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

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

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

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

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

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

7. A candidate has to write his/her answers in the OMR sheet by darkening the appropriate bubble with the help of Blue / Black Ball Point Pen only as the correct answer(s) of the question attempted.

8. Use of Pencil is strictly prohibited.

Note: In case of any correction in the test paper, please mail to dlpcorrections@allen.ac.in within 2 days along with Your Form No. & Complete Test Details.

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1. A ball is thrown horizontally from the top of a tower with velocity of 30m/s during its motion, at a particular point horizontal and vertical velocities become equal. Determine the time elapsed to reach this point:
   (1) 3s  
   (2) 5s  
   (3) 2s  
   (4) Cannot be determined

2. A source of sound of frequency 500 Hz is moving towards an observer with velocity 30 m/s. The speed of sound is 330 m/s. The frequency heard by the observer will be:
   (1) 550 Hz  
   (2) 458.3 Hz  
   (3) 530 Hz  
   (4) 545.5 Hz

3. A footballer kicks the football with velocity \(60\sqrt{2}\) m/s at an angle of 45º. Find angle made by velocity vector with the horizontal after 3s:
   (1) 30º  
   (2) 60º  
   (3) \(\tan^{-1}\left(\frac{1}{2}\right)\)  
   (4) 45º

4. An observer moves towards a stationary source of sound, with a velocity one-fifth of the velocity of sound. What is the percentage increase in the apparent frequency:
   (1) 5%  
   (2) 20%  
   (3) Zero  
   (4) 0.5 %

5. Two cars A and B each 5m long. Car A is travelling at 84 km/hr and overtakes another car B which is travelling at low speed of 12 km/hr. Find out the time taken for overtaking:
   (1) 2s  
   (2) 0.5s  
   (3) 4s  
   (4) 5s

6. A wave of frequency 100 Hz is sent along a string towards a fixed end. When this wave travels back after reflection, a node is formed at a distance of 10 cm from the fixed end of the string. The speed of incident (and reflected) wave are:
   (1) 40 m/s  
   (2) 20 m/s  
   (3) 10 m/s  
   (4) 5 m/s
7. A plank is moving on a ground with a velocity \( V \) and a block is moving on the plank with a velocity \( U \) as shown in figure. What is the velocity of block with respect to ground?

- (1) \( V - U \) towards right
- (2) \( V - U \) towards left
- (3) \( U \) towards right
- (4) None

8. A standing wave having 3 nodes and 2 antinodes is formed between two atoms having a distance 1.21 Å between them. The wavelength of the standing wave is:

- (1) 1.21 Å
- (2) 2.42 Å
- (3) 6.05 Å
- (4) 3.63 Å

9. The displacement of a body is given by

\[ 4s = M + 2Nt \]

where \( M \) and \( N \) are constants. Find the velocity of body at any instant:

- (1) \( \frac{M + 2Nt}{4} \)
- (2) \( 2N \)
- (3) \( \frac{M + 2N}{4} \)
- (4) \( 2Nt^3 \)

10. The equation of a longitudinal wave is represented as

\[ y = 20 \cos \pi (50t - x) \]

Its wavelength is \( (x \text{ in cm}) \):

- (1) 5 cm
- (2) 2 cm
- (3) 50 cm
- (4) 20 cm

11. A particle is moving along x-axis whose instantaneous speed is \( V^2 = 108 - 9x^2 \). The acceleration of particle is:

- (1) \(-9x \text{ m/s}^2\)
- (2) \(-18x \text{ m/s}^2\)
- (3) \(-\frac{9x}{2} \text{ m/s}^2\)
- (4) None of these

12. A wave is represented by the equation

\[ y = 7 \sin \{\pi(2t - 2x)\} \]

where \( x \) is in metres and \( t \) in seconds. The velocity of the wave is:

- (1) 1 m/s
- (2) 2 m/s
- (3) 5 m/s
- (4) 10 m/s

(11-04-2013)

**TARGET : PRE-MEDICAL 2013 (NEET-UG)**

**H**

- (1) \( V - U \) दाईं ओर
- (2) \( V - U \) बाईं ओर
- (3) \( U \) दाईं ओर
- (4) कोई नहीं

8. 1.21 Å" के फ्रेंचिशा तदा" के मध्यकार अग्र गा मैं तला गा का निम्ना प होता त आकार निम्नें तला रुप हूँ ल आगा मी तला गा की तला गई छू ना होगी

- (1) 1.21 Å
- (2) 2.42 Å
- (3) 6.05 Å
- (4) 3.63 Å

9. \( \text{फ्रबसु का बिपूतक म + 2Nt} \) द्वारा दिय गया है , \( \text{kम में N नियामन करेंगे} \)। ते किसी श्रेणी प्रवसु का बेगा गा होगा:

\[ \frac{M + 2Nt}{4} \]

- (1) \( \frac{M + 2N}{4} \)
- (2) \( 2N \)
- (3) \( \frac{M + 2Nt^3}{4} \)
- (4) \( 2Nt^3 \)

10. अंगूठे फ्रशी तला गा का सीमापार 20 \( \cos \pi (50t - x) \) है इसी तला गा फ्रशी (अपी) है

- (1) 5 cm
- (2) 2 cm
- (3) 50 cm
- (4) 20 cm

11. \( \text{कम x-अक्ष के अंगूठे दिय गा गति कर है जिसकी तला श्रेणी का वक्ता} 108 - 9x^2 \) है। तो कम का चरण है

\[ \frac{-9x}{2} \text{ m/s}^2 \]

- (4) इनमें से कोई नहीं

12. \( \text{फ्रस्टो गा की सीमापार} = 7 \sin\{\pi(2t - 2x)\} \) द्वारा दिय गा फ्रस्टो विश्व गया है, झामी में "लाइव फ्रस्टो में" है। तला गा बेगा गा होगा: गा

- (1) 1 m/s
- (2) 2 m/s
- (3) 5 m/s
- (4) 10 m/s
13. The velocity-time graph of a body is shown in figure. It indicates that:

1. At B force is zero
2. At B there is force but towards motion
3. At B there is a force which opposes motion
4. None

14. The period of a simple pendulum is doubled, when:
1. Its length is doubled
2. the mass of the bob is doubled
3. Its length is made four times
4. The mass of the bob and the length of the pendulum are doubled

15. The force $F$ is given in terms of time $t$ and displacement $x$ by the equation $F = Acos Bx + C sin Dt$.

The dimensional formula of $\frac{D}{B}$ is:

1. $M^0 L^0 T^0$
2. $M^0 L^0 T^{-1}$
3. $M^0 L^{-1} T^0$
4. $M^0 L^1 T^{-1}$

16. A body of mass 1 kg is executing simple harmonic motion. Its displacement $y$ (cm) at $t$ seconds is given by $y = 6 \sin (100t + \pi/4)$. Its maximum kinetic energy is:

1. 6 J
2. 18 J
3. 24 J
4. 36 J

17. A particle is given successive displacements which of the following set of displacements could be capable of returning the particle to its initial position.

1. 10 m, 8m, 6m, 30 m
2. 20 m, 10 m, 6m, 50 m
3. 70 m, 20 m, 40 m, 30 m
4. 100 m, 18 m, 22 m, 32 m

18. If a simple pendulum oscillates with an amplitude of 50 mm and time period of 2 s, then its maximum velocity is:

1. 0.10 m/s
2. 0.15 m/s
3. 0.8 m/s
4. 0.26 m/s
19. The projection of a vector \( \mathbf{r} = 3\hat{i} + \hat{j} + 2\hat{k} \) on the x-y plane has magnitude :-
   (1) 3  (2) 4  (3) \( \sqrt{14} \)  (4) \( \sqrt{10} \)

20. A particle has simple harmonic motion. The equation of its motion is \( x = 5\sin \left( 4t - \frac{\pi}{6} \right) \), where \( x \) is its displacement. If the displacement of the particle is 3 units, then it velocity is :-
   (1) \( \frac{2\pi}{3} \)  (2) \( \frac{5\pi}{6} \)  (3) 20  (4) 16

21. Two blocks A and B of masses 2m and m, respectively are connected by a massless and inextensible string. The whole system is suspended by a massless spring as shown in the figure. The magnitudes of acceleration of A and B immediately after the string is cut, are respectively :-
   (1) \( g \)  (2) \( \frac{g}{2} \)  (3) \( \frac{g}{2} \)  (4) \( \frac{g}{2} \)

22. A monoatomic gas supplied the heat \( Q \) very slowly keeping the pressure constant. The work done by the gas will be :
   (1) \( \frac{2Q}{3} \)  (2) \( \frac{3Q}{5} \)  (3) \( \frac{2Q}{5} \)  (4) \( \frac{1Q}{5} \)

