is **NOT** permissible on the Answer Sheet.
7. No candidate, without special permission of the Superintendent or Invigilator, would leave his / her seat.
8. Use of Electronic / Manual Calculator is prohibited.

## Syllabus covered in this test

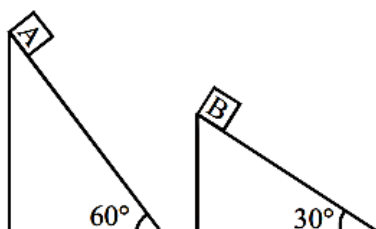
**Physics:** 1. Introduction 2. Units and Measurements 3. Motion in a Straight Line 4. Motion in a Plane 5. Laws of Motion 6. Work, Energy and Power 7. System of Particles and Rotational Motion 8. Gravitation

**Chemistry:** 1. Basic Concepts of Chemistry. 2. Structure of Atom 3. Classification of Elements and Periodicity in Properties 4. Chemical Bonding and Molecular Structure 5. States of Matter 6. Thermodynamics 7. Equilibrium 8. Redox Reactions

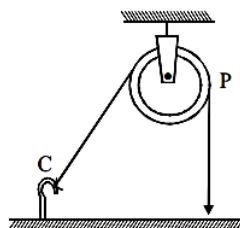
**Biology:** 1. The Living World 2. Biological Classification 3. Plant Kingdom 4. Animal Kingdom 5. Morphology of Flowering Plants 6. Anatomy of Flowering Plants 7. Structural Organisation in Animals 8. Cell: The Unit of Life 9. Biomolecules 10. Cell Cycle and Cell Division

**PHYSICS**

1. Two fixed frictionless inclined planes making an angle  $30^\circ$  and  $60^\circ$  with the vertical are shown in the figure. Two blocks A and B are placed on the two planes. What is the relative vertical acceleration of A with respect to B?



- (a)  $4.9 \text{ ms}^{-2}$  in vertical direction.                      (b)  $4.9 \text{ ms}^{-2}$  in horizontal direction  
 (c)  $9.8 \text{ ms}^{-2}$  in vertical direction                      (d) Zero
2. One end of 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 840 N. With what value of maximum safe acceleration (in  $\text{ms}^{-2}$ ) can a man of 60 kg climb on the rope?



- (a) 16                      (b) 6                      (c) 4                      (d) 8
3. At time  $t = 0\text{s}$  particle starts moving along the x-axis. If its kinetic energy increases uniformly with time 't', the net force acting on it must be proportional to :-

- (a)  $\sqrt{t}$                       (b) constant                      (c) t                      (d)  $\frac{1}{\sqrt{t}}$

**SPACE FOR ROUGH WORK**

4. The time period of a satellite of earth is 5 hours. If the separation between the centre of earth and the satellite is increased to 4 times the previous value, the new time period will become :–  
 (a) 10 h (b) 80 h (c) 40 h (d) 20 h
5. A projectile is given an initial velocity of  $(\hat{i} + 2\hat{j})\text{ m/s}$ , where  $\hat{i}$  is along the ground and  $\hat{j}$  is along the vertical. If  $g = 10\text{ m/s}^2$ , the equation of its trajectory is:  
 (a)  $y = x - 5x^2$  (b)  $y = 2x - 5x^2$  (c)  $4y = 2x - 5x^2$  (d)  $4y = 2x - 25x^2$
6. Two particles of equal mass 'm' go around a circle of radius R under the action of their mutual gravitational attraction. The speed of each particle with respect to their centre of mass is:–  
 (a)  $\sqrt{\frac{Gm}{R}}$  (b)  $\sqrt{\frac{Gm}{4R}}$  (c)  $\sqrt{\frac{Gm}{3R}}$  (d)  $\sqrt{\frac{Gm}{2R}}$
7. A circular disc X of radius R is made from an iron plate of thickness t and another disc Y of radius 4R is made from an iron plate of thickness t/4. Then the relation between the moment of inertia  $I_x$  and  $I_y$  is :–  
 (a)  $I_y = 32 I_x$  (b)  $I_y = 16 I_x$  (c)  $I_y = I_x$  (d)  $I_y = 64 I_x$
8. A ball of mass 0.2 kg is thrown vertically upwards by applying a force by hand. If the hand moves 0.2 m while applying the force and the ball goes upto 2m height further, find the magnitude of the force. Consider  $g = 10\text{ m/s}^2$  :  
 (a) 4N (b) 16 N (c) 20 N (d) 22 N
9. A wire fixed at the upper end stretches by length  $\ell$ , slowly under external variable force, such that final force is F. The work done in external stretching is:–  
 (a)  $\frac{F}{2\ell}$  (b)  $F\ell$  (c)  $2F\ell$  (d)  $\frac{F\ell}{2}$
10. The change in the value of g at a height h above the surface of the earth is the same as at a depth d below the surface of earth. When both d and h are much smaller than the radius of earth, then which one of the following is correct?

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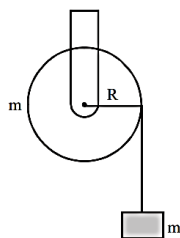
**SPACE FOR ROUGH WORK**

- (a)  $d = \frac{h}{2}$                       (b)  $d = \frac{3h}{2}$                       (c)  $d = 2h$                       (d)  $d = h$
11. Speeds of two identical cars are  $u$  and  $4u$  at a specific instant. The ratio of the respective distances at which the two cars are stopped from that instant is–  
 (a) 1: 1                      (b) 1 : 4                      (c) 1: 8                      (d) 1 : 16
12. A spherical ball of mass 20 kg is stationary at the top of a hill of height 100 m. It rolls down a smooth surface to the ground, the climbs up another hill of height 30 m and finally rolls down to a horizontal base at a height of 20 m above the ground. The velocity attained by the ball is :–  
 (a)  $40\sqrt{\frac{5}{7}}$  m/s                      (b) 20 m/s                      (c) 10 m/s                      (d)  $10\sqrt{30}$  m/s
13. Consider the following two statements :–  
 (a) Linear momentum of a system of particles is zero.  
 (b) Kinetic energy of a system of particles is zero.  
 The:–  
 (a) A does not imply B and B does not imply A  
 (b) A implies B but B does not imply A  
 (c) A does not imply B but B implies A  
 (d) A implies B and B implies A
14. Consider a uniform square plat of side ‘a’ and mass ‘m’ the moment of inertia of this plate about an axis perpendicular to its plane and passing through one of its corners is  
 (a)  $\frac{5}{6} ma^2$                       (b)  $\frac{1}{12} ma^2$                       (c)  $\frac{7}{12} ma^2$                       (d)  $\frac{2}{3} ma^2$
15. The respective number of significant figures for the numbers 23.023, 0.0003 and  $2.1 \times 10^{-3}$  are:–  
 (a) 4, 4, 2                      (b) 5, 1, 2                      (c) 5, 1, 5                      (d) 5, 5, 2
16. A rocket which has a mass of  $3.5 \times 10^4$  kg is blasted upwards with an initial acceleration of  $10 \text{ m/s}^2$ . Then the initial thrust of the blast is–

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**SPACE FOR ROUGH WORK**

- (a)  $3.5 \times 10^5 \text{ N}$       (b)  $7.0 \times 10^5 \text{ N}$       (c)  $14.0 \times 10^5 \text{ N}$       (d)  $1.75 \times 10^5 \text{ N}$
17. A car, starting from rest, accelerates at the rate  $f$  through a distance  $S$ , then continues at constant speed for time  $t$  and then decelerates at the rate  $f/2$  to come to rest. If the total distance travelled is  $15S$ , the—
- (a)  $S = ft$       (b)  $S = \frac{1}{6} ft^2$       (c)  $S = \frac{1}{72} ft^2$       (d)  $S = \frac{1}{4} ft^2$
18. A circular disc of radius  $R$  is removed from a bigger circular disc of radius  $2R$  such that the circumferences of the discs coincide. The centre of mass of the new disc is  $\alpha R$  from the centre of the bigger disc. The value of  $\alpha$  is:—
- (a)  $\frac{1}{3}$       (b)  $\frac{1}{2}$       (c)  $\frac{1}{6}$       (d)  $\frac{1}{4}$
19. A mass 'm' is supported by a massless string wound around a uniform hollow cylinder of mass  $m$  and radius  $R$ . If the string does not slip on the cylinder, with what acceleration will the mass fall on release?



