Sky Tutorials
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IIT-JEE | NEET | Foundation

NEET

Time: 200 Minute **M.M. 720**

ALL INDIA SKY TEST SERIES

Pulse Batch – Neet

Date : 04/09/2023

SYLLABUS

PHYSICS	CHEMISTRY	BOTANY	ZOOLOGY
Law's of motion	**Equilibrium**	**Biomolecules + The living world**	**Animal Kingdom + animal tissue**

Please read the instructions carefully. You are allotted **5** minutes specifically for this purpose.

INSTRUCTIONS:

1. This Question paper is divided in to four parts physics, chemistry, botany, zoology and each part is further divided into two sections.
   Section –A contains 35 Questions Section B contains 15 questions. Please ensure that the Questions paper you have received contains **ALL THE QUESTIONS** in each Part.
2. **In Section A all the 35 Questions are compulsory and in Section B Contain 15 Question, out of these**
   15 Questions, candidates can choose to attempt any 10 Questions.
   Each Question has four choices (a), (b), (c), (d) out of which **only one is correct & Carry 4 marks each 1 mark** will be deducted for each wrong answer.

GENERAL INSTRUCTION

1. Use only **blue/black pen (avoid gel pen)** for darkening the bubble.
2. Indicate the correct answer for each question by filling appropriate bubble in your **OMR** answer sheet.
3. The answer sheet will be checked through computer hence; the answer of the question must be marked by –shading the circles against the question by dark **blue/black pen**
4. Blank papers, Clipboards, Log tables, Slide Rule, Calculator, Cellular Phones Papers and Electronic Gadgets in any form are **not** allowed to be carried inside the examination hall.

Name of the candidate: _____

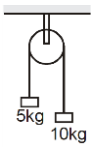
Signature of the candidate: _____**Signature of the invigilator:** _____

PHYSICS

SECTION - A

1. You are on friction less horizontal plane. How can you get off if no horizontal force is exerted by pushing against the surface?
(a) by jumping
(b) by spitting or sneezing
(c) by rolling your body on the surface
(d) by running on the plane

2. Two masses of 5 kg and 10 kg are connected to a pulley as shown. What will be the acceleration if the pulley is set free : (g = acceleration due to gravity)



(a) g (b) g/2 (c) g/3 (d) g/4

3. A rider on horse back falls forward, when the horse suddenly stops. This is due to-
(a) The inertia of the horse
(b) The inertia of the rider
(c) Large weight of the horse
(d) Loosing the balance

4. The linear momentum P of a body varies with time and is given by the equation $P = x + yt^2$, where x and y are constants. The net force acting on the body for a one dimensional motion is proportional to-
(a) t^2 (b) a constant (c) 1/t (d) t

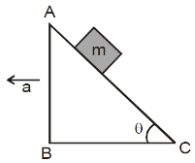
5. A person says that he measured the acceleration of a particle to be non-zero while no force was acting on the particle-
(a) He is a lier
(b) His clock might have run slow
(c) His meter scale might have been longer than the standard
(d) He might have-non inertial frame

6. A thief stole a box full of valuable articles of weight W and while carrying it on his back, he jumped down a wall of height h from the ground. Before he reached the ground, he experienced a load of
(a) 2W (b) W (c) W/2 (d) zero

7. The ratio of the weight of a man in a stationary lift and in a lift accelerating downwards with a uniform acceleration 'a' is 3 : 2. The acceleration of the lift is-
(a) g/3 (b) g/2 (c) g (d) 2g

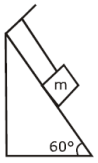
8. A block of mass m is placed on a smooth wedge of inclination θ. The whole system is accelerated horizontally so that the block does not slip on the wedge. The force exerted by the wedge on the block has magnitude-
(a) mg (b) mg/cos θ (c) mg cos θ (d) mg tan θ

9. A block of mass m resting on a wedge of angle θ as shown in the figure. The wedge is given an acceleration a. What is the minimum value of a so that the mass m falls freely?



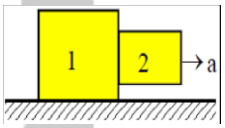
(a) g
(b) g cos θ
(c) g cot θ
(d) g tan θ

10. For the arrangement shown in fig. the tension in the string to prevent it from sliding down is. $(\mu = \sqrt{3})$



(a) 6 N (b) 6.4 N
(c) 0.4 N (d) Zero

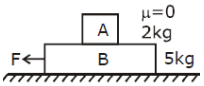
11. The coefficient of static friction between the two blocks is 0.363. What is the minimum acceleration of block 1 so that block 2 does not fall?