23. A block of mass 4 kg is placed on a rough horizontal plane. A time dependent force \( F = kt^2 \) acts on the block, where \( k = 2 \) N/s². Coefficient of friction \( \mu = 0.8 \). Force of friction between block and the plane at \( t = 2 \) s is :-
   (1) 8N  (2) 4N  (3) 2N  (4) 32N

24. A gas is taken through a number of thermodynamic states. What happens to its specific heat
   (1) It is always constant
   (2) It increases
   (3) It decreases
   (4) It can have any value depending upon process of heat absorbed or evolved
25. If system in equilibrium find out $T_1$ and $T_2$:

\[ g = 10 \text{ m/s}^2 \]

(1) 50N, $50\sqrt{3}$N  (2) $50\sqrt{3}$N, 50N
(3) 25N, $25\sqrt{3}$N  (4) $25\sqrt{3}$N, 25N

26. An ideal gas is taken the cycle $A \rightarrow B \rightarrow C \rightarrow A$, as shown in the figure. If the net heat supplied to the gas in the cycle is 10 joule, the work done by the gas in the process $C \rightarrow A$ is:

\[ PV \text{ (in N/m}^2 \text{ )} \]

(1) –20 J  (2) –10 J  (3) –5 J  (4) –15 J

27. If coefficient of friction between block A and surface is 0.2. Minimum value of mass of block B to just slide the system on the surface:

\[ m \]

(1) 0.6 kg  (2) 0.8 kg  (3) 0.10 kg  (4) 0.2 kg

28. The following figure represents the temperature versus time plot for a given amount of a substance when heat energy is supplied to it at a fixed rate and at a constant pressure. Which part of the above plot represent a phase change?

(1) a to b and e to f  (2) b to c and c to d
(3) d to e and e to f  (4) b to c and d to e
29. A machine gun fires a bullet of mass 40 g with a velocity 1200 ms\(^{-1}\). The man holding it, can exert maximum force of 144 N on the gun. How many bullets can he fire per second at the most?
   (1) One  (2) Four
   (3) Two  (4) Three

30. 10 gm of ice at -20\(^{\circ}\)C is added to 10gm of water at 50\(^{\circ}\)C. Specific heat of water = 1 cal/gm -\(^{\circ}\)C, specific heat of ice = 0.5. cal/gm.-\(^{\circ}\)C. Latent heat of ice = 80 cal/gm. Then, resulting temperature is -
   (1) -20\(^{\circ}\)C  (2) 15\(^{\circ}\)C
   (3) 0\(^{\circ}\)C  (4) 50\(^{\circ}\)C

31. The bob of a simple pendulum of length \(\ell\) dropped from a horizontal position, strikes a block of same mass elastically placed on a frictionless horizontal table as shown figure. The block shell have kinetic energy:
   (1) zero
   (2) \(mg\ell\)
   (3) \(\frac{mg\ell}{2}\)
   (4) 2\(mg\ell\)

32. An isotropic material has coefficients of linear thermal expansion \(\alpha_1, \alpha_2\), and \(\alpha_3\) along x,y and z-axis respectively. Coefficient of cubical expansion of its material will be equal to-
   (1) \(\alpha_1 + \alpha_2 + \alpha_3\)
   (2) \(2\alpha_1 + 3\alpha_2 + 3\alpha_3\)
   (3) \(3\alpha_1 + 2\alpha_2 + \alpha_3\)
   (4) \(\frac{\alpha_1 + \alpha_2 + \alpha_3}{3}\)

33. Two masses are connected by a string (as shown figure), over a frictionless pulley, find acceleration of system :-
   (1) \(\frac{g}{3}\)
   (2) Zero
   (3) \(\frac{g}{4}\)
   (4) None of these
34. One mole of an ideal gas \((\gamma = \frac{5}{3})\) is at 127°C compress adiabatically up to \(\left(\frac{8}{27}\right)\) time of its initial volume. Find out work done on the system?

(1) 500 cal  
(2) 1000 cal  
(3) 2000 cal  
(4) 1500 cal

35. Two thin discs each of mass M and radius r metre are attached as shown in figure, to form a rigid body. The rotational inertia of this body about an axis perpendicular to the plane of disc B and passing through its centre is :-

(1) \(2Mr^2\)  
(2) \(3Mr^2\)  
(3) \(4Mr^2\)  
(4) \(5Mr^2\)

36. To decrease the volume of a gas by 5% at constant temperature, the pressure should be:

(1) decreased by 5.26%  
(2) increased by 5.26%  
(3) decreased by 5.00%  
(4) increased by 5.00%

37. The moment of inertia of a body about a given axis is 1.2 kg \(\times\) m\(^2\). Initially, the body is at rest. In order to produce a rotational KE of 1500 joule, an angular acceleration of 25 rad/sec\(^2\) must be applied about that axis for a duration of:

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

38. Pressure versus temperature graphs of an ideal gas are as shown in figure. Choose the wrong statement.

(1) Density of gas is increasing in graph (i)  
(2) Density of gas is decreasing in graph (ii)  
(3) Density of gas is constant in graph (iii)  
(4) None of the above

Use stop, look and go method in reading the question

34. एक आर्द्र ने \(\left(\frac{5}{3}\right)\) के फँड़ लगे 27° घर के पि में का कोटिका का नाम से सॉ. न किया जा ता है निकल पाका किया गया जा ता कहें?

(1) 500 cal  
(2) 1000 cal  
(3) 2000 cal  
(4) 1500 cal

35. सा द द बिंका बिंका जिए का दे महली डिस्क को बलता नुसरा ड. करनादु ड. जहां चल गया है इससे द बिंका के न. र अ. बमे. ब के, बस्क स्क दे लाबपूर ता इसके द से हाँ करने वाले आकर के पि है?

(1) \(2Mr^2\)  
(2) \(3Mr^2\)  
(3) \(4Mr^2\)  
(4) \(5Mr^2\)

36. निकल पस किसी म चित्र अ चक% चटाने के लिए दे ब-?

(1) 5.26% डांड ना चाहिए  
(2) 5.26% कटा 1 ना चाहिए  
(3) 5.00% डांड ना चाहिए  
(4) 5.00% कटा 1 ना चाहिए

37. किसी ज्ञात आकर के पि है किसी बस्त का जध, जध को पि़रे 1.2 किमा मी है? प्रा. ना. मे बस्तु बिंका मा बस्ता 1500 जुली चित्र डु बन गलतनड उर फ न करने के लिए किसी साथे के किसी उ सबक से उ यक के 1.2 किमा दा. से वी दर से त विराम करना चाहिए?

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

38. किसी अ दर्घे म चित्र दे वता के पिंक ब चित्र मे दर्घे चयं चम गया है गलत क्षण के चु निष्ठें?

(1) या चढ़े में सकर दे नट च दर्घे निया है  
(2) या चढ़े में सकर दे नट ल दर्घे निया है  
(3) या चढ़े में सकर दे नट ल बनाया है  
(4) उ दे के में से कोई नहीं
39. A coin is placed on a gramophone record rotating at a speed of 45 rpm. It flies away when the rotational speed is 50 rpm. If two such coins are placed on over the other on the same record, both of them will fly away when the rotation speed is:-
(1) 12.5 rpm (2) 25 rpm (3) 50 rpm (4) 100 rpm

40. Two bodies A and B have thermal emissivities of 0.04 and 0.64 respectively. The outer surface area are same. Both bodies emit total radiant power at same rate. The temperature of A is 5802 K. Calculate the temperature of B :-
(1) 771 K (2) 1934 K (3) 245 K (4) 2901 K

41. A thin uniform circular disc of mass M and radius R is rotating in a horizontal plane about an axis passing through its centre and perpendicular to the plane with angular velocity \( \omega \). Another disc of same mass but half the radius is gently placed over it coaxially. The angular speed of the composite disc will be :
(1) \( \frac{5}{4} \omega \) (2) \( \frac{4}{5} \omega \) (3) \( \frac{2}{5} \omega \) (4) \( \frac{5}{2} \omega \)

42. The Reynolds number of a flow is the ratio of:-
(1) Gravity to viscous force (2) Gravity force to pressure force (3) Inertia forces to viscous force (4) Viscous forces to pressure force

43. The total kinetic energy of a body of mass 10 kg and radius 0.5 m moving with a velocity of 2m/s without slipping is 32.8 J. The radius of gyration of the body is :-
(1) 0.25m (2) 0.2 m (3) 0.5m (4) 0.4 m

44. If angle of contact between glass and a liquid is 0° and on dipping a glass capillary in this liquid, the liquid rises to a height of 6 cm. If another capillary of radius 3/2 times higher that of the former is dipped into the liquid, the height of liquid column inside it will be :-
(1) 9 cm (2) 3 cm (3) 4 cm (4) 12 cm