- (a)  $\frac{5g}{6}$       (b)  $g$       (c)  $\frac{2g}{3}$       (d)  $\frac{g}{2}$
20. If  $\vec{e}_1$  &  $\vec{e}_2$  are two unit vectors and  $\theta$  is the angle between them, then  $\sin\left(\frac{\theta}{2}\right)$  is :
- (a)  $\frac{1}{2} |\vec{e}_1 + \vec{e}_2|$       (b)  $\frac{1}{2} |\vec{e}_1 - \vec{e}_2|$       (c)  $\frac{\vec{e}_1 \cdot \vec{e}_2}{2}$       (d)  $\frac{|\vec{e}_1 \times \vec{e}_2|}{2 |\vec{e}_1| |\vec{e}_2|}$

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**SPACE FOR ROUGH WORK**

21. The potential energy of a long spring when stretched by 2cm is U. If the spring is stretched by 8 cm the potential energy stored in it is:  
 (a) 4U (b) 8U (c) 16U (d) U/4
22. For angles of projection of a projectile at angles  $(45^\circ - \theta)$  and  $(45^\circ + \theta)$ , the horizontal ranges described by the projectile are in the ratio of :  
 (a) 1 : 1 (b) 2 : 3 (c) 1 : 2 (d) 2 : 1
23. A body of mass 3 kg is under a constant force which causes a displacement s in metres it, given by the relation  $s = \frac{1}{3}t^2$ , where t is s. Work done by the force in 2s is:  
 (a)  $\frac{5}{19}$  J (b)  $\frac{3}{8}$  J (c)  $\frac{8}{3}$  J (d)  $\frac{19}{5}$  J
24. A particle moves along a straight line OX. At a time t(in seconds) the distance x(in metres) of the particle from O is given by  

$$x = 40 + 12t - t^3$$
  
 How long would the particle travel before coming to rest ?  
 (a) 24 m (b) 40 m (c) 56 m (d) 16 m
25. The velocity v of a particle at time is given by  $v = at + \frac{b}{t+c}$ , where a, b and c are constants. The dimensions of a, b and c are respectively :  
 (a)  $[LT^{-2}]$ , [L] and [T] (b)  $[L^2]$ , [T] and  $[LT^2]$  (c)  $[LT^2]$ , [LT] and [L] (d) [L], [LT] and  $[T^2]$
26. 300 J of work is done in sliding a 2 kg block up an inclined plane of height 10 m. Taking  $g = 10 \text{ m/s}^2$ , work done against friction is :  
 (a) 200 J (b) 100 J (c) zero (d) 1000 J
27. A 0.5 kg ball moving with a speed of 12 m/s strikes a hard wall at an angle of  $30^\circ$  with the wall. It is reflected with the same angle. If the ball is in contact with the wall for 0.25 s, the average force acting on the wall is:

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**SPACE FOR ROUGH WORK**



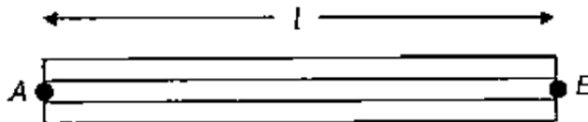
- (a) 48 N                      (b) 24 N                      (c) 12 N                      (d) 96 N
28. The moment of inertia of a uniform circular disc of radius  $R$  and mass  $M$  about an axis touching the disc at its diameter and normal to the disc is:
- (a)  $MR^2$                       (b)  $\frac{2}{5}MR^2$                       (c)  $\frac{3}{2}MR^2$                       (d)  $\frac{1}{2}MR^2$
29. The earth is assumed to be a sphere of radius  $R$ . A platform is arranged at a height  $R$  from the surface of the earth. The escape velocity of a body from this platform is  $fv_e$  where  $v_e$  is its escape velocity from the surface of the earth. The value of  $f$  is :
- (a)  $\sqrt{2}$                       (b)  $\frac{1}{\sqrt{2}}$                       (c)  $\frac{1}{3}$                       (d)  $\frac{1}{2}$
30. A car runs at a constant speed on a circular track of radius 100 m, taking 62.8 s for every circular lap. The average velocity and average speed for each circular lap respectively is:
- (a) 0, 0                      (b) 0, 10 m/s                      (c) 10 m/s, 10 m/s                      (d) 10 m/s, 0
31. A tube of length  $L$  is filled completely with an incompressible liquid of mass  $M$  and closed at both the ends. The tube is then rotated in horizontal plane about one of its ends with a uniform angular velocity  $\omega$ . The force exerted by the liquid at the other end is:
- (a)  $\frac{ML\omega^2}{2}$                       (b)  $\frac{ML^2\omega}{2}$                       (c)  $ML\omega^2$                       (d)  $\frac{ML^2\omega^2}{2}$

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**SPACE FOR ROUGH WORK**

32. A uniform rod of length  $l$  and mass  $m$  is free to rotate in a vertical plane about A. The rod initially in horizontal position is released. The initial angular acceleration of the rod is:

(Moment of inertia of rod about A is,  $\frac{ml^2}{3}$  )



- (a)  $\frac{3g}{2l}$                       (b)  $\frac{2l}{3g}$                       (c)  $\frac{3g}{2l^2}$                       (d)  $mg \frac{1}{2}$
33. The vectors  $\vec{A}$  and  $\vec{B}$  are such that a:  

$$|\vec{A} + \vec{B}| = |\vec{A} - \vec{B}|$$
 The angle between the two vectors is:  
 (a)  $90^\circ$                       (b)  $60^\circ$                       (c)  $75^\circ$                       (d)  $45^\circ$
34. Two bodies, A (of mass 1 kg) and B (of mass 3kg) are dropped from heights of 16 m and 25 m, respectively. The ratio of the time taken by them to reach the ground is:  
 (a)  $5/4$                       (b)  $12/5$                       (c)  $5/12$                       (d)  $4/5$
35. When a mass is rotating in a plane about a fixed point, its angular momentum is directed along:  
 (a) a line perpendicular to the plane of rotation  
 (b) the line making an angle of  $45^\circ$  to the plane of rotation.  
 (c) the radius  
 (d) the tangent to the orbit
36. The potential energy of particle in a force field is  $U = \frac{A}{r^2} - \frac{B}{r}$ , where A and B are positive constants and r is the distance of particle from the centre of the field. For stable equilibrium, the distance of the particle is:

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**SPACE FOR ROUGH WORK**



- (a)  $B/2A$                       (b)  $2A/B$                       (c)  $A/B$                       (d)  $B/A$
37. The horizontal range and the maximum height of a projectile are equal. The angle of projection of the projectiles is:
- (a)  $\theta = \tan^{-1}\left(\frac{1}{4}\right)$                       (b)  $\theta = \tan^{-1}(4)$                       (c)  $\theta = \tan^{-1}(2)$                       (d)  $\theta = 45^\circ$
38. Two persons of masses 55 kg and 65 kg respectively, are at the opposite ends of a boat. The length of the boat is 3.0 m and weight 100 kg. The 55 kg man walks up to 65 kg man and sits with him. If the boat is in still water the centre of mass of the system shifts by:
- (a) 3.0 m                      (b) 2.3 m                      (c) zero                      (d) 0.75 m
39. The height at which the weight of a body becomes  $1/16^{\text{th}}$ , its weight on the surface of earth (radius  $R$ ), is:
- (a)  $5R$                       (b)  $15R$                       (c)  $3R$                       (d)  $4R$
40. A car of mass 1000 kg negotiates a banked curve of radius 90 m on a frictionless road. If the banking angle is  $45^\circ$ , the speed of the car is:
- (a)  $20 \text{ ms}^{-1}$                       (b)  $30 \text{ ms}^{-1}$                       (c)  $5 \text{ ms}^{-1}$                       (d)  $10 \text{ ms}^{-1}$
41. A solid cylinder of mass 3 kg is rolling on a horizontal surface with velocity  $4 \text{ ms}^{-1}$ . It collides with a horizontal spring of force constant  $200 \text{ Nm}^{-1}$ . The maximum compression produced in the spring will be:
- (a) 0.5m                      (b) 0.6 m                      (c) 0.7 m                      (d) 0.2 m
42. A spherical planet has a mass  $M_p$  and diameter  $D_p$ . A particle of mass  $m$  falling freely near the surface of this planet will experience an acceleration due to gravity, equal to :
- (a)  $4GM_p / D_p^2$                       (b)  $GM_p m / D_p^2$   
 (c)  $GM_p / D_p^2$                       (d)  $4GM_p m / D_p^2$
43. The damping force on an oscillator is directly proportional to the velocity. The units of the constant of proportionality are:

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**SPACE FOR ROUGH WORK**

- (a)  $\text{kgms}^{-1}$  (b)  $\text{kgms}^{-2}$  (c)  $\text{Kgs}^{-1}$  (d)  $\text{Kgs}$
44. A block of mass 2 kg rests on a rough inclined plane making an angle of  $30^\circ$  with the horizontal. The coefficient of static friction between the block and the plane is 0.7. The frictional force on the block is
- (a) 9.8 N (b)  $0.7 \times 9.8 \times \sqrt{3} \text{ N}$
- (c)  $9.8 \times \sqrt{3} \text{ N}$  (d)  $0.7 \times 9.8 \text{ N}$
45. The motion of a particle along straight line is described by equation:  
 $x = 8 + 12t - t^3$ , where x is in metre and t in second. The retardation of the particle when its velocity becomes zero, is;
- (a)  $24 \text{ ms}^{-2}$  (b) zero (c)  $6 \text{ ms}^{-2}$  (d)  $12 \text{ ms}^{-2}$

### CHEMISTRY

46. Given that the equilibrium constant for the reaction  $2\text{SO}_2(\text{g}) + \text{O}_2(\text{g}) \rightleftharpoons 2\text{SO}_3(\text{g})$  has a value of 278 at a particular temperature. What is the value of the equilibrium constant for the following reaction at the same temperature ?
- $$\text{SO}_3(\text{g}) \rightleftharpoons \text{SO}_2(\text{g}) + \frac{1}{2} \text{O}_2(\text{g})$$
- (a)  $1.8 \times 10^{-3}$  (b)  $3.6 \times 10^{-3}$  (c)  $6.0 \times 10^{-2}$  (d)  $1.3 \times 10^{-5}$
47. Given the reaction between 2 gases represented by  $\text{A}_2$  and  $\text{B}_2$  to give the compound  $\text{AB}(\text{g})$ .  
 $\text{A}_2(\text{g}) + \text{B}_2(\text{g}) \rightleftharpoons 2 \text{AB}(\text{g})$ .  
 At equilibrium, the concentration  
 of  $\text{A}_2 = 3.0 \times 10^{-3} \text{ M}$   
 of  $\text{B}_2 = 4.2 \times 10^{-3} \text{ M}$   
 of  $\text{AB} = 2.8 \times 10^{-3} \text{ M}$ .  
 If the reaction takes place in a sealed vessel at  $527^\circ \text{C}$ , then the value of  $K_C$  will be :
- (a) 2.0 (b) 1.9 (c) 0.62 (d) 4.5

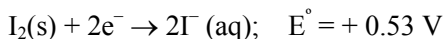
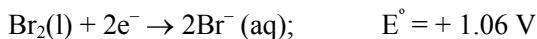
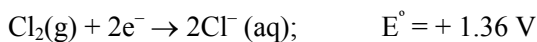
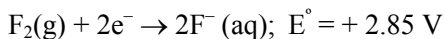
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**SPACE FOR ROUGH WORK**

48. During change of  $O_2$  to  $O_2^-$  ion, the electron adds on which one of the following orbitals?

- (a)  $\pi^*$  orbital                      (b)  $\pi$  orbital                      (c)  $\sigma^*$  orbital                      (d)  $\sigma$  orbital

49. Standard reduction potentials of the half reactions are given below :



The strongest oxidising and reducing agents respectively are :

- (a)  $F_2$  and  $I^-$                       (b)  $Br_2$  and  $Cl^-$                       (c)  $Cl_2$  and  $Br^-$                       (d)  $Cl_2$  and  $I_2$

50. The orbital angular momentum of a p-electron is given as :

- (a)  $\frac{h}{\sqrt{2\pi}}$                       (b)  $\sqrt{3} \frac{h}{2\pi}$                       (c)  $\sqrt{\frac{3}{2}} \frac{h}{\pi}$                       (d)  $\sqrt{6} \cdot \frac{h}{2\pi}$

51. For real gases van der Waals equation is written as

$$\left( p + \frac{an^2}{V^2} \right) (V - nb) = n RT$$

where 'a' and 'b' are van der Waals constants.

Two sets of gases are :

(I)  $O_2$ ,  $CO_2$ ,  $H_2$  and He    (II)  $CH_4$ ,  $O_2$  and  $H_2$

The gases given in set-I in increasing order of 'b' and gases given in set-II in decreasing order of 'a', are

**arranged below. Select the correct order from the following :**

- |                                 |                         |
|---------------------------------|-------------------------|
| (a) (I) $He < H_2 < CO_2 < O_2$ | (II) $CH_4 > H_2 > O_2$ |
| (b) (I) $O_2 < He < H_2 < CO_2$ | (II) $H_2 > O_2 > CH_4$ |
| (c) (I) $H_2 < He < O_2 < CO_2$ | (II) $CH_4 > O_2 > H_2$ |
| (d) (I) $H_2 < O_2 < He < CO_2$ | (II) $O_2 > CH_4 > H_2$ |