(a) 6 ms^{-2} (b) 12 ms^{-2} (c) 18 ms^{-1} (d) 27 ms^{-1}

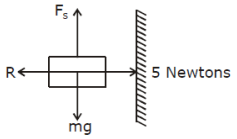
12. A block slides down an inclined surface of inclination 30^o with the horizontal. Starting from rest it covers 8m in the first two seconds. Find the coefficient of kinetic friction between the two.
(a) 0.11 (b) 0.5 (c) 0.8 (d) 0.2

13. Two block (A) 2 kg and (B) 5 kg rest one over the other on a smooth horizontal plane. The coefficient of static and dynamic fiction between (A) and (B) is the same and equal to 0.60. The maximum horizontal force that can be applied to (B) in order that both (A) and (B) do not have any relative motion.



(a) 42 N (b) 420 N (c) 5.4 N (d) 1.2 N

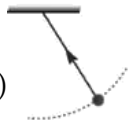
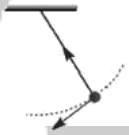
14. A block of mass 0.1 kg is pressed against a wall with a horizontal force of 5N as shown in the figure. If the coefficient of friction between the wall and the block is 0.5 then the frictional force acting on the block in Newton will be. (g=9.8 m/s²)



(a) 9.8 (b) 2.5 (c) 0.98 (d) 0.49

15. A block of mass 2 kg is lying on a floor. The coefficient of static friction is 0.54. What will be value of frictional force if the applied force is 2.8 N and g = 10 m/s².
(a) 2.8 Newton (b) 8 Newton
(c) Zero (d) 2 Newton

16. A simple pendulum is oscillating without damping. When the displacement of the bob is less than maximum its acceleration vector *a* is correctly shown in

(a)  (b) 

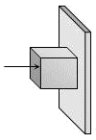
(c)  (d) 

17. A car is travelling with linear velocity *v* on a circular road of radius R. If its speed is decreasing at the rate *a* m/s², then the net acceleration will be
(a) $\frac{v^2}{R}+a$ (b) $\frac{v^2}{R}-a$
(c) $\sqrt{\left(\frac{v^2}{R}\right)^2+a^2}$ (d) $\sqrt{\left(\frac{v^2}{R}\right)^2-a^2}$

18. A simple pendulum of length *l* is oscillating with amplitude θ. At some instant it makes angle θ with the vertical, its speed of the bob is *v*. The acceleration of bob will be
(a) g sin θ
(b) g tan θ
(c) $\sqrt{(g\sin\theta)^2+\left(\frac{v^2}{l}\right)^2}$
(d) $\frac{v^2}{l}$

19. A mass is supported on a frictionless horizontal surface. It is attached to a string and rotates about a fixed centre at an angular velocity ω_0. If the length of the string and angular velocity are double, the tension in the string which was initially T_0 is now
(a) T_0 (b) $\frac{T_0}{2}$ (c) $4\,T_0$ (d) $8\,T_0$

20. A horizontal force of 10 N is necessary to just hold a block stationary against a wall. The coefficient of friction between the block and the wall is 0.2. the weight of the blocks is (assume acceleration due to gravity to be 10 m/s²)



(a) 2 N (b) 20 N (c) 50 N (d) 100 N

21. A 60 kg body is pushed with just enough force to start it moving across a floor and the same force continues to act afterwards. The coefficient of static friction and sliding friction are 0.5 and 0.4 respectively. The acceleration of the body is (acceleration due to gravity = 10 m/s²):
(a) 6 m/s² (b) 4.9 m/s²
(c) 3.92 m/s² (d) 1 m/s²

22. A body moving along a circular path of radius R with velocity v has centripetal acceleration a. If its velocity is made equal to 2*v*, then its centripetal acceleration is :
(a) 4a (b) 2a (c) $\frac{a}{4}$ (d) $\frac{a}{2}$

23. A particle is moving in a horizontal circle with constant speed. It has constant.
(a) Velocity (b) Acceleration
(c) Kinetic energy (d) Displacement