45. Elasticity is the property which is caused by :-
(1) The applied deforming forces (2) Gravitational force (3) Nuclear forces (4) Intermolecular forces
46. The pH of a solution obtained by mixing 100 ml of 0.2 M CH₃COOH in 100 ml of 0.2 M NaOH would be (pKa for CH₃COOH = 4.74):-
   (1) 4.74 (2) 8.87 (3) 9.10 (4) 8.57

47. Lanthanoids can be seperated by :-
   (1) Magnetic method
   (2) Electrolytic method
   (3) Froth floatation method
   (4) Ion exchange method

48. Buffer capacity of a buffer solution is x, the volume of 1M NaOH added to 100 ml of this solution if change the pH by 1 is :-
   (1) 0.1 x ml (2) 10 x ml (3) 100 x ml (4) x ml

49. Amphoteric oxide is :-
   (1) NiO (2) ZnO (3) CoO (4) FeO

50. In a saturated solution of Ag₂CO₃ silver ion concentration is 2 × 10⁻⁴ M. Its solubility product is :-
   (1) 4 × 10⁻¹² (2) 3.2 × 10⁻¹¹ (3) 8 × 10⁻¹² (4) 4 × 10⁻¹²

51. Which one is π-acid ligand :-
   (1) ONO⁻ (2) C₅H₅⁻ (3) NO₂⁻ (4) CN⁻

52. Which has the highest degree of ionisation ?
   (1) 1 M NH₃ (2) 0.01 M NH₃ (3) 0.1 M NH₃ (4) 0.001 M NH₃

53. Which shows ionisation isomerism :-
   (1) [Pt(NH₃)₂Cl₂] (2) K₄[Fe(CN)₆] (3) [Co(NH₃)₆]BrSO₄ (4) [Cr(NH₃)₆]Cl₃

54. Kᵥ for two weak acids are 2.8 × 10⁻⁴ and 1.8 × 10⁻⁴. Their relative strengths are :-
   (1) 16 : 1 (2) 1 : 16 (3) 10 : 1 (4) 1 : 10

55. Kᵥ[CoF₆] is a high spin complex here Co is in which hybridisation state :-
   (1) d²sp³ (2) sp³ (3) sp³d (4) sp³d²

56. 200 ml of 20% NaOH \( \left( \frac{W}{V} \right) \) is added to 200 ml of 20% HCl \( \left( \frac{W}{V} \right) \). The resultant solution becomes :-
   (1) Alkaline (2) Acidic (3) Neutral (4) Strongly basic

57. 0.2 M NaOH of 100 ml of the \( \rho \) 16.2 M CH₃COOH of 100 ml make a buffer solution. What \( \rho \) pH of the resultant solution is :-
   (1) 4.74 (2) 8.87 (3) 9.10 (4) 8.57

58. लेने वाले ना इक किसीविध द्वारा पृथ्वी के किसी से से होते हैं
   (1) चूंकि वह दुनिया निविदित (2) वह वहाँ से नहीं निविदित (3) जो ग्राह्म प्लान निविदित (4) अ या विनिविदित

59. उ भा क्या में अँक इस प्रकार हैं
   (1) NiO (2) ZnO (3) CoO (4) FeO

60. Ag₂CO₃ के संस्थूत विल्सम में, किस वर आ वह से द त 2 × 10⁻⁴ M है। इसके विल्सम वह गुण निकाल हैं
   (1) 4 × 10⁻¹² (2) 3.2 × 10⁻¹¹ (3) 8 × 10⁻¹² (4) 10⁻¹²

61. कौन नृक्षा-आ लिखें यदि हैं
   (1) ONO⁻ (2) C₅H₅⁻ (3) NO₂⁻ (4) CN⁻

62. ग्राम में ऐसे कौन अधी गुण है याँ के मात्र रखत हैं
   (1) 1 M NH₃ (2) 0.01 M NH₃ (3) 0.1 M NH₃ (4) 0.001 M NH₃

63. अ यां का सब देश कौन अधी त हैं
   (1) [Pt(NH₃)₂Cl₂] (2) K₄[Fe(CN)₆] (3) [Co(NH₃)₆]BrSO₄ (4) [Cr(NH₃)₆]Cl₃

64. दू ब व ल आय में के भे न क्रम 2.8 × 10⁻⁴ तथा 1.8 × 10⁻⁵ है। आ ले के अंश ग्रहण में हैं
   (1) 16 : 1 (2) 1 : 16 (3) 10 : 1 (4) 1 : 10

65. Kᵥ[CoF₆] फूल चचक्र या कु चक्र का संक्षेप का अधी त है
   (1) d²sp³ (2) sp³ (3) sp³d (4) sp³d²

66. 20% NaOH \( \left( \frac{W}{V} \right) \) के 200 ml में 20% \( \left( \frac{W}{V} \right) \) HCl विल्सम का 200 ml मिला या जल है तो पृथ्वी का विल्सम है या
   (1) शताब्दी या (2) अक्ली या (3) उदा में न (4) अंतर शताब्दी या
57. At room temperature which one is most stable:
   (1) S-Rhombic  (2) S-monoclinic  
   (3) S-Milky  (4) S-Colloidal

58. 34 gm of hydrogen peroxide is present in 1120 ml. This solution is called:
   (1) 10 V  (2) 20 V  (3) 30 V  (4) 40 V

59. Which one is not a pseudo halide:
   (1) CN⁻  (2) SCN⁻  (3) OCN⁻  (4) RC=O⁻

60. The number of molecules in 27 ml of water (ρ = 1 gm/ml):
   (1) $9.033 \times 10^{23}$  (2) $6.02 \times 10^{23}$  
   (3) 27  (4) $3.01 \times 10^{23}$

61. Which inert gas is not present in atmosphere:
   (1) He  (2) Kr  (3) Xe  (4) Rn

62. 0.2 molal aqueous solution of each of NaCl, BaCl₂ and AlCl₃ have boiling points $T_1$, $T_2$ and $T_3$. Which of the following is correct:
   (1) $T_1 > T_2 > T_3$  (2) $T_3 > T_2 > T_1$  
   (3) $T_3 > T_1 > T_2$  (4) $T_1 > T_3 > T_2$

63. Number of P-H bond in hypophosphorous acid is:
   (1) 2  (2) 3  (3) 0  (4) 1

64. Van't Hoff factor of HgCl₂ in its aqueous solution will be (Hg₂Cl₂ is 80% ionised in solution):
   (1) 1.6  (2) 2.6  (3) 3.6  (4) 4.6

65. Which of the following does not give bead test:
   (1) Co-salt  (2) Ni-salt  
   (3) Al-salt  (4) Cu-salt

66. The freezing point depression of 0.001 m $K_x[Fe(CN)_6]$ is $7.10 \times 10^{-3}$ K. Determine the value of $x$ [$K_f = 1.86$ K Kg/mole for water]:
   (1) 2  (2) 3  (3) 4  (4) 5

67. Which reacts very slowly with water:
   (1) Cs  (2) Li  (3) K  (4) Rb

68. The osmotic pressure of decimolar solution of urea at 27°C is:
   (1) 2.49 bar  (2) 5 bar  
   (3) 3.4 bar  (4) 1.25 bar

69. Which one is known as Indian salt peter:
   (1) KNO₃  (2) NaNO₃  
   (3) AgNO₃  (4) Ca(NO₃)₂

70. The co-ordination number in a crystal of sodium element is:
   (1) 4  (2) 6  (3) 8  (4) 12
71. Oxidation state of two oxygen in H₂O₂ are respectively:-
   (1) +1, +1  (2) −1, −2  
   (3) −2, −2  (4) −1, −1

72. In a body-centered cubic cell (bcc) of lattice parameter a, the atomic radius is –
   (1) \(\frac{\sqrt{3}a}{4}\)  (2) \(\frac{a}{\sqrt{3}}\)  
   (3) \(2\sqrt{2}a\)  (4) \(\frac{a}{4}\)

73. Which process is used in removal of hardness of water :-
   (1) Hoopes Method  (2) Halls Method  
   (3) Calgon Method  (4) Fisher ring method

74. How many unit cell are present in a cube-shaped ideal crystal of NaCl of mass 1.00 g. [Atomic masses : Na = 23, Cl = 35.5]
   (1) \(2.57 \times 10^{21}\) unit cells  
   (2) \(5.14 \times 10^{21}\) unit cells  
   (3) \(1.25 \times 10^{21}\) unit cells  
   (4) \(1.71 \times 10^{21}\) unit cells

75. Which of the following does not have coordination bond :-
   (1) SO₂  (2) O₃  (3) CH₃NC  (4) CO₂

76. When a gas is subjected to adiabatic expansion it gets cooled due to :-
   (1) Fall in temperature  
   (2) Less in kinetic energy  
   (3) Decrease in velocity  
   (4) Energy spent in doing work