**SPACE FOR ROUGH WORK**

52. Equal volumes of two monoatomic gases, A and B, at same temperature and pressure are mixed. The ratio of specific heats ( $C_p/C_v$ ) of the mixture will be:  
 (a) 0.83 (b) 1.50 (c) 3.3 (d) 1.67
53. Four diatomic species are listed below. Identify the correct order in which the bond order is increasing in them:  
 (a)  $\text{NO} < \text{O}_2^- < \text{C}_2^{2-} < \text{He}_2^+$  (b)  $\text{O}_2^- < \text{NO} < \text{C}_2^{2-} < \text{He}_2^+$   
 (c)  $\text{C}_2^{2-} < \text{He}_2^+ < \text{O}_2^- < \text{NO}$  (d)  $\text{He}_2^+ < \text{O}_2^- < \text{NO} < \text{C}_2^{2-}$
54. For photoelectric emission from certain metal, the cutoff frequency is  $\nu$ . If radiation of frequency  $2\nu$  impinges on the metal plate, the maximum possible velocity of emitted electron will be ( $m$  is the electron mass):  
 (a)  $\sqrt{2h\nu/m}$  (b)  $2\sqrt{h\nu/m}$  (c)  $\sqrt{h\nu/(2m)}$  (d)  $\sqrt{h\nu/m}$
55.  $\text{XeF}_2$  is isostructural with:  
 (a)  $\text{SbCl}_3$  (b)  $\text{BaCl}_2$  (c)  $\text{TeF}_2$  (d)  $\text{ICl}_2^-$
56. Which of the following is a polar molecule?  
 (a)  $\text{SiF}_4$  (b)  $\text{XeF}_4$  (c)  $\text{BF}_3$  (d)  $\text{SF}_4$
57. Which of the following is paramagnetic?  
 (a)  $\text{CN}^-$  (b)  $\text{NO}^+$  (c)  $\text{CO}$  (d)  $\text{O}_2^-$
58. What is the maximum numbers of electrons that can be associated with the following set of quantum numbers?  
 $n = 3, l = 1$  and  $m = -1$   
 (a) 4 (b) 2 (c) 10 (d) 6
59. Dipole – induced dipole interactions are present in which of the following pairs:  
 (a)  $\text{HCl}$  and He atoms (b)  $\text{SiF}_4$  and He atoms  
 (c)  $\text{H}_2\text{O}$  and alcohol (d)  $\text{Cl}_2$  and  $\text{CCl}_4$

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**SPACE FOR ROUGH WORK**

60. Maximum deviation from ideal gas is expected from:  
 (a)  $\text{CH}_4$  (g) (b)  $\text{NH}_3$  (g) (c)  $\text{H}_2$  (g) (d)  $\text{N}_2$  (g)
61.  $6.02 \times 10^{20}$  molecules of urea are present in 100 mL of its solution. The concentration of solution is:  
 (a) 0.001M (b) 0.1 M (c) 0.02 M (d) 0.01M
62. Which of these is least likely to act as a Lewis base?  
 (a)  $\text{BF}_3$  (b)  $\text{PF}_3$  (c) CO (d)  $\text{F}^-$
63. How many grams of concentrated nitric acid solution should be used to prepare 250ml of 2.0M  $\text{HNO}_3$ ?  
 The concentrated acid is 70%  $\text{HNO}_3$ .  
 (a) 70.0 g conc.  $\text{HNO}_3$  (b) 54.0 g conc.  $\text{HNO}_3$   
 (c) 45.0 g conc.  $\text{HNO}_3$  (d) 90.0 g conc.  $\text{HNO}_3$
64. The value of Planck's constant is  $6.63 \times 10^{-34}$  Js. The speed of light is  $3 \times 10^{17}$  nm  $\text{s}^{-1}$ . Which value is closest to the wavelength in a quantum of light with frequency of  $6 \times 10^{15}$   $\text{s}^{-1}$ ?  
 (a) 50 (b) 75 (c) 10 (d) 25
65. Which one of the following molecules contains no  $\pi$  bond?  
 (a)  $\text{SO}_2$  (b)  $\text{NO}_2$  (c)  $\text{CO}_2$  (d)  $\text{H}_2\text{O}$
66. If uncertainty in position and momentum are equal, then uncertainty in velocity is  
 (a)  $\sqrt{\frac{h}{\pi}}$  (b)  $\frac{1}{2m} \sqrt{\frac{h}{\pi}}$  (c)  $\sqrt{\frac{h}{2\pi}}$  (d)  $\frac{1}{m} \sqrt{\frac{h}{\pi}}$
67. If a gas expands at constant temperature, it indicates that  
 (a) Number of the molecules of gas increases (b) Kinetic energy of molecules decreases  
 (c) Pressure of the gas increases (d) Kinetic energy of molecules remains the same
68. The value of equilibrium constant of the reaction  

$$\text{HI (g)} \rightleftharpoons \frac{1}{2} \text{H}_2 \text{ (g)} + \frac{1}{2} \text{I}_2 \text{ is } 8.0$$
  
 The equilibrium constant of the reaction  $\text{H}_2 \text{ (g)} + \text{I}_2 \rightleftharpoons 2\text{HI (g)}$  will be

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**SPACE FOR ROUGH WORK**

- (a)  $\frac{1}{8}$                       (b)  $\frac{1}{16}$                       (c)  $\frac{1}{64}$                       (d) 16
69. Which of the following are not state functions?  
 (I)  $q + w$                       (II)  $q$                       (III)  $w$                       (IV)  $H - TS$   
 (a) (II) and (III)                      (b) (I) and (IV)  
 (c) (II), (III) and (IV)                      (d) (I), (II) and (III)
70. What volume of oxygen gas ( $O_2$ ) measured at  $0^\circ C$  and 1 atm, is needed to burn completely 1 L of propane gas ( $C_3H_8$ ) measured under the same conditions?  
 (a) 10 L                      (b) 7 L                      (c) 6 L                      (d) 5 L
71. Equal volumes of three acid solutions of pH 3, 4 and 5 are mixed in a vessel. What will be the  $H^+$  ion concentration in the mixture?  
 (a)  $1.11 \times 10^{-3} M$                       (b)  $1.11 \times 10^{-4} M$                       (c)  $3.7 \times 10^{-4} M$                       (d)  $3.7 \times 10^{-3} M$
72. The values of  $K_{p1}$  and  $K_{p2}$  for the reactions  
 $X \rightleftharpoons Y + Z$  ..... (1) and  
 $A \rightleftharpoons 2B$  ..... (2)  
 are in ratio of 9:1. If degree of dissociation of X and A be equal, then total pressure at equilibrium (1) and (2) are in the ratio  
 (a) 1 : 1                      (b) 3 : 1                      (c) 1 : 9                      (d) 36 : 1
73. If the concentration of  $OH^-$  ions in the reaction  
 $Fe(OH)_3(s) \rightleftharpoons Fe^{3+}(aq) + 3OH^-(aq)$  is decreased by  $\frac{1}{4}$  times, then equilibrium concentration of  $Fe^{3+}$  will increase by  
 (a) 4 times                      (b) 8 times                      (c) 16 times                      (d) 64 times
74. How many moles of lead (II) chloride will be formed from a reaction between 6.5 g of PbO and 3.2 g of HCl? (Pb = 208)  $PbO + 2HCl \rightarrow PbCl_2 + H_2O$   
 (a) 0.029                      (b) 0.044                      (c) 0.333                      (d) 0.011