24. A body of mass 5 kg is moving in a circle of radius 1 m with an angular velocity of 2 rad/sec. The centripetal force is :
(a) 10 N (b) 20 N (c) 30 N (d) 40 N

25. A man is standing on a rough (μ = 0.5) horizontal disc rotating with constant angular velocity of 5 rad/sec. At what distance from centre should he stand so that he does not slip on the disc?
(a) R ≤ 0.2 m (b) R > 0.2 m
(c) R > 0.5 m (d) R > 0.3 m

26. A coin placed on a rotating turn-table slips, when it is placed at a distance of 9 cm from the centre, if the angular velocity of the turn-table is trippled. It will just slip, if its distance from the centre is:
(a) 27 cm (b) 9 cm (c) 3 cm (d) 1 cm

27. The velocity and acceleration vectors of a particle undergoing circular motion are $\vec{v} = 2\hat{i}\,m/s$ and $\vec{a} = 2\hat{i} + 4\hat{j}\,m/s^2$ respectively at an instant of time. The radius of the circle is :
(a) 1 m (b) 2 m (c) 3 m (d) 4 m

28. If a_r and a_t represent radial and tangential accelerations, the motion of a particle will be uniformly circular if :
(a) $a_r = 0$ and $a_t = 0$ (b) $a_r = 0$ but $a_t \neq 0$
(c) $a_r \neq 0$ and $a_t = 0$ (d) $a_r \neq 0$ and $a_t \neq 0$

29. A car is moving with speed 30 m/sec on a circular path of radius 500 m. Its speed is increasing at the rate of 2 m/sec^2. What is the acceleration of the car?
(a) 2m/sec^2 (b) 2.7 m/sec^2
(c) 1.8 m/sec^2 (d) 9.8 m/sec^2

30. A particle moves in a circular path of radius 25 cm at two revolutions per second. The acceleration of the particle in m/s^2 is :
(a) π^2 (b) $8\pi^2$ (c) $4\pi^2$ (d) $2\pi^2$

31. A particle moves in a circle of radius 0.5m at a speed that uniformly increases. Find the angular acceleration of particle if its speed changes from 2 m/s to 4 m/s in 4 seconds?
(a) 1 rad/s^2 (b) 2 rad/s^2 (c) 4 rad/s^2 (d) 0 rad/s^2

32. A body moves along an uneven horizontal road with a constant speed at all points. The normal reaction of the road on the body-

(a) maximum at A (b) maximum at B
(c) minimum at C (d) same at A, B and C

33. A particle of mass m is fixed to one end of a light spring of force constant k and unstretched length *l*. The system is rotated about the other end of the spring with an angular velocity ω, in gravity free space. Then increase in length of the spring will be:
(a) $\frac{m\omega^2 l}{k}$ (b) $\frac{m\omega^2 l}{k - m\omega^2}$ (c) $\frac{m\omega^2 l}{k + m\omega^2}$ (d) N.O.T.

34. Which of the following statement is false for a particle moving in a circle with a constant angular speed?
(a) the velocity vector is tangent to the circle
(b) the acceleration vector is tangent to the circle
(c) the acceleration vector points to the centre of the circle
(d) the velocity and acceleration vector are perpendicular to each other

35. In a circular motion of a particle, the tangential acceleration of the particle is given by a_t = 9 ms^{-2}. The radius of the circle is 4 m. The particle was initially at rest. Time after which total acceleration of the particle makes an angle 45^0 of with the radial acceleration is.
(a) $\frac{1}{3}$S (b) $\frac{5}{3}$S (c) $\frac{2}{3}$S (d) $\frac{4}{3}$S

SECTION -B

36. A particle of mass m describes a circle of radius r, if centripetal acceleration of the particle is $4/r^2$. Then momentum of the particle is.
(a) $\frac{4m}{r}$ (b) $\frac{2m}{r}$ (c) $\frac{4m}{\sqrt{r}}$ (d) $\frac{2m}{\sqrt{r}}$

37. A point on the periphery of a rotating disc has its acceleration vector making an angle 30^0 with the velocity vector. Then, the ratio of the magnitude of centripetal acceleration to the tangential acceleration is
(a) sin30° (b) cos30° (c) tan30° (d) none of these