77. Which shows maximum covalent character :-
   (1) SnCl₄  (2) AlCl₃  
   (3) MgCl₂  (4) NaCl

78. For \(A \rightarrow B, \Delta H = 4 \text{ Kcal/mol}\)
   \(\Delta S = 10 \text{ cal mole}^{-1} \text{ K}^{-1}\), reaction is spontaneous when temperature can be :-
   (1) 400 K  (2) 300 K  
   (3) 500 K  (4) None

79. Which shows minimum internuclear distance:-
   (1) O₂  (2) O₂⁻  
   (3) O₂²⁻  (4) O²⁺

80. What is the value of standard Gibb's free energy change if its equilibrium constant is 100?
   (1) 11.41 kJ  (2) −11.41 kJ  
   (3) 41.11 kJ  (4) −14.11 kJ
81. Anhydride of sulphurous acid is :-
   (1) SO₂  (2) SO₃  (3) H₂S₂O₅  (4) SO₄

82. Calculate de-Broglie wavelength of a neutron (Mass m = 1.6 × 10⁻²⁷ kg) moving with kinetic energy of 0.04 eV :-
   (1) 146 Å  (2) 14.6 Å  
   (3) 1460 Å  (4) 1.46 Å

83. Most reactive non metal is :-
   (1) F  (2) N  (3) O  (4) S

84. A photon of 300 nm is absorbed by a gas and then reemits two photons one reemitted photon has wavelength 496 nm. The wavelength of second reemitted photon is :-
   (1) 759 nm  (2) 857 nm  
   (3) 957 nm  (4) 657 nm

85. Atomic number of halogen with minimum IE will be :-
   (1) 9  (2) 17  (3) 35  (4) 53

86. If the electron can be located in the orbit with in 0.1 Å. What is the uncertainty in its velocity
   (1) 5.76 × 10⁷ ms⁻¹  (2) 0.576 × 10⁷ ms⁻¹  
   (3) 0.576 × 10⁻⁴ ms⁻¹  (4) 5.76 × 10⁻⁴ ms⁻¹

87. Correct order of increasing atomic radii is :-
   (1) Mg < K < Na < Rb  (2) Mg < Na < K < Rb  
   (3) Mg < Na < Rb < K  (4) Na < K < Rb < Mg

88. At the STP, the order of root mean square speed of molecules of H₂, N₂, O₂ and HBr is :-
   (1) H₂ > N₂ > O₂ > HBr  (2) HBr > O₂ > N₂ > H₂  
   (3) HBr > H₂ > O₂ > N₂  (4) N₂ > O₂ > H₂ > HBr

89. Increasing order of oxidising nature is :-
   (1) Cl < Br < I < F  (2) Cl < I < Br < F  
   (3) I < Cl < Br < F  (4) I < Br < Cl < F

90. Kinetic gas equation is :-
   (1) PV = nRT  
   (2) PV = \frac{1}{3} m N V^2 \text{rms}  
   (3) PV_m - P_b = RT  
   (4) PV_m + \frac{a}{V_m^2} = RT

81. अन्याय में लगभग पहाड़ी है।
   (1) SO₂  (2) SO₃  (3) H₂S₂O₅  (4) SO₄

82. 0.04 eV जलवात में चुरा वेग वा ना देखा है।
   (1) 146 Å  (2) 14.6 Å  
   (3) 1460 Å  (4) 1.46 Å

83. सबसे किंवा कितने होल नये हैं?
   (1) F  (2) N  (3) O  (4) S

84. एक गैस 8000 nm का एक फोटो टेन में हो जाता है। किने के दो फोटो टेन को कुं न उसे सबै टेन जाते हैं।
   (1) 146 Å  (2) 14.6 Å  
   (3) 1460 Å  (4) 1.46 Å

85. गैस धातुओं के होल जा का प्राप्त क्रम कहा है?
   (1) 9  (2) 17  (3) 35  (4) 53

86. चौड़ा देखा है नये में हो जाता है।
   (1) Mg < K < Na < Rb  (2) Mg < Na < K < Rb  
   (3) Mg < Na < Rb < K  (4) Na < K < Rb < Mg

88. STP पर, H₂, N₂, O₂ व HBr के आंशिक अन्तर्गत वा वर्ग में क्या ले जा गांव का रंग है?
   (1) H₂ > N₂ > O₂ > HBr  (2) HBr > O₂ > N₂ > H₂  
   (3) HBr > H₂ > O₂ > N₂  (4) N₂ > O₂ > H₂ > HBr

89. अंग्रेजी समेत समेत का कल्पना क्रम है?
   (1) Cl < Br < I < F  (2) Cl < I < Br < F  
   (3) I < Cl < Br < F  (4) I < Br < Cl < F

90. गतितम या सम्मान कहा है?
   (1) PV = nRT  
   (2) PV = \frac{1}{3} m N V^2 \text{rms}  
   (3) PV_m - P_b = RT  
   (4) PV_m + \frac{a}{V_m^2} = RT
91. One can grow but cannot reproduce, it will be:-(1) Living (2) Non-living (3) Living or non living (4) Cannot say

92. The course of blood from heart to the lungs and back to the heart is called:-(1) Systemic circulation (2) Pulmonary Circulation (3) Blood circulation (4) Single circuit circulation

93. Classification system are changing every now and then because an attempt has been made to evolve such a system ultimately which is able to explain evolutionary relations in organisms. What was the correct sequence of these types of classification systems with respect to their evolution:-(1) Practical → Artificial → Natural → Phylogenetic → Numerical (2) Artificial → Practical → Numerical → Phylogenetic (3) Practical → Artificial → Natural → Numerical → phylogenetic (4) Numerical → Artificial → Natural → Practical → phylogenetic

94. The main difference in the structure of arteries and veins is:-(1) Tunica interna - made up of simple squamous epithelium (2) Tunica media less developed in veins (3) Tunica externa is less developed in veins (4) Tunica externa is well developed in arteries

95. Cellular organisation of the body is the defining feature of life forms. Viruses are noncellular even then they are pathogenic. In this condition how will you justify the statement? (1) Viruses are exceptions of this statement (2) Viruses are living but not made of cell so this statement is not true (3) Viruses did not find a place in classification, so the statement is not correct (4) Viruses are not truly "living" they are connecting links so the statement is correct
96. Which among the following is correct during each cardiac cycle?
(1) The volume of blood pumped out by the right and left ventricle is different
(2) The volume of blood pumped out by the right and left ventricle is same
(3) The volume of blood received by each atrium is different
(4) The volume of blood received by the aorta and pulmonary artery is different

97. The biggest spin off in biological knowledge was the recognition of the sharing of similarities among living organisms both horizontally and vertically. Here what is the meaning of horizontally similarities among living organisms:
(1) Similarities between different members of same taxonomic ranks
(2) Similarities between different members of different taxonomic ranks
(3) Similarities between different species and genera of same families
(4) Similarities between classes and divisions of plantae kingdom.

98. Identify the correct and incorrect match about the respiratory volume and capacities and mark the correct answer:
(a) Expiratory capacity = Tidal volume + Residual volume
(b) Vital capacity = Total long capacity – Residual volume
(c) Inspiratory capacity = Total long capacity – Functional Residual capacity
(d) Total long capacity = Vital capacity + Functional Residual capacity

<table>
<thead>
<tr>
<th></th>
<th>(a)</th>
<th>(b)</th>
<th>(c)</th>
<th>(d)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>Incorrect</td>
<td>Correct</td>
<td>Correct</td>
<td>Incorrect</td>
</tr>
<tr>
<td>(2)</td>
<td>Correct</td>
<td>Correct</td>
<td>Incorrect</td>
<td>Correct</td>
</tr>
<tr>
<td>(3)</td>
<td>Incorrect</td>
<td>Correct</td>
<td>Incorrect</td>
<td>Incorrect</td>
</tr>
<tr>
<td>(4)</td>
<td>Correct</td>
<td>Incorrect</td>
<td>Incorrect</td>
<td>Correct</td>
</tr>
</tbody>
</table>
99. Find the correct statements from the followings:-
(a) Biology is the science of life forms and living processes.
(b) Biology is the story of life on earth
(c) Biology is the story of evolution of living organisms on earth
(d) Biology is the story of characters and processes of animate forms as opposed of inanimate forms.
(1) Only (a) and (b)
(2) Only (c) and (d)
(3) (a), (b) & (c)
(4) (a), (b), (c) & (d)

100. Regarding the human tracheal rings mark the wrong entry :-
(1) Made up of hyaline cartilage
(2) Prevent collapsing of trachea
(3) Dorsally incomplete
(4) 10 - 12 in number