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**SPACE FOR ROUGH WORK**

75. Volume occupied by one molecule of water (density =  $1 \text{ g cm}^{-3}$ ) is  
 (a)  $5.5 \times 10^{-23} \text{ cm}^3$  (b)  $9.0 \times 10^{-23} \text{ cm}^3$  (c)  $6.023 \times 10^{-23} \text{ cm}^3$  (d)  $3.0 \times 10^{-23} \text{ cm}^3$
76. Calculate the pOH of a solution at  $25^\circ\text{C}$  that contains  $1 \times 10^{-10} \text{ M}$  of hydronium ions.  
 (a) 7.00 (b) 4.00 (c) 9.00 (d) 1.00
77. A weak acid, HA has a  $K_a$  of  $1.00 \times 10^{-5}$ . If 0.100 mole of this acid is dissolved in one litre of water, the percentage of acid dissociated at equilibrium is closest to:  
 (a) 99.0% (b) 1.00% (c) 99.9% (d) 0.100%
78. The correct order of C–O bond length among  $\text{CO}$ ,  $\text{CO}_3^{2-}$ ,  $\text{CO}_2$  is:  
 (a)  $\text{CO}_2 < \text{CO}_3^{2-} < \text{CO}$  (b)  $\text{CO} < \text{CO}_3^{2-} < \text{CO}_2$   
 (c)  $\text{CO}_3^{2-} < \text{CO}_2 < \text{CO}$  (d)  $\text{CO} < \text{CO}_2 < \text{CO}_3^{2-}$
79. Given : The mass of electron is  $9.11 \times 10^{-31} \text{ kg}$  Planck constant is  $6.626 \times 10^{-34} \text{ Js}$ , the uncertainty involved in the measurement of velocity within involved in the measurement of velocity within a distance of  $0.1 \text{ \AA}$  is:  
 (a)  $5.79 \times 10^6 \text{ ms}^{-1}$  (b)  $5.79 \times 10^7 \text{ ms}^{-1}$  (c)  $5.79 \times 10^8 \text{ ms}^{-1}$  (d)  $5.79 \times 10^5 \text{ ms}^{-1}$
80. Which of the following is not isostructural with  $\text{SiCl}_4$  ?  
 (a)  $\text{SCl}_4$  (b)  $\text{SO}_4^{2-}$  (c)  $\text{PO}_4^{3-}$  (d)  $\text{NH}_4^+$
81. Which of the following is not a correct statement?  
 (a) The electron – deficient molecules can act as Lewis acids  
 (b) The canonical structures have no real existence  
 (c) Every  $\text{AB}_5$  molecule does in fact have square pyramid structure  
 (d) Multiple bonds are always shorter than corresponding single bonds
82. The orientation of an atomic orbital is governed by:  
 (a) azimuthal quantum number (b) spin quantum number  
 (c) magnetic quantum number (d) principal quantum number

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**SPACE FOR ROUGH WORK**

83. The correct regarding the electronegativity of hybrid orbitals of carbon is:  
 (a)  $sp > sp^2 < sp^3$       (b)  $sp > sp^2 > sp^3$       (c)  $sp < sp^2 > sp^3$       (d)  $sp < sp^2 < sp^3$
84. Which of the following species has a linear shape?  
 (a)  $NO_2^-$       (b)  $SO_2$       (c)  $NO_2^-$       (d)  $O_3$
85. The electronegativity difference between N and F is greater than that between N and H yet the dipole moment of  $NH_3$  (1.5 D) is larger than that of  $NF_3$  (0.2 D). This is because:  
 (a) In  $NH_3$  as well as in  $NF_3$  the atomic dipole and bond dipole are in the same direction  
 (b) In  $NH_3$  the atomic dipole and bond dipole are in the same direction whereas in  $NF_3$  these are in opposite directions  
 (c) In  $NH_3$  as well as  $NF_3$  the atomic dipole and bond dipole are in opposite directions  
 (d) In  $NH_3$  the atomic dipole and bond dipole are in the opposite directions whereas in  $NF_3$  these are in the same directions
86. In which of the following molecules are all the bonds not equal?  
 (a)  $CF_3$       (b)  $BF_3$       (c)  $AlF_3$       (d)  $NF_3$
87. The enthalpy of combustion of  $H_2$ , cyclohexene ( $C_6H_{10}$ ) and cyclohexane ( $C_6H_{12}$ ) are  $-241$ ,  $-3800$  and  $-3920$  kJ per mol respectively. Heat of hydrogenation of cyclohexane is:  
 (a)  $-121$  kJ per mol      (b)  $+121$  kJ per mol  
 (c)  $+242$  kJ per mol      (d)  $-242$  kJ per mol
88. The order of the oxidation state of the phosphorus atom in  $H_3PO_2$ ,  $H_3PO_4$ ,  $H_3PO_3$ , and  $H_4P_2O_6$  is  
 (a)  $H_3PO_3 > H_3PO_2 > H_3PO_4 > H_4P_2O_6$     (b)  $H_3PO_4 > H_3PO_2 > H_3PO_3 > H_4P_2O_6$   
 (c)  $H_3PO_4 > H_4P_2O_6 > H_3PO_3 > H_3PO_2$     (d)  $H_3PO_2 > H_3PO_3 > H_4P_2O_6 > H_3PO_4$

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**SPACE FOR ROUGH WORK**



89. Which of the following statement is true?
- (a) Higher the value of critical temperature, easier to liquefy a real gas.  
 (b) Higher the value of 'b' (vander Wall's constant), easier to liquefy a real gas.  
 (c) Lower the value of 'a' (vander Wall's constant), easier to liquefy a real gas.  
 (d) All are correct
90. Enthalpy of combustion of C(graphite),  $H_2(g)$  and  $CH_4(g)$  are x, y and z kcal/mol respectively. Enthalpy of formation of  $CH_4$  in kcal/mol is
- (a)  $x - xy + z$                       (b)  $-x - xy + z$                       (c)  $x + 2y - z$                       (d)  $x + 2y + z$

### BIOLOGY

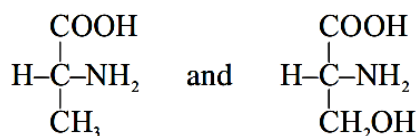
91. Choose the incorrect statement of following :-
- (a) Dinoflagellates have stiff cellulose plates on the outer surface  
 (b) Euglenoids have two flagella one lies longitudinally and the other transversely  
 (c) Slime mould's spores are dispersed by air current  
 (d) In diatoms the cell wall from two thin overlapping shells
92. Fats and oils are glycerides, in which fatty acids are esterified with :-
- (a) Glycerole                      (b) Amino acid                      (c) Fatty acid                      (d) Sugar
93. The gametophyte of pteridophytes requires to grow-
- (a) Warm, damp and shady place                      (b) Cool, damp and shady place  
 (c) Warm, dry and shady place                      (d) Cool, dry and place of well sunshine
94. Which of the following compound is/are substituted purines :-
- (a) Adenine, Thymine    (b) Guanine, Cytosine    (c) Adenine, Guanine    (d) Uracil, Cytosine
95. Flexibility of euglenoid body is due to :-
- (a) Plasma membrane    (b) Cellulosic membrane    (c) Pellicle                      (d) Glycocalyx

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**SPACE FOR ROUGH WORK**

96. Eubacterial flagellum is made up of :-  
 (a) Basal body, hook and pili (b) Cell membrane, hook and filament  
 (c) Basal body, cell membrane and filament (d) Basal body, hook and filament

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



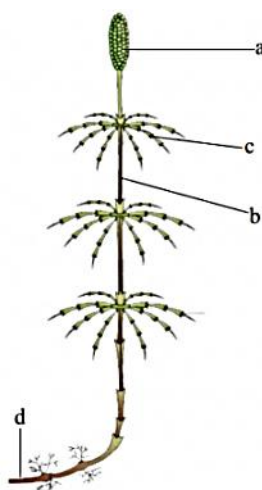
These amino acids show which type of nature respectively :-