38. For a particle moving along a circular path, the radial acceleration a_r is proportional to time t. If a_t is the tangential acceleration, then which of the following will be independent of time t?
(a) a_t (b) $a_r a_t$ (c) $\frac{a_r}{a_t}$ (d) $a_r(a_t)^2$

39. The angular position of line of a disc of radius r = 6cm is given by $\theta = 10 - 5t + 4t^2$ rad, the average angular velocity between 1 s and 3 s is.
(a) $\pi rads^{-1}$ (b) $11 rads^{-1}$ (c) $22 rads^{-1}$ (d) $5.5 rads^{-1}$

40. When a particle moves in a circle with uniform speed
(a) Its velocity and acceleration are both constant
(b) Its velocity constant but the acceleration changes
(c) Its acceleration is constant but velocity changes
(d) Its acceleration and velocity both changes

41. A point moves along the circle with the velocity v=t/2. Find the acceleration of the point at the moment when it has covered a quarter circle from the beginning of motion.

(a) $\frac{1}{2}\sqrt{\pi^2+1}$ (b) $\sqrt{\pi^2+1}$

(c) $2\sqrt{\pi^2+1}$ (d) $4\sqrt{\pi^2+1}$

42. A flywheel at rest is to reach an angular velocity of 24 $rads^{-1}$ in 8 s with constant angular acceleration. The total angle turned through during this interval is
(a) 24 rad (b) 48 rad (c) 72 rad (d) 96 rad

43. A disc initially at rest, is rotated about its axis with uniform angular acceleration. In the first 2s, it rotates an angle θ. In the next 2s, the disc rotates through an angle
(a) θ (b) 2θ (c) 3θ (d) 4θ

44. A body is projected with an initial velocity $(a\hat{i}+b\hat{j})$ ms^{-1}. If the range of the projectile is double of the maximum height reached by it then.
(a) a = 2b (b) b = 4a (c) b = 2a (d) b = a

45. Two bodies thrown from the same point at angles 30^o and 60^o with the horizontal attain the same height. The ratio of their initial velocities is:
(a) 1 : 1 (b) 2 : 1 (c) $\sqrt{3}:1$ (d) 1 : 3

46. The projectile is thrown at an angle β with the vertical. It reaches a maximum height H. The time taken to reach the highest point of its path is:
(a) $\sqrt{\frac{H}{g}}$ (b) $\sqrt{\frac{2H}{g}}$ (c) $\sqrt{\frac{H}{2g}}$ (d) $\sqrt{\frac{2H}{g\cos\beta}}$

47. The equation of the projectile is $y=\sqrt{3}x-\frac{gx^2}{2}$. The angle of projection is:
(a) $\tan\theta=\frac{1}{\sqrt{3}}$ (b) $\tan\theta=\sqrt{3}$
(c) $\pi/2$ (d) Zero

48. For a projectile, the angle of projection is 30^o, then how many times is the horizontal range larger than the maximum height:
(a) 2 (b) 3 (c) $3\sqrt{3}$ (d) $4\sqrt{3}$

49. A body is projected vertically upwards. The time corresponding to height 'h' while ascending and descending are t_1 and t_2 respectively. Then the velocity of projection is:
(g= Acceleration due to gravity)
(a) $g\frac{\sqrt{t_1.t_2}}{2}$ (b) $\frac{g(t_1+t_2)}{2}$
(c) gt_1+t_2 (d) $\frac{t_1.t_2}{(t_1+t_2)}$

50. Two stones are projected with the same velocity in magnitude but make different angles with the horizontal. Their ranges are equal. If the angle of projection of one is $\pi/3$ and the maximum height is y_1, then the maximum height of the other will be.
(a) $3y_1$ (b) $2y_1$ (c) $\frac{y_1}{2}$ (d) $\frac{y_1}{3}$

CHEMISTRY

SECTION - A

51. Which of the following statements are correct regarding Arrhenius theory of acid and base?
(a) This theory was applicable to only aqueous solutions
(b) This theory was applicable to all solutions
(c) This theory could not explain the basicity of substances like ammonia which do not possess a hydroxyl group
(d) Both (a) and (c)