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

Find the most correct option from the followings:
(1) A, B and C are correct and D is incorrect
(2) A and B are correct and C and D are incorrect
(3) A and B are incorrect and C and D are correct
(4) A is correct and B, C and D are incorrect
102. Mark the correct set of muscles involved in the process of normal breathing process :-
(a) External Intercostal Muscles
(b) Internal intercostal muscles
(c) Phrenic muscles
(d) Abdominal muscles
(1) a and b (2) a and c (3) b and c (4) c and d

103. Find the incorrect statements from the followings:-
(A) All living phenomena are due to underlying interactions
(B) Properties of tissues arise as a result of interactions among the constituent cells
(C) Properties of cellular organelles arise as a result of molecular components of them, not by their interactions
(D) All living organisms of present past and future are linked to one another by sharing of equal common genetic material
(1) A and B (2) B & C (3) A, B and C (4) C & D

104. Oxygen dissociation curve of haemoglobin is shown in graph :-

What does X and Y indicates :-
(1) X - Oxygenated blood, Y - Deoxygenated blood
(2) X - De oxygenated blood, Y - Oxygenated blood
(3) X - Blood of Haemophilic person, Y - Blood of normal person
(4) X - Blood of embryo, Y - Blood of adult

102. खाने-यमने के प्रक्रिया में सीम-मल्टिप्लेरो यें की सूची बाज देने के चलते, नीचे दिए गए हैं :
(a) बाह्य अंतरमुँह धारक
(b) अंतर्मुँह अंतरमुँह धारक
(c) फ्रेनिक धारक
(d) अब्दूल्ला धारक
(1) ए और ब (2) ए और भ (3) ब और भ (4) भ और द

103. निम्न नामित तथ्य का कोने को पुष्ट निष्कर्ष हैं:
(A) सर्व जीवित क्रम अंतर्लिंग हिंदू तिथियों के बारे होते हैं
(B) कल के सम्मि अंतर्निहीन उन्नत तथ्य के बारे होते हैं
(C) तथ्यों को ग्रहण करने के लिए प्रवृत्त अंतर्निहीन तथ्य तथ्य के बारे होते हैं, न किंतु उनके पूर्ण तिथियों के बारे होते हैं
(D) वर्तमान पूर्व तथ्य निम्नलिखित के सारे जीवित क्रम फ़ूड़े से विद्युक्त न नहीं निर्माण अनुक्रम कथा कार्यालय के बारे दी जता है:
(1) ए और ब (2) ब और ध (3) ए, ब और ध (4) ध और ए

104. हो मां र लॅसिन अंतर्निहीन अंतर्निहीन जिंदगी जा जाने जा चाणक्य फ हमें दिख गय हैं:-

X और Y कई भी गिनते हैं तथ्य के बारे है:
(1) X - अंतर्निहीन अंतर्निहीन जिंदगी कुछ रहता है
(2) X - अंतर्निहीन अंतर्निहीन जिंदगी कुछ रहता है
(3) X - हो मां फिल्टर का विपक्ष का रहता है
(4) X - द अंतर्निहीन जिंदगी का रहता है
105. Find the incorrect statement about fungi:

(1) They show a great diversity in morphology and habitats.
(2) Fungi are cosmopolitan and occur in air, water, soil and as parasites also.
(3) They prefer to grow in cold and dry places.
(4) With the exception of yeasts, fungi are filamentous.

106. Arrange the following animals in order of increasing heart rate:

(a) Sheep  (b) Mouse  
(c) Rabbit  (d) Horse
(e) Elephant

1. e, d, a, c, b
2. a, b, c, d, e
3. e, d, b, c, a
4. e, d, a, b, c

107. Find the correct statements about fungi:

(A) Most of the fungi are saprophytes.
(B) Fungi can also survive as symbionts.
(C) Sexual reproduction in fungi involves three steps.
(D) Reduction division in fungi occurs in fruiting bodies which forms haploid spores.

1. A, B are correct
2. C, D are correct
3. A, B & C are correct
4. A, B, C & D are correct

108. Plant breeding may be used to create - varieties which are:

(1) Resistant to pathogens and to insect pests.
(2) This method has also been used to increase the protein content of plant food and thereby enhance the quality of food.
(3) This increases the yield of the food.
(4) All the above.

109. Why viruses did not find a place in classification:

(1) They are obligate parasites, cannot survive without host.
(2) Viruses cannot be cultured in laboratory.
(3) They are not truly living because they don’t have cell structure.
(4) They can pass through the bacterial proof filter.

110. Given the following statements:

(1) These statements are about fungi.
(2) These statements are about plants.
(3) These statements are about animal life.
(4) These statements are about bacteria.

1. (1)
2. (2)
3. (3)
4. (4)
110. Which of the following is correctly matched :-
   (1) Genegun method = Suitable for plants
   (2) PCR-technique = Cutting of DNA at specific location
   (3) Gel electrophoresis = Gene cloring
   (4) PBR322 = Variety of virus

111. Match the followings Column-I with Column-II :-

<table>
<thead>
<tr>
<th>Column-I</th>
<th>Column-II</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) Fucus</td>
<td>(i) Moss</td>
</tr>
<tr>
<td>(b) Pinus</td>
<td>(ii) Pteridophyte</td>
</tr>
<tr>
<td>(c) Azolla</td>
<td>(iii) Algae</td>
</tr>
<tr>
<td>(d) Polytrichum</td>
<td>(iv) Gymnosperm</td>
</tr>
</tbody>
</table>

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

112. Which one of the following symbol and its representation, used in human pedigree analysis is correct :-

   (1) Male affected
   (2) Unaffected male
   (3) Unaffected female
   (4) Carrier female of autosomal recessive disorder

113. Following structures are given below in the list. From them how many structures are haploid: -
Protonemal Cells of moss, Primary endosperm, nucleus in dicots, Prothallus cells of a fern, gemma cell in Marchantia, Leaf cell of a moss, ovum of liverwort, zygote of a fern

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

114. Test cross in Drosophila involves crossing :-

   (1) Between two genotype with domoninant trait
   (2) Between two F₁ hybrid
   (3) Between two genotypes with recessive trait
   (4) The F₁ hybrid with a double recessive genotype
115. Make the correct identification of these figures and than they belong to which group of plants:

<table>
<thead>
<tr>
<th>Identification</th>
<th>Belong to group</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) (a) Selaginella</td>
<td>An Club Moss</td>
</tr>
<tr>
<td>(b) Polysiphonia</td>
<td>An Alga</td>
</tr>
<tr>
<td>(c) Marchantia</td>
<td>A Liver wort</td>
</tr>
<tr>
<td>(d) Sphagnum</td>
<td>A moss</td>
</tr>
<tr>
<td>(2) (a) Chlamydomonas</td>
<td>An Alga</td>
</tr>
<tr>
<td>(b) Selaginella</td>
<td>An Club Moss</td>
</tr>
<tr>
<td>(c) Marchantia</td>
<td>A moss</td>
</tr>
<tr>
<td>(d) Polytrichum</td>
<td>A Liverwort</td>
</tr>
<tr>
<td>(3) (a) Polytrichum</td>
<td>A moss</td>
</tr>
<tr>
<td>(b) Marchantia</td>
<td>A Liver wort</td>
</tr>
<tr>
<td>(c) Funaria</td>
<td>An Moss</td>
</tr>
<tr>
<td>(d) Chlamydomonas</td>
<td>An Alga</td>
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<td>(4) (a) Sphagnum</td>
<td>An Club Moss</td>
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<td>(b) Marchantia</td>
<td>An Alga</td>
</tr>
<tr>
<td>(c) Polysiphonia</td>
<td>An bryophyte</td>
</tr>
<tr>
<td>(d) Funaria</td>
<td>An Alga</td>
</tr>
</tbody>
</table>

116. Which one of the following condition of the zygotic cell would lead to the birth of a normal human male child:

1. Only one x-chromosome
2. Only one y-chromosome
3. Two x-chromosomes
4. One x and one y-chromosome

115. इन चित्रों को सही पहचान कीजिए। उसके बाद वह समूह बताइए कि जिसमें है के खराब हैं।