- (a) Acidic, Alkaline (b) Alkaline, Neutral (c) Neutral, Neutral (d) Alkaline, Alkaline
98. Which option creates the difference between Gram  $\oplus$  and Gram  $\ominus$  bacterial :-  
 (a) Cell membrane constitution (b) Rings of flagellum  
 (c) Unit of RNA (d) Function of flagella
99. Palmitic acid is an example of :-  
 (a) Essential amino acid (b) Non essential amino acid  
 (c) Saturated fatty acid (d) Unsaturated fatty acid
100. Choose the correct match :-  
 (a) Mesosomes - Cell respiration  
 (b) Plasmid - bear photosynthetic pigments  
 (c) Flagella - help in formation of conjugation tube  
 (d) Capsula - help in locomotion
101. Myricyl cerotate is also known as :-  
 (a) Lanoline (b) Bee wax (3) Ear wax (4) Carnauba
102. When scientific nomenclature are hand written they are underlined to indicate :-  
 (a) Their latin origin (b) Wild species  
 (c) They are found in botanical garden (d) Now they are extinct

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**SPACE FOR ROUGH WORK**

103.  $\text{Cu}^{++}$  ions can be reduced to  $\text{Cu}^+$  by sugar having:-  
 (a) Free – CHO group (b) Free  $> \text{C} = \text{O}$  group  
 (c) Free aldehyde or ketone group (d) Neither aldehyde nor keton group
104. Which statement is false ? Bacteria are involved in:-  
 (a) Food digestion in animals (b) Nitrogen processing in the soil  
 (c) Alcohol production in beer (d) Decomposing dead organic matter
105. Element located in centre of porphyrin ring of cytochrome  
 (a) K (b) Mn (c) Mg (d) Fe
106. In above diagram identify the a, b, c and d



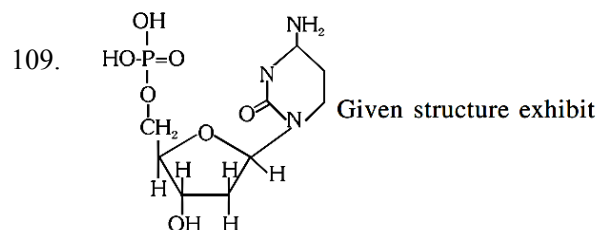
- (a) a - Strobilus, b - Node, c - Internode, d - Rhizoids  
 (b) a - Cone, b - Stem, c - leaves, d - Rhizoids  
 (c) a - Strobilus, b - leaves, c - stem, d - Rhizome  
 (d) a - Strobilus, b - Internode, c - Node, d – Rhizome
107. Unsaturated fats are made saturated by :-  
 (a) Polymerisation (b) Hydrogenation (c) Dehydrogenation (d) Hybridization

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SPACE FOR ROUGH WORK

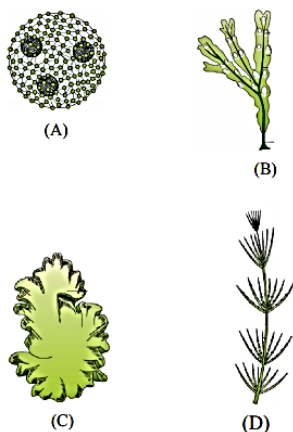
108. Which one of the following statement is correct:-

- |                                    |                                    |
|------------------------------------|------------------------------------|
| (a) All bacteria are parasites     | (b) All bacteria are saprotrophs   |
| (c) Many bacteria are heterotrophs | (d) Some bacteria are heterotrophs |



- |                         |                         |
|-------------------------|-------------------------|
| (a) A nucleoside of RNA | (b) A nucleotide of RNA |
| (c) A nucleoside of DNA | (d) A nucleotide of DNA |

110.



Identify the above diagram :-

- |  |  |
|--|--|
| (a) A - Volvox, B - Chlamydomonas, C - Fucus, D - Porphyra | (b) A - Volvox, B - Fucus, C - Porphyra, D - Chara     |
| (c) A - Chlorella, B - Fucus, C - Laminaria, D - Dictyota  | (d) A - Volvox, B - Laminaria, C - Fucus, D - Porphyra |

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**SPACE FOR ROUGH WORK**

111. In a nucleotide which type of bond is found :-  
 (a) C–O–C glycosidic bond (b) C–N–C glycosidic bond  
 (c) Ester bond (d) (2) & (3) both
112. Which of the following is true for alternation of generation :-  
 (a) The sporophyte undergoes syngamy to produce spore  
 (b) The gametophyte undergoes syngamy to produce spore  
 (c) The sporophyte undergoes meiosis to produce spore  
 (d) The gametophyte undergoes meiosis to produce gametes
113. Select out the incorrect match :-  
 (a) Euglenoids- Fresh stagnant water (b) Diatoms - Marine water  
 (c) Dinoflagellates - Damp soil (d) Slime mould - Lumbers and plant waste
114. Match the following:-
- |                           |                          |
|---------------------------|--------------------------|
| (A) Dictyosome            | i. Hydrolysis            |
| (B) Aleuroplast           | ii. Photosynthesis       |
| (C) Endoplasmic reticulum | iii. Stacks of Cisternae |
| (D) Lysosome              | iv. Detoxification       |
| (E) Chromatophore         | v. Store proteins        |
- (a) (A)-i, (B)-ii, (C)-iii, (D)-iv, (E)-v (b) (A)-v, (B)-iv, (C)-iii, (D)-ii, (E)-i  
 (c) (A)-iii, (B)-i, (C)-v, (D)-iv, (E)-ii (d) (A)-iii, (B)-v, (C)-iv, (D)-i, (E)-ii
115. Bacterial structure and behaviour are respectively:-  
 (a) Simple, Simple (b) Complex, Simple  
 (c) Simple, Complex (d) Complex, Complex

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**SPACE FOR ROUGH WORK**

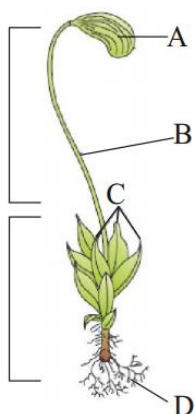
116. Read the following statements regarding ribosomes:-

- (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?

- (a) Two                      (b) Three                      (c) Four                      (d) One

117.



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

- |                                     |                                     |
|-------------------------------------|-------------------------------------|
| (a) Seta, Leaves, Capsula, Rhizoids | (b) Leaves, Capsule, Seta, Rhizoids |
| (c) Capsule, Seta, leaves, Rhizome  | (d) Capsule, Seta, leaves, Rhizoids |

118. Which of the following microbodies is related to the degradation of fat in animal cells?

- |   |  |
|---|--|
| (a) Microbody related to the lipid storage. | (b) Microbody which contain catalase enzyme. |
| (c) Microbody related to yolk formation.    | (d) Microbody related to glyoxylate cycle.   |