52. BF_3 is an acid according to
(a) Arrhenius concept
(b) Bronsted-Lowry concept
(c) Lewis Concept
(d) Both (b) and (c)

53. Which of the following can act as both Bronsted acid and Bronsted base?
(a) Na_2CO_3 (b) OH^-
(c) HCO_3^- (d) NH_4^+

54. Which one of the following is the correct statement?
(a) HCO_3^- is the conjugate base of CO_3^{2-}
(b) NH_2^- is the conjugate acid of NH_3
(c) H_2SO_4 is the conjugate acid of HSO_4^-
(d) NH_3 is the conjugate base of NH_2^-

55. Three reactions involving $H_2PO_4^-$ are given below:
(i) $H_3PO_4+H_2O\rightarrow H_3O^++H_2PO_4^-$
(ii) $H_2PO_4^-+H_2O\rightarrow HPO_4^{2-}+H_3O^+$
(iii) $H_2PO_4^-+OH^-\rightarrow H_3PO_4+O^{2-}$
In which of the above does $H_2PO_4^-$ act as an acid?
(a) (ii) only (b) (i) and (ii)
(c) (iii) only (d) (i) only

56. The pH of a 10^{-3}M HCl solution at 25^0C if it is diluted 1000 times, will be –
(a) 3 (b) zero (c) 5.98 (d) 6.95

57. Which solution has pH equal to 10?
(a) 10^{-4} M KOH (b) 10^{-10} M KOH
(c) 10^{-10} M HCl (d) 10^{-4} M HCl

58. A weak acid, HA, has a K_a of 1.00×10^{-5}. If 0.100 mole of this acid dissolved in one litre of water, the percentage of acid dissociated at equilibrium is closet to
(a) 1.00% (b) 99.9%
(c) 0.100% (d) 99.0%

59. Equimolar solutions of HF, HCOOH and HCN at 298 K have the values of K_a as 6.8×10^{-4}, 1.8×10^{-5} and 4.8×10^{-9} respectively. What is the observed trend of dissociation constants in successive stages?
(a) HF > HCN > HCOOH
(b) HF > HCOOH > HCN
(c) HCN > HF > HCOOH
(d) HCOOH > HCN > HF

60. The dissociation constant of two acids HA_1 and HA_2 are 3.14×10^{-4} and 1.96×10^{-5} respectively. The relative strength of the acids will be approximately
(a) 1 : 4 (b) 4 : 1 (c) 1 : 16 (d) 16 : 1

61. The solubility of AgI in NaI solution is less than that is pure water because:
(a) the temperature of the solution decreases
(b) solubility product to AgI is less than that of NaI
(c) due to common ion effect
(d) AgI forms complex with NaI

62. Aqueous solution of ferric chloride is acidic due to
(a) ionization (b) polarization
(c) dissociation (d) hydrolysis

63. The pK_a of a weak acid, HA, is 4.80. The pK_b of a weak base, BOH, is 4.78. The pH of an aqueous solution of the corresponding salt, BA, will be
(a) 9.58 (b) 4.79
(c) 7.01 (d) 9.22

64. A buffer solution is prespared in which the concentration of NH_3 is 0.30 M and the concentration of NH_4^+ is 0.20 M. If the equilibrium constant, K_b for NH_3 equals 1.8×10^{-5}, what is the pH of this solution? (log 2.7 = 0.433).
(a) 9.08 (b) 9.43
(c) 11.72 (d) 8.73

65. Which of the following pairs constitutes a buffer?
(a) NaOH and NaCl (b) HNO_3 and NH_4NO_3
(c) HCl and KCl (d) HNO_2 and $NaNO_2$

66. The buffering action of an acidic buffer is maximum when its pH is equal
(a) 5 (b) 7 (c) 1 (d) pK_a

67. The K_{sp} for $Cr(OH)_3$ is 1.6×10^{-30}. The solubility of this compound in water is :
(a) $\sqrt[4]{1.6\times10^{-30}}$ (b) $\sqrt[4]{1.6\times10^{-30}/27}$
(c) $1.6\times10^{-30/27}$ (d) $\sqrt{1.6\times10^{-30}}$

68. pH of a saturated solution of $Ba(OH)_2$ is 12. The value of solubility product (K_{sp}) of $Ba(OH)_2$ is :
(a) 3.3×10^{-7} (b) 5.0×10^{-7}
(c) 4.0×10^{-6} (d) 5.0×10^{-6}

69. At 25^0C, the solubility product of $Mg(OH)_2$ is 1.0×10^{-11}. At which pH, will Mg^{2+} ions start precipitating in the form of $Mg(OH)_2$ from a solution of 0.001 M Mg^{2+} ions?
(a) 9 (b) 10 (c) 11 (d) 8