<table>
<thead>
<tr>
<th>पहचान</th>
<th>समूह समूह</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) (a) फ्लाइ फ्लाट्सूज़</td>
<td>एक व लड़का समूह</td>
</tr>
<tr>
<td>(b) पीलिंगसैफ़ो नियम एक व वाला समूह</td>
<td></td>
</tr>
<tr>
<td>(c) माके रिश्ते एक लड़का पर वर्ग</td>
<td></td>
</tr>
<tr>
<td>(d) रफ़ेर नम एक मास समूह</td>
<td></td>
</tr>
<tr>
<td>(2) (a) वेमा इडे मों नाम प्लीसैफ़ो वाला समूह</td>
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</tr>
<tr>
<td>(b) सिसिज़ लिया एक व लड़का समूह</td>
<td></td>
</tr>
<tr>
<td>(c) माके रिश्ते एक मास समूह</td>
<td></td>
</tr>
<tr>
<td>(d) पीली टू इकम एक लड़का पर वर्ग</td>
<td></td>
</tr>
<tr>
<td>(3) (a) पीली टू इकम एक मास समूह</td>
<td></td>
</tr>
<tr>
<td>(b) माके रिश्ते एक मास पर वर्ग</td>
<td></td>
</tr>
<tr>
<td>(c) प्यूड ने बिंदिया एक मास समूह</td>
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</tr>
<tr>
<td>(d) वेमा इडे मों नाम प्लीसैफ़ो वाला समूह</td>
<td></td>
</tr>
<tr>
<td>(4) (a) रफ़ेर नम एक व लड़का समूह</td>
<td></td>
</tr>
<tr>
<td>(b) माके रिश्ते एक मास पर वर्ग</td>
<td></td>
</tr>
<tr>
<td>(c) पीली टू इकम नियम एक मास फ्रॉ मोना इकम</td>
<td></td>
</tr>
<tr>
<td>(d) प्यूड ने बिंदिया एक मास समूह</td>
<td></td>
</tr>
</tbody>
</table>

116. निम्नलिखित में से पुरुष एवं महिलाओं को नसीरी अस्तान में मनुष्य भ्रम रंग नहीं दिया है।

1. के बल्के एक वाली प्यूड ग्रुप जी ।
2. के बल्के एक वाली प्यूड ग्रुप जी ।
3. के बल्के एक वाली प्यूड ग्रुप जी ।
4. के बल्के एक वाली प्यूड ग्रुप जी ।
117. The figures (a), (b) and (c) are of :-

(1) (a) A B.G.A - Nostoc  
(b) A phycomycete - Aspergillus  
(c) A basidiomycete - Agaricus

(2) (a) A Green Alga - Nostoc  
(b) A deuteromycete - Aspergillus  
(c) A basidiomycete - Agaricus

(3) (a) A Red Alga - Nostoc  
(b) An ascomycete - Aspergillus  
(c) A phycomycete - Agaricus

(4) (a) A B.G.A - Nostoc  
(b) A ascomycete - Aspergillus  
(c) A basidiomycete - Agaricus

118. Which one out of A-D given below correctly represent the structural formula of simplest amino acid :

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>CH₂OH</td>
<td>CH₂OH</td>
<td>CH₃</td>
<td>NH₂</td>
</tr>
<tr>
<td>B</td>
<td>CH₃</td>
<td>H</td>
<td>C=O</td>
<td>NH₂</td>
</tr>
<tr>
<td>C</td>
<td>H</td>
<td>H-C-COOH</td>
<td>CH₃</td>
<td>CH₂</td>
</tr>
<tr>
<td>D</td>
<td>CH₂OH</td>
<td>CH₃</td>
<td>CH₂</td>
<td>NH₂</td>
</tr>
</tbody>
</table>

Option :-
(1) A  (2) B  (3) C  (4) D
119. Identify the (X), (Y) and (Z) in these figures:

- (X) Capsid
- (Y) Parental colony
- (Z) Mid rib

119. इन चित्रों `(X, Y, Z) के प्रति निचे व्याख्या कीजिये:

- (X) Capsid
- (Y) Parental colony
- (Z) Mid rib

120. In nerve impulse \(Na^+ \& K^+\) are required. Which ions are required in muscular contraction:

- (1) \(Na^+ \& Ca^{+2}\)
- (2) \(Mg^{+2} \& Ca^{+2}\)
- (3) \(Ca^{+2} \& K^+\)
- (4) \(Na^+ \& K^+\)

120. ज्वरमें रात्रि त्रिक्र यथा भी पृथ्वी के अ अवस्थाए तथा \(K^+\) की अवस्था हो ती है तो कुछ से प्राक्रमण वस्तु का चन में कितना अव वस्था हो ती है?

- (1) \(Na^+ \& Ca^{+2}\)
- (2) \(Mg^{+2} \& Ca^{+2}\)
- (3) \(Ca^{+2} \& K^+\)
- (4) \(Na^+ \& K^+\)

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

- (1) *Cucumeria* - Sea lily
- (2) *Myxine* - Lamprey
- (3) *Ichthyophis* - Penguin
- (4) *Neophron* - Vulture

121. नीचे दिए गए जीव के बायुक और नाम का यथा बायुक में से सही नाम गूँजन के छटे-दिशे है:

- (1) *Cucumeria* - Sea lily
- (2) *Myxine* - Lamprey
- (3) *Ichthyophis* - Penguin
- (4) *Neophron* - Vulture

122. In below disorder "A" shows:

- Addison's disease
- Cushing syndrome
- Gynaecomastia

122. नीचे दिए गए जीव "A" के विक्रम के दर्शे तकत है:

- Addison's disease
- Cushing syndrome
- Gynaecomastia
123. Select the distinguishable character of Reptiles from Aves : -
(1) Dicondylic skull
(2) Cranial nerves - 10 Pairs
(3) Diaphragm is present in crocodile
(4) Poikilothermous in nature

124. In following table parasympathetic and sympathetic division shows their work in which mainly x and y indicate which process:

<table>
<thead>
<tr>
<th>Organs</th>
<th>Parasympathetic division</th>
<th>Sympathetic division</th>
</tr>
</thead>
<tbody>
<tr>
<td>(A) Iris</td>
<td>x</td>
<td>y</td>
</tr>
<tr>
<td>(B) Gall bladder</td>
<td>x</td>
<td>y</td>
</tr>
<tr>
<td>(C) Bronchi</td>
<td>x</td>
<td>y</td>
</tr>
<tr>
<td>(D) Urinary bladder</td>
<td>x</td>
<td>y</td>
</tr>
</tbody>
</table>

125. Consider the following features : -
(A) Exclusively marine in nature
(B) Contain Extra & intra cellular digestion
(C) Only sexual reproduction occur
(D) Development indirect
Which of the following animals has all the above mentioned features : -
(1) Cliona
(2) Pennatula
(3) Pleurobrachia
(4) Adamsia

126. The receptor of thyroxin is present in :-
(1) Regulatory site of chromosome in nucleus
(2) Cytoplasm in cell
(3) Plasmamembrane in cell
(4) At any where in cell

127. In which of the following animals muscular pharynx is more distinct : -
(1) Wuchreria
(2) Taenia
(3) Loligo
(4) Pila

128. Conduction of an impulse along the axon is associated with the :-
(1) Resting potential
(2) Cl\(^-\) concentration
(3) Strength of an impulse
(4) Action potential
129. Identify the correct statements from the following with reference to bony fishes:
(A) Body is streamlined
(B) Skin is covered by placoid scales
(C) Air bladder & operculum absent
(D) Mouth mostly terminal
(E) External fertilisation
(1) A, B, D  (2) A, B, E
(3) C, D, E  (4) A, D, E

130. The potential difference in the membrane which is responsible for the conduction of an impulse is brought about by a charge in the membrane:
(1) Permeability  (2) Structure
(3) Anions  (4) Concentration

131. Consider the following statements:
During the alternation of generation or metagenesis in dimorphic cnidarians the polyps are:
(A) Sedentary
(B) Free living
(C) Polyp forms the medusae sexually
(D) Polyp forms the medusae asexually
(1) A, C & D are correct
(2) A and D are correct
(3) B, C & D are correct
(4) A, B, C are correct

132. The function of adrenal medulla glands is similar to nerves because:
(A) Adrenal medulla & nervous system are derived from embryonic mesoderms
(B) Adrenal medulla & some nerves secrete similar chemicals such as adrenals & nor adrenals
(C) Adrenal medulla is modified from nervous part.
(D) Adrenal medulla is made up of nervous tissue
Which statements are correct:
(1) A & B  (2) B & D
(3) B & C  (4) C & D

133. Identify incorrect statements with regard to coelenterata:
(1) Gorgonia exhibit two basic forms called polyp & Medusa
(2) Aurelia contains medusa stage
(3) Animals contain gastrovascular cavity
(4) Hydra is fresh water polyp

129. अभी यह वर्तमानी के संदर्भ में कि कहा जाएँ वो पृष्ठ हैं:
(A) बाइ गेम - रे खिड़ क ब्रीर न
(B) वर्तमान प्रेक्षण का फ़ौँग जरे से घिरा होता है
(C) वायु की घा का घा आये पृष्ठ तही है
(D) मुख नया दरा तर ताता होता है
(E) जाह यानिंद्र चल होता है
(1) A, B, D  (2) A, B, E
(3) C, D, E  (4) A, D, E

130. विशेष ली के विभिन्न वर्तमान के संदर्भ के लिए अन्य पृष्ठ होता है?
(1) प साम या  (2) संसार
(3) अंगु त्र स  (4) सं - द्राक