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**SPACE FOR ROUGH WORK**

119. Which is not true about agar :-  
 (a) It is obtained from red algae (b) It is used to grow microbes  
 (c) It is used to make ice-cream and jellies  
 (d) It is used to food supplement even by space travellers
120. Nucleosome = A + B + Linker DNA + H<sub>1</sub> 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 :-**  
 (a) (i)-8 types, (ii)-Deoxyribonucleic acid. (b) (i)-2 types, (ii)-Ribonucleic acid.  
 (c) (i)-6 types, (ii)-Ribonucleic acid. (d) (i)-4 types, (ii)-Deoxyribonucleic acid.
121. Bacteria can not move with the help of Pili because :-  
 (a) They are smaller than cilia and flagella (b) They are found on surface  
 (c) They are made up of non-contractile protein (d) They help in conjugation
122. Centrioles are different from cilia or flagella :-  
 (i) in number of subunits in each peripheral microtubule.  
 (ii) in number of radial spokes.  
 (iii) in arrangement of microtubules.  
 (iv) in containing proteinaceous central hub.  
 (v) in being surrounded by double membrane.
- Choose the correct statements:-**  
 (a) i, iii and iv (b) i, ii, iii and iv (c) i, ii and iii (d) ii, iii, iv and v
123. Read the following statement :-  
 (i) Possess chlorophyll a, c, carotenoids and xanthophylls  
 (ii) Cell wall usually covered by gelatinous coating of algin  
 (iii) Gametes are pyriform and bear two laterally attached flagella  
 (iv) Members are found primarily in marine habitats.  
 All these information are related with group

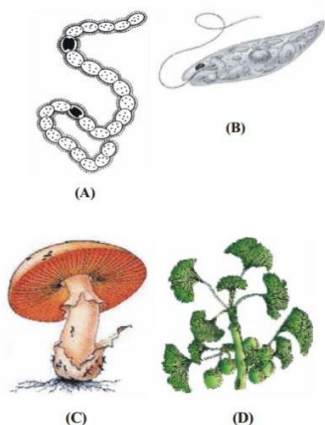
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**SPACE FOR ROUGH WORK**

124. (a) Phaeophyceae      (b) Chlorophyceae      (c) Rhodophyceae      (d) Cyanophyceae  
 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 :-**

- (a) A = Karyokinesis, B = G0 phase, C = inactive, D = divide  
 (b) A = G1 phase, B = G0 phase, C = inactive, D = not divide  
 (c) A = Cytokinesis, B = Polyteny, C = active, D = divide  
 (d) A = G1 phase, B = Quiescent stage, C = active, D = not divide
- 125.



Identify the A, B, C and D

- (a) A - Equisetum, B - Paramoecium, C - Funaria, D - Sphagnum  
 (b) A - Euglena, B - Agaricus, C - Ginkgo, D - Nostoc  
 (c) A - Agaricus, B - Ginkgo, C - Euglena, D - Equisetum  
 (d) A - Nostoc, B - Euglena, C - Agaricus, D - Ginkgo

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**SPACE FOR ROUGH WORK**

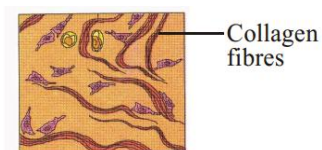


126. Which one of the following is a event of pachytene ?
- Clearly appearance of tetrads
  - Synapsis
  - Dissolution of Synaptonemal complex
  - In Oocytes of Vertebrates, can last for Months or Year
127. (I) Fertilization (II) Liberation of spores (III) Prothallus formation (IV) Embryo formation  
 Arrange the above events in a correct sequence in the life cycle of Pteridophytes :-
- II, III, I, IV
  - IV, III, II, I
  - I, II, III, IV
  - I, IV, III, II
128. Nucleolus is -
- Spherical structure found in cytoplasm near nucleus
  - Spherical structure inside nucleus and having r RNA
  - Rod shaped structure in cytoplasm near the nucleus
  - Rod shaped structure inside nucleus and having m-RNA
129. A feature common in gametophyte and sporophyte of Mosses and ferns is :-
- Independent existence
  - Photosynthetic nature
  - Presence of vascular tissue
  - Unbranched habit
130. 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 -
- During the M phase of the cell cycle
  - Between prophase and metaphase of Mitosis
  - Between the G1 and G2 phase of the cell cycle
  - Between prophase I and prophase II of meiosis
131. Sexual reproduction in fungi may occur by means of :-
- Sporangiospore, Oospore and Ascospore
  - Zoospore, Oospore and Ascospore
  - Sporangiospore, Ascospore and Basidiospore
  - Oospore, Ascospore and Basidiospore

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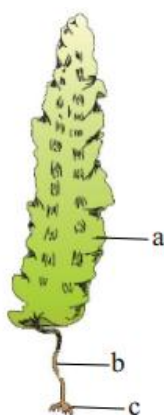
**SPACE FOR ROUGH WORK**

132. Given below is the diagrammatic sketch of a certain type of connective tissue



The above tissue is found in : -

- (a) Ligament                      (b) Tendon                      (c) Dermis of the skin                      (d) All of these
133. Which one of the following is mismatched :-
- (a) Penicillium - Source of antibiotics  
(b) Albugo - Parasitic fungi on legume  
(c) Neurospora - Used in biochemical and genetic work  
(d) Agaricus - Edible fungus
134. Which of the following epithelial tissue is incorrectly matched with its location?
- (a) Simple squamous epithelium - Air sacs of lungs  
(b) Simple cuboidal epithelium - ducts of glands  
(c) Ciliated epithelium - inner surface of fallopian tubes  
(d) Compound epithelium - lining of stomach
- 135.

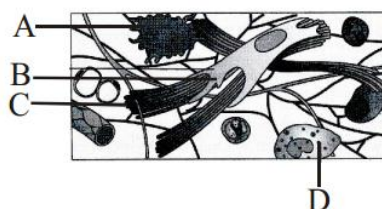



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SPACE FOR ROUGH WORK

Identify the diagram and a, b and c :-

- (a) Chara; a - Branches, b - Stipe, c – Fronds      (b) Dictyota; a - Frond, b - Midrib, c - Stipe  
 (c) Laminaria; a - Frond, b - Stipe, c- Holdfast      (d) Fucus; a- Air bladder, b - Midrib, c- stipe
136. In which of the following white fibrous cartilage is present?  
 (a) Tip of nose      (b) Outer ear joints  
 (c) Between adjacent bones of vertebral column      (d) Limbs and hands in adults
137. Binomial system of nomenclature means that every organism has :-  
 (a) One scientific nomenclature consisting of two specific epithet  
 (b) A name given by two scientists  
 (c) One scientific nomenclature consisting of one specific epithet  
 (d) A number in an international catalogue by which an organism is identified
138. 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
(a) Macrophage	Collagen fibres	Mast cell	Fibroblast
(b) Macrophage	Fibroblast	Collagen fibres	Mast cell
(c) Mast cell	Fibroblast	Macrophage	Collagen fibres
(c) Mast cell	Macrophage	Collagen fibres	Fibroblast

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**SPACE FOR ROUGH WORK**

139. Which of the following option is related with protist and plantae but not in monera :-  
 (a) Cell wall and cell membrane (b) Ribosome and flagella  
 (c) Mode of nutrition (d) Cellular grade of organization
140. Blood sample of a person was taken and examined and following results were obtained.  
 RBC - 5 - 5.5 million  $\text{mm}^{-3}$   
 WBC - 15000 - 20000  $\text{mm}^{-3}$   
 Platelets - 80,000  $\text{mm}^{-3}$   
 Haemoglobin - 14 gm/100 ml of blood  
**Which of the above components are normal?**  
 (a) RBC and platelets (b) WBC and haemoglobin  
 (c) RBC and haemoglobin (d) RBC, WBC and platelets
141. Which option is not related with Cycas :-  
 (a) Unbranched stem (b) Symbiosis with cyanobacteria  
 (c) More than one archegonia (d) Monoecious sporophyte
142. ....A....are phagocytic cells which destroy foreign organisms entering the body while  
 ....B....are involved in inflammatory reactions-  
 (a) A-Eosinophils and neutrophils b-basophils  
 (b) A-Monocytes and neutrophils b-eosinophils  
 (c) A-Monocytes and neutrophils b-basophils  
 (d) A-Monocytes and lymphocytes b-neutrophils
143. Choose the incorrect statement regarding decomposer.  
 (a) They are may be prokaryotes or eukaryotes  
 (b) They are may be unicellular or multicellular  
 (c) They are essentially present in every food chain  
 (d) They play a great role in ecology