70. Which of the following statement(s) is/are correct?
(i) In a tribasic acid 2nd and 3rd (K_{a_2}, K_{a_3}) ionization constants are smaller than the first ionisation (K_{a_1})
(ii) It is difficult to remove a positively charged proton from a negative ion due to electrostatic force.
(a) Both (i) and (ii) (b) Neither (i) nor (ii)
(c) Only (i) (d) Only (ii)

71. Match the columns

Column - I		Column - II	
(A)	$HClO_4$	(p)	Strong base
(B)	HNO_2	(q)	Strong acid
(C)	NH_2^-	(r)	Weak base
(D)	HSO_4^-	(s)	Weak acid

(a) A-(s), B-(q), C-(p), D-(r)
(b) A-(q), B-(s), C-(p), D-(r)
(c) A-(r), B-(p), C-(q), D-(s)
(d) A-(s), B-(q), C-(r), D-(p)

72. 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) 1.11×10^{-4} M (b) 3.7×10^{-4} M
(c) 3.7×10^{-3} M (d) 1.11×10^{-3} M

73. 100 mL of 0.04 N HCl aqueous solution is mixed with 100 mL of 0.02 N NaOH solution. The pH of the resulting solution is :
(a) 1.0 (b) 1.7 (c) 2.0 (d) 2.3

74. Ionisation constant of CH_3COOH is 1.7×10^{-5} if concentration of H^+ ions is $3.4\times10^{-4}M$, then find out initial concentration of CH_3COOH molecules
(a) $3.4\times10^{-4}M$ (b) $3.4\times10^{-3}M$
(c) $6.8\times10^{-3}M$ (d) $6.8\times10^{-4}M$

75. The dissociation constant for acetic acid and HCN at 25^0C are 1.5×10^{-5} and 4.5×10^{-10} respectively. The equilibrium constant for the equilibrium
$CN^- + CH_3COOH \rightleftharpoons HCN + CH_3COO^-$ would be :
(a) 3.0×10^{-5} (b) 3.0×10^{-4}
(c) 3.0×10^{4} (d) 3.0×10^{5}

76. The solubility product (K_{sp}) of the following compounds are given at 25^0 C.

Compound	K_{sp}
AgCl	1.1×10^{-10}
AgI	1.0×10^{-16}
$PbCrO_4$	4.0×10^{-14}
Ag_2CO_3	8.0×10^{-12}

The most soluble and least soluble compounds are respectively.
(a) AgCl and $PbCrO_4$ (b) AgI and Ag_2CO_3
(c) AgCl and Ag_2CO_3 (d) Ag_2CO_3 and AgI

77. The following equilibrium is established when $HClO_4$ is dissolved in weak acid HF.
$HF + HClO_4 \rightleftharpoons ClO_4^- + H_2F^+$
Which of the following is correct set of conjugate acid base pair?
(a) HF and $HClO_4$ (b) HF and ClO_4^-
(c) HF and H_2F^+ (d) $HClO_4$ and H_2F^+

78. Which of the following has pH is equal to near about one?
(a) $100\,ml\,\frac{M}{10}HCl + 100\,ml\,\frac{M}{10}NaOH$
(b) $55\,ml\,\frac{M}{10}HCl + 44\,ml\,\frac{M}{10}NaOH$
(c) $10\,ml\,\frac{M}{10}HCl + 90\,ml\,\frac{M}{10}NaOH$
(d) $75\,ml\,\frac{M}{5}HCl + 25\,ml\,\frac{M}{5}NaOH$

79. A reaction $CaF_2 \rightleftharpoons Ca^{2+} + 2F^-$ is at equilibrium. If the concentration of Ca^{2+} is increased four times, what will be the change in F^- concentration as compared to the initial concentration of F^-?
(a) $\frac{1}{4}$ times (b) $\frac{1}{2}$ times
(c) 4 times (d) 2 times

80. A compound whose aqueous solution will have the highest pH
(a) NaCl (b) Na_2CO_3
(c) NH_4Cl (d) $NaHCO_3$

81. The solubility of CaF_2 ($K_{sp} = 3.4\times10^{-11}$) in 0.1 M solution of NaF would be
(a) 3.4×10^{-12} M (b) 3.4×10^{-10} M
(c) 3.4×10^{-9} M (d) 3.4×10^{-13} M