131. निम्नलिखित के कहा न का अर्थ की जिक्र
बहु खर निकल रित्स ये पूँछ 1 खर तप ये में टाच जिसके साथ पत्रप्रमाण वनस्पतिय से होते हैं?
(A) संधियाँ नवर्तक
(B) यू का त हो की
(C) पत्रप्रमाण निकल से में डू खर ना निम्न प करते हैं
(D) पत्रप्रमाण निकल जाना द्राक में डू खर बना ता है
(1) A, C और D हैँ
(2) A और D हैँ
(3) B, C और D हैँ
(4) A, B, C हैँ

132. फ़्रे नल में डू खर ला ग द्राक का कय तंत्रिका अं बें तंत्रिका किन
(A) फ़्रे नल में डू खर ला अं तंत्रिका तंत्र दरानही उत्तर
(1) A & B  (2) B & D
(3) B & C  (4) C & D

133. ने ले ते टैंटा से विशेष ताता य न का पहिचान नियाँ
(1) गाइ राग विभाग पिंतह ए में डू स दर अवस्था ये वे गाई ती है
(2) अ रे लीमे में डू स अवस्था होती है
(3) ज सं ये में जड़ निम्न गु हा पय दे जाती है
(4) है झुक स्वयं फ जनी प्या रित्स है
134. Motor neuron along with muscle fibers connected to it & consists of a -
   (1) neuromuscular junction
   (2) motor end plate
   (3) motor unit
   (4) both (1) & (2)

135. First phylum to have complete digestive tract can be represented by :
   (1) Hydra
   (2) Taenia
   (3) Ancylostoma
   (4) Pheretima

136. In mechanism of vision action potential is developed at-
   (1) Pigmented layer of Retina
   (2) Photoreceptor cells
   (3) Ganglionic layer
   (4) Optic nerve

137. In the above given diagram identify the coelomic condition :
   (a) (b) (c)
   (1) (A) Coelomata
       (B) Acoelomate
       (C) Pseudocoelomate
   (2) (A) Acoelomate
       (B) Coelomata
       (C) Pseudocoelomate
   (3) (A) Pseudocoelomate
       (B) Acoelomate
       (C) Coelomata
   (4) (A) Coelomata
       (B) Pseudocoelomate
       (C) Acoelomate
138. What is true about sensory organ :-

(1) It's modified transducer initiate as dendron & terminate as area
(2) It's modified effector initiate as dendron & terminate as area
(3) It's modified Axon initiate as dendron & terminate as area
(4) It's modified cyton initiate as dendron & terminate as area

139. Read the following (A - D) Statements :-

(A) Tight junctions help to stop substances from leaking across a tissue
(B) Adhering junctions perform cementing to keep neighbouring cells together.
(C) The simple epithelium consists of two or more cell layers and has protective function.
(D) The columnar epithelium is made of a single layer of flattened cells with irregular boundaries.

How many of the above statements are correct?

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

140. Skeletal muscle exhibit stripes & hence, these are designated as striated muscles these stripes are located :-

(1) Longitudinally
(2) Radially
(3) Transversely
(4) Both longitudinally & Transversely

141. How many of the following structure are an example of dense connective tissue.

Smooth muscle, Fat, Tendon, Ligament, Femur, Patella and Eustachian tube :-

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

142. The H-zone contains only thick filament while the I-band contains only thin filament. The remainder of A-band has :-

(1) Only thick filament
(2) Only thin filament
(3) both thick & thick filament
(4) Neither thick nor thin filament
143. Identify the glands (A) and (B) shown below and select the right option for location and function:

<table>
<thead>
<tr>
<th>Gland</th>
<th>Location</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. A Unicellular Gland</td>
<td>Alveoli</td>
<td>Secrete Saliva</td>
</tr>
<tr>
<td>2. B Multicellular gland</td>
<td>Oesophagus</td>
<td>Secrete enzyme</td>
</tr>
<tr>
<td>3. A Multicellular gland</td>
<td>Alimentery Canal</td>
<td>Secrete Mucos</td>
</tr>
<tr>
<td>4. B Multicellular gland</td>
<td>Buccal Cavity</td>
<td>Secrete Saliva</td>
</tr>
</tbody>
</table>

144. Deficiency of which of the following results in anemia?
   (1) Folic acid
   (2) Vit.-B<sub>12</sub>
   (3) Iron, Castle intrinsic factor
   (4) All the above

145. The function of typhlosole found in the intestine of earthworm is to?
   (1) Secrete digestive juices
   (2) Regulate the blood flow
   (3) Emulsify the food
   (4) Increases absorptive surface for digested food

146. Consider the following four statements (a-d) and select the option which includes all the correct ones only:
   (a) Small intestine is principle organ for absorption of nutrients.
   (b) Reflex action for vomiting is controlled by medulla.
   (c) Irregular bowel movements cause Diarrhoea
   (d) Mucosa forms gastric gland in the stomach
   (1) Statements (b), (c) and (d)
   (2) Statements (a), (b) and (c)
   (3) Statements (c), (d)
   (4) Statements (a), (b), and (d)
147. The number of abdominal segments in male and female cockroach is?
   (1) 10, 10 (2) 9, 10 (3) 10, 11 (4) 8, 10

148. How many enzymes in the list given below act on protein and are found in pancreatic juice?
   Trypsin, Pepsin, Sucrase, Aminopeptidase, Lactase, Rennin, Carboxypeptidase, Nuclease, Chymotrypsin
   (1) Six (2) Three (3) Four (4) Five

149. The meristematic cells of root tip are characterized by:
   (a) Rich protoplasm and large conspicuous nucleus
   (b) Cell wall primary in nature which is thin and cellulosic
   (c) Greater number of mitochondria
   (d) Abundant plasmodesmata
   (1) Only a & b (2) Only b & c
   (3) Only b, c, d (4) All a, b, c, d

150. Find out the correct match:

<table>
<thead>
<tr>
<th>Column-I</th>
<th>Column-II</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Hepatic lobule</td>
<td>I Base of Villi</td>
</tr>
<tr>
<td>B Crypts of leiberkuhn</td>
<td>II Glisson's capsule</td>
</tr>
<tr>
<td>C Sphincter of Oddi</td>
<td>III Gall bladder</td>
</tr>
<tr>
<td>D Cystic duct</td>
<td>IV Hepato-pancreatic duct</td>
</tr>
</tbody>
</table>

(1) A-I, B-II, C-IV, D-III
(2) A-II, B-I, C-IV, D-III
(3) A-I, B-II, C-III, D-IV
(4) A-IV, B-III, C-II, D-I

151. Given diagram represents secondary growth in a typical dicot root. In which one of the option all the four parts A, B, C and D are correctly identified:

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Primary Xylem</td>
<td>Primary Phloem</td>
<td>Secondary Xylem</td>
<td>Secondary Phloem</td>
</tr>
<tr>
<td>(2) Primary Phloem</td>
<td>Vascular Cambium</td>
<td>Secondary Xylem</td>
<td>Secondary Phloem</td>
</tr>
<tr>
<td>(3) Vascular Cambium</td>
<td>Primary Xylem</td>
<td>Secondary Xylem</td>
<td>Secondary Phloem</td>
</tr>
<tr>
<td>(4) Primary Phloem</td>
<td>Vascular Cambium</td>
<td>Secondary Xylem</td>
<td>Secondary Phloem</td>
</tr>
</tbody>
</table>
152. The below diagram represents a section of small intestinal mucosa showing villi. Identify A, B, C and D:

(A) Artery
(B) Vein
(C) Capillaries
(D) Crypts

(1) A - Villi, B - Lacteal, C - Capillaries, D - Crypts
(2) A - Lacteal, B - Villi, C - Capillaries, D - Crypts
(3) A - Villi, B - Lacteal, C - Crypts, D - Capillaries
(4) A - Crypts, B - Lacteal, C - Capillaries, D - Villi

153. Taxonomic keys are based on contrasting characters. In the bracketed key the pairs of contrasting statements are used for identification. The number on the right indicates the next choice of contrasting statements. Using the given Key, select correct option for A, B, C & D:

Bracketed Key

1. Vascular bundles are conjoint, collateral and primary xylem is endarch
2. Vascular bundles are radial and primary xylem is exarch
3. Open vascular bundles, arranged in a ring
4. Closed vascular bundles, scattered in ground tissue
5. Usually more than six xylem bundles, pith is large and well developed
6. Usually two to four xylem bundles, pith is small or inconspicuous or absent

(A) Dicotyledonae root
(B) Dicotyledonae stem
(C) Monocotyledonae root
(D) Monocotyledonae stem