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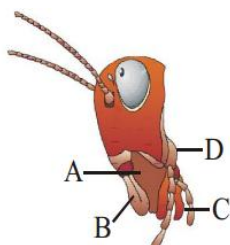
144. Given below are some incomplete statements  
 Fill their a, b, c and d with respect to earthworm  
 and find out the correct answer : -

(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 tubules	Peristomium	in cocoon
(3) Closed	Malpighian tubules	Peristomium	internal
(4) Closed	Nephridia	Peristomium	in cocoon

145. Albugo, Agaricus, Alternaria, Aspergillus.

Which option is common in all above organism

- |  |   |
|--|---|
| (a) All have chitinous cell wall         | (b) All have sexual reproduction          |
| (c) They all act as decomposer in nature | (d) They all are heterotrophic eukaryotes |
146. 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.



A	B	C	D
(a) Maxilla	Mandible	Labrum	Labium

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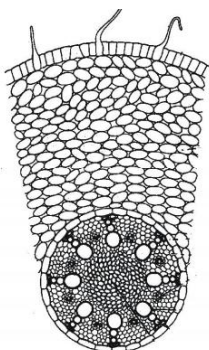
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- |              |         |          |         |
|--------------|---------|----------|---------|
| (b) Mandible | Labrum  | Labium   | Maxilla |
| (c) Mandible | Labrum  | Maxilla  | Labium  |
| (d) Labium   | Maxilla | Mandible | Labrum  |
147. Read 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?
- (a) Three                      (b) Two                      (c) One                      (d) None
148. Pick the odd pair out:-
- (a) Cellular level : *Scypha*                      (b) Tissue level : *Ancylostoma*
- (c) Organ level : *Fasciola*                      (d) Organ system level : *Nereis*
149. 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 :-
- (a) Statements (A), (D)                      (b) Statements (B), (C)
- (c) Statements (A), (C)                      (d) Statements (A), (C) and (D)
150. Animals possess various type of symmetry, select the correctly matched :-
- (a) Echinodermates possess radial symmetry                      (b) Arthropods possess bilateral symmetry
- (c) Sponges are mostly asymmetrical                      (d) All of these

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151.



Which structure is shown in above diagram :-

- (a) Monocot root      (b) Dicot root      (c) Dicot stem      (d) Monocot stem

152. The correct set for porifera is :-

- (a) Acoelomates, Fresh water, Zooplanktonic, Triploblastic, Cell aggregate body plan  
 (b) Eucoelomates, Marine, Sedentary, diploblastic, blind sac body plan  
 (c) Cellular level of organisation, Marine, Sedentary, diploblastic  
 (d) Acoelomates, Marine, Sedentary, diploblastic, blind sac body plan

153. Which of the following is true ?

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

154. The phyla showing radial symmetry :-

- (a) Echinodermata, Coelenterata and Ctenophora      (b) Porifera, Coelenterata and Echinodermata  
 (c) Protozoa, Coelenterata and Ctenophora      (d) Coelenterata, Ctenophora and Annelida

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

- (a) Hypodermis      (b) Ground tissue      (c) Cortex      (d) Pith

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156. The biological name and their popular common name of animals are given below, select the correctly matched among following :-
- (a) *Ancylostoma* - Pin worm (b) *Octopus* - Squid  
 (c) *Antedon* - Sea Lily (d) *Laccifer* – Locust
157. The first formed primary phloem consist of narrow sieve tube and referred to :-
- (a) Prophloem (b) Protophloem  
 (c) Metaphloem (d) Ray initial
158. In which one of the following organisms its respiratory organs are correctly matched ?
- (a) *Ophura* – Gills (b) *Limulus* - Book gills  
 (c) *Sepia* - Book lungs (d) Earthworm - Tracheal system
159. Drup fruit present in mango and coconut is formed from :-
- (a) Monocarpellary unilocular ovary (b) Monocarpellary bilocular ovary  
 (c) Bicarpellary unilocular ovary (d) (1) and (3) both
160. Which one of the following statements about certain given animals is correct?
- (a) Sea squid shows metamerism (b) Flat worms are pseudocoelomates  
 (c) Insects are coelomates (d) Adult Star Fish are bilaterally symmetrical
161. Sclereid is a common feature of :-
- (a) Fruit wall of nut (b) Seed coat of legume (c) Fruit pulp of pear (d) All of the above
162. Which one of the following phyla is correctly matched with its general characteristics ?
- (a) Porifera - Cellular level of organisation and external fertilisation  
 (b) Coelenterata - Diploblastic and mostly segmented  
 (c) Aschelminthes - Pseudocoelomates and dioecious  
 (d) Hemichordata - Coelomates and closed circulatory system
163. Inferior ovary is commonly present in :-
- (a) Plum (b) Rose (c) Cucumber (d) China rose

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164. Select the incorrect statement from the following:-
- (a) Members of phylum ctenophora have ciliary comb plate.
  - (b) When any plane passing through the central axis of the body divides the organism into two identical halves, is called radial symmetry
  - (c) Earthworm and *Nereis* are monoecious
  - (d) Hemichordates body is composed of proboscis, collar and trunk
165. Cambium activity is controlled by :-
- (a) Physiological factor
  - (b) Environmental factor
  - (c) Physiological and environmental factor both
  - (d) It is unregulated process
166. Which one of the following is a matching pair of a body feature and the animal possessing it?
- (a) Canal system – *Asterias*
  - (b) Metagenesis - *Nereis*
  - (c) Dorsal nerve cord – *Pheretima*
  - (d) Muscular pharynx – *Ascaris*
168. When leaflet are attached to simple point it is known as .....(A)..... and it is present in .....B..... A and B are respectively :-
- (a) Pinnately compound leaf, Neem
  - (b) Whorl phyllotaxy, *Alstonia*
  - (c) Palmately compound leaf, Silk cotton
  - (d) Simple leaf, Silk cotton
169. Which one of the following pairs is correctly matched?
- (a) *Physalia* - Portuguese man of war
  - (b) *Ascaris* - Flat worm
  - (c) *Wuchereria* - Pin worm
  - (d) *Ancylostoma* - Eye worm
170. Which of the following contribute to the formation of primary plant body ?
- (a) Apical meristem and intercalary meristem
  - (b) Apical and lateral meristem
  - (c) Lateral and intercalary meristem
  - (d) Primary and secondary Meristem
171. 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?

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178. Which of the following is correct for glycogen:-  
 (a) The right end is called the reducing end      (b) The left end is called reducing end  
 (c) Stored food in plant      (d) Polymer of  $\beta$ -D-glucose
179. All of the following would be found in a prokaryotic cell except :-  
 (a) m-RNA, t-RNA, r-RNA, ribosome      (b) Informosome  
 (c) Coupled transcription & translation      (d) Ribosome, Polysome
180. Protein amino acids are :-  
 (a)  $\alpha$ -amino acid      (b)  $\beta$ -amino acid      (c)  $\gamma$ -amino acid      (d) Non rotatory

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