82. The precipitate of CaF_2 (K_{sp} = 1.7×10^{-10}) is obtained when equal volumes of the following are mixed
(a) $10^{-4}M\,Ca^{2+}$ ion and $10^{-4}M\,F^-$
(b) $10^{-2}M\,Ca^{2+}$ and $10^{-3}M\,F^-$
(c) $10^{-5}M\,Ca^{2+}$ and $10^{-3}M\,F^-$
(d) $10^{-3}M\,Ca^{2+}$ and $10^{-5}M\,F^-$

83. The pH of a buffer is 6.745. When 0.01 mole of NaOH is added to 1 litre of it, the pH changes to 6.832. Its buffer capacity is
(a) 0.187 (b) 0.115
(c) 0.076 (d) 0.896

84. What fraction of an indicator Hln is in the basic form at a pH of 6 if pK_a of the indicator is 5?
(a) $\frac{1}{2}$ (b) $\frac{1}{11}$ (c) $\frac{10}{11}$ (d) $\frac{1}{10}$

85. What is the difference in pH for 1/3 and 2/3 stages of neutralization of 0.1 M CH_3COOH with 0.1 M NaOH?
(a) 2 log 3 (b) 2 log (1/4)
(c) 2 log (2/3) (d) 2 log 2

SECTION – B

86. $2A_{(g)} + B_{(g)} \rightleftharpoons Product$
If pressure is increased three times of the initial pressure, the velocity of forward reaction will be ____ of the previous velocity:
(a) 9 times (b) 27 times (c) $\frac{1}{9}$ times (d) $\frac{1}{27}$

87. For a reversible reaction, the rate constant for the forward and backward reactions are 2.38×10^{-4} and 8.15×10^{-5} respectively. The equilibrium constant for the reaction is:
(a) 0.342 (b) 2.92 (c) 0.292 (d) 3.42

88. The equilibrium $SO_2Cl_2(g)\rightleftharpoons SO_2(g)+Cl_2(g)$ is stained at 25°C in a closed container and an inert gas, helium, is introduced. Which of he following statements is correct?
(a) Concentration of SO_2Cl_2, SO_2 and Cl_2 do not change.
(b) More Cl_2 is formed
(c) Concentration of SO_2 is reduced
(d) More SO_2Cl_2 is formed

89. The reaction $PCl_5(g)\rightleftharpoons PCl_3(g)+Cl_2(g)$ and $COCl_2(g)\rightleftharpoons CO(g)+Cl_2(g)$. At simultaneously in equilibrium in an equilibrium box at constant volume, A few moles of CO(g) are large introduced into the vessel, after some time, the new equilibrium concentration of
(a) PCl_5 will remain unchanged
(b) Cl_2 will be greater
(c) PCl_5 will become less
(d) PCl_5 will become greater

90. Densities of diamond and graphite are 3.5 and 2.3 g/mL
C(diamond) $\rightleftharpoons$ C (graphite); $\Delta_r H=-1.9$ kJ/mol Favourable conditions for the formation of graphite are:
(a) High pressure and low temperature
(b) Low pressure and high temperature
(c) High pressure and high temperature
(d) Low pressure and low temperature

91. For a reaction, $N_2(g)+3H_2(g)\rightarrow 2NH_3(g)$; identify dihydrogen ($H_2$) as a limiting reagent in the following reaction mixtures.
(a) 28 g of N_2 + 6 g of H_2
(b) 56 g of N_2 + 10 g of H_2
(c) 14 g of N_2 + 4 g of H_2
(d) 35 g of N_2 + 8 g of H_2

92. The ground state energy of hydrogen atom is 13.6 eV. The energy of second excited state He^+ ion in eV is:
(a) – 54.4 (b) – 6.04 (c) – 3.4 (d) – 27.2

93. Amongst the following which is nto postulate of Dalton's atomic theory
(a) Matter is formed of indivisible atoms
(b) Under identical conditions of pressure and temperature gases combines and give gaseous products in simple volume ratio.
(c) During chemical reactions atoms remains conserved and only pass through rearrangement.
(d) Some atoms have some properties including atomic mass