1. Dicotyledonae root
2. Dicotyledonae stem
3. Monocotyledonae stem
4. Monocotyledonae root

(A) Dicotyledonae root
(B) Dicotyledonae stem
(C) Monocotyledonae root
(D) Monocotyledonae stem

1. Dicotyledonae root
2. Dicotyledonae stem
3. Monocotyledonae stem
4. Monocotyledonae root

(A) Dicotyledonae root
(B) Dicotyledonae stem
(C) Monocotyledonae root
(D) Monocotyledonae stem
154. Which of the following processes require emulsification:

(1) Nucleic acid → Nuclease → Nucleotides → Nucleotidase → Nucleosides → Nucleosidase → Sugar + bases

(2) Sucrose → Sucrase → Glucose + Fructose

(3) Fats → Lipase → Diglycerides → Monoglycerides

(4) Proteins → Trypsin/Chymotrypsin → Peptones → Dipeptides → Carboxypeptidase → Proteases

155. A student of botany in practical examination, cut a transverse section of the plant material, stain in safranin and fast green combination and mount in glycerine. Then he observe the following anatomical characters under microscope:

- Five ridges and five furrows
- Collenchymatous discontinuous hypodermis
- Chlorenchymatous cortex & sclerenchymatous pericycle
- Number of V.B. 10, arranged in two rings.
- Conjoint, bicollateral and open vascular bundles
- Protoxylem is endarch

The plant material should be:

(1) Cucurbita stem
(2) Sunflower stem
(3) Dorsiventral leaf
(4) Zea mays stem

156. Match the columns and choose the correct option:

<table>
<thead>
<tr>
<th>Column-I</th>
<th>Column-II</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Salivary amylase</td>
<td>I. Proteins</td>
</tr>
<tr>
<td>B. Lipase</td>
<td>II. Milk proteins</td>
</tr>
<tr>
<td>C. Rennin</td>
<td>III. Starch</td>
</tr>
<tr>
<td>D. Pepsin</td>
<td>IV. Fats</td>
</tr>
</tbody>
</table>

(1) A-III, B-IV, C-II, D-I
(2) A-III, B-IV, C-I, D-II
(3) A-IV, B-III, C-II, D-I
(4) A-I, B-II, C-III, D-IV
157. Consider the following four statements A, B, C & D. Select the right option for two correct statements. 

Statements :
A. Scutellum observed in a grain of wheat or maize is comparable to endosperm of the seed in other monocotyledons.
B. A fruit develops from hypanthodium inflorescence is called syconus.
C. An example of seed with endosperm, perisperm & caruncle is castor.
D. The floral formula of sun hemp is \[ \text{A, B, C} \]

The correct statements are :-
(1) A & B  (2) B & C  (3) C & D  (4) A & C

158. When proteins are respiratory substrate the RQ would be about :-
(1) 1  (2) > 1  (3) 0.7  (4) 0.9

159. Which one of the following pairs is wrongly matched while the remaining three are correct?
(1) Offset-Pistia
(2) Castor-Monoclinous
(3) Valvate aestivation-Calotropis
(4) Parietal placentation-Argemone

160. Formation of cork cambium is :-
(1) Differentiation  (2) Redifferentiation  (3) Dedifferentiation  (4) Maturation

161. The major site for the synthesis of lipid in a eukaryotic cell is :-
(1) Golgi apparatus  (2) Smooth endoplasmic reticulum  (3) Microbodies  (4) Centrosome

162. In the diagram given below

\[
\text{Size of the organ} = \text{A} + \text{B} + \text{C} \\
\text{Time} \\
\]

B can be expressed as :-
(1) \[ L_t = L_0 + rt \]  (2) \[ L_0 = L_t + rt \]  (3) \[ W_t = W_0e^t \]  (4) \[ W_t = W_0 + W_o \]
163. Which substage of prophase I is characterized by appearance of recombination nodule? -
(1) Zygotene  (2) Pachytene  (3) diplotene  (4) Leptotene

164. The formation of succinic acid from succinyl CoA is associated with:
(1) Reduction of NAD+  (2) Decarboxylation  (3) Phosphorylation  (4) Hydration

165. The basal body of cilia or flagella are structurally equivalent to:
(1) Centriole  (2) Kinetochore  (3) Centromere  (4) Nuclear matrix

166. Carotenoids:
(1) Protect chlorophyll from photooxidation  (2) Enable a wider range of wavelength of incoming light to be utilised for photosynthesis  (3) Are used for synthesis of hormone ABA  (4) All of these

167. Given below is the diagramatic sketch of plasma membrane. Identify the past labelled A, B, C, D & E and select the right option about them:

![Plasma Membrane Diagram]

<table>
<thead>
<tr>
<th>(A)</th>
<th>(B)</th>
<th>(C)</th>
<th>(D)</th>
<th>(E)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>Sugar</td>
<td>Protein</td>
<td>Lipid bilayer</td>
<td>Cholesterol</td>
</tr>
<tr>
<td>(2)</td>
<td>Protein</td>
<td>Sugar</td>
<td>Lipid bilayer</td>
<td>Cholesterol</td>
</tr>
<tr>
<td>(3)</td>
<td>Protein</td>
<td>Sugar</td>
<td>Integral protein</td>
<td>Lipid bilayer</td>
</tr>
<tr>
<td>(4)</td>
<td>Cholesterol</td>
<td>Protein</td>
<td>Lipid bilayer</td>
<td>Lipid bilayer</td>
</tr>
</tbody>
</table>

168. In photorespiration ATP is used in _____ and O₂ is used in ______.

Fill in the blanks:
(1) Peroxisome, Mitochondria  (2) Chloroplast, Mitochondria  (3) Peroxisome, Chloroplast  (4) Chloroplast, Peroxisome
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169. Consider the following four statements and select the option which includes all the correct ones only:
(A) Pili and fimbriae are surface structure of the bacteria but do not play a role in motility
(B) Chromatophore are membranous extension into cytoplasm found in some prokaryotes like cyanobacteria
(C) Plasma membrane of prokaryotes is structurally similar to that of the eukaryotes
(D) Reserve material in prokaryotic cells are stored in the cytoplasm in the form of inclusion body that are membrane bound body

(1) Only A is correct
(2) A, B & C are correct
(3) Only B & D are correct
(4) Only B and C are correct

170. Find the incorrect match:
(1) Complex-I Oxidation of NADH + H+
(2) Complex-II Oxidation of FADH
(3) Complex-III Metabolic water formation
(4) Complex-IV ATP synthesis

171. Find the incorrect match:
(1) Phosphorous Nucleotides
(2) Sulphur Methionine
(3) Zinc Auxin Synthesis
(4) Molybdenum Chlorophyll synthesis

172. Who is associated to action spectrum of photosynthesis?
(1) Engelman
(2) Lipman
(3) Lohman
(4) Emerson

173. Which of the following is incorrect for facilitated transport?
(1) Requires special membrane proteins
(2) Non selective
(3) Not uphill transport
(4) ATP not required

174. Calvin cycle:
(1) Consumes 18 ATP and 12 NADPH + H+ per glucose
(2) Consumes 18 NADPH + H+ and 12 ATP per glucose
(3) Yields 18 ATP and 12 NADPH + H+ per glucose
(4) Yields 12 ATP and 18 NADPH + H+ per glucose
175. \( \text{N}_2 + 8e^- + 8H^+ + xATP \rightarrow yNH_3 + H_2 + xADP + xPi \)  
Here \( x \) and \( y \) stand for :-  
(1) 16, 2  (2) 8, 4  (3) 6, 12  (4) 16, 16

176. Maximum osmotic pressure is observed in the sap of :-  
(1) Hydrophytes  (2) Halophytes  (3) Mesophytes  (4) Xerophytes

177. Find the correct match :-

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>Auxin</td>
<td>Apical dominance</td>
<td>Gibberellins</td>
</tr>
<tr>
<td>2</td>
<td>Auxin</td>
<td>Parthenocarpy</td>
<td>Cytokinins</td>
</tr>
<tr>
<td>3</td>
<td>Auxin</td>
<td>Malting</td>
<td>ABA</td>
</tr>
<tr>
<td>4</td>
<td>Auxin</td>
<td>Phloem transport</td>
<td>Gibberellins</td>
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<tr>
<td></td>
<td>Cytokinins</td>
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<tr>
<td></td>
<td>ABA</td>
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</tbody>
</table>

178. Ascent of sap takes place due to :-  
(1) Root pressure  (2) Transpiration pull  (3) Mass flow  (4) Both (2) and (3)

179. Which is obtained from amino acid?  
(1) Cytokinins  (2) ABA  (3) Ethylene  (4) Gibberellin

180. When root hair absorbs minerals from soil, which of the following decreases?  
(1) DPD  (2) OP  (3) \( \Psi_w \)  (4) Both (1) and (2)

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Your moral duty  
is to prove that **Allen is Allen**
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