94. A certain orbital has no angular nodes and two radial nodes. The orbital is:
(a) 2 s (b) 3 s (c) 3 p (d) 2 p

95. If the Thomson model of the atom was correct then the result of Rutherfords gold foil experiment would have been.
(a) All of the α - particles pass through the gold foil without decrease on speed
(b) α - particles are deflected over a wide range of angles
(c) All α - particles get bounced back by 180°
(d) α - particles pass through the gold foil deflected by small angles with reduced speed

96. How many electrons are involved in the following redox reaction?
$Cr_2O_7^{2-}+Fe^{2+}+C_2O_4^{2-}\rightarrow Cr^{3+}+Fe^{3+}+CO_2$
(Unbalanced)
(a) 3 (b) 4 (c) 5 (d) 6

97. Which of the following reactions is an example of a redox reaction?
(a) $XeF_4+O_2F_2\rightarrow XeF_6+O_2$
(b) $XeF_2+PF_5\rightarrow[XeF]+PF_6^-$
(c) $XeF_6+H_2O\rightarrow XeOF_4+2HF$
(d) $XeF_6+2H_2O\rightarrow XeO_2F_2+4HF$

98. The correct order of the oxidation states of nitrogen in NO, N_2O, NO_2 and N_2O_3 is:
(a) $N_2O<NO<N_2O_3<NO_2$
(b) $N_2O<N_2O_3<NO<NO_2$
(c) $NO_2<NO<N_2O_3<N_2O$
(d) $NO_2<N_2O_3<NO<N_2O$

99. The dark purple colour of $KMnO_4$ disappears in the titration with oxalic acid in acidic medium. The overall change in the oxidation number of manganese in reaction is:
(a) 5 (b) 1 (c) 7 (d) 2

100. For the reaction:
$I^-+ClO_3^-+H_2SO_4\longrightarrow Cl^-+HSO_4^-+I_2$
The incorrect statement(s) in the balanced equation is/are
(a) Stoichiometric coefficient of HSO_4^- is 6.
(b) Iodide is oxidized
(c) Sulphur is reduced
(d) H_2O is one of the product

BOTANY

SECTION – A

101. The places where wild animals are kept in protected environment under human care which enable us to learn about their food habits and behaviour is called:
(a) Museum (b) Botanical garden
(c) Herbarium (d) Zoological park

102. The term 'Systematics' is derived from:
(a) English word 'Systema'
(b) Greek word 'Systema'
(c) Latin word 'Systema'
(d) Hindi word 'Systema'

103. Which statement is not correct about keys:
(a) Keys is applicable only on the plants
(b) Keys are based on the contrasting characters
(c) Keys are generally in a pair that is called couplet
(d) Keys are generally analytical in nature

104. Identify the correct statements and select the right answer from the given options:
I. Growth in living organisms is from inside
II. Growth can be taken as characteristic of living systems only under special conditions.
III. A dead organisms also grows.
IV. Mountain, boulders and sand mounds never grow
(a) Only I & II (b) Only III & IV
(c) Only II & III (d) Only I & IV

105. Order polymoniales includes plant family:
(a) Convolvulaceac, Solanaceae
(b) Convolvulaceae, Malvaceae
(c) Malvaceae, Liliaceae
(d) Liliaceae, Poaceae

106. Find the incorrect statement from the following:-
(a) Family is a group of related genera with still less number of similarities as compared to genus and species.
(b) Lion, tiger, leopard and cat belong to the same genus.
(c) Systematics takes into account evolutionary relationship between organisms.
(d) Taxonomic aids are prime source for taxonomy, systematics, and future studies.

107. Taxonomic hierarchy refers to
(a) Step-wise arrangement of all categories for classification of plants and animals
(b) A group of senior taxonomists who decide the nomenclature of plants and animals
(c) A list of botanists or zoologists who have worked on taxonomy of a species or group
(d) Classification of a species based on fossil record

108. In taxonomic hierarchy, which of the following group of taxa will have more number of similarities as compared to other?
(a) Anacardiaceae,Convolvulaceae and Poaceae
(b) Polymoniales, Poales and Sapindales
(c) *Solanum*, *Petunia* and *Datura*
(d) Leopard, tiger and lion

109. Live specimens are used for reference in taxonomic studies in
(a) Museum
(b) Zoological parks
(c) Botanical gardens
(d) More than one option is correct

110. Which of the following is not a result of cell division?
(a) Growth (b)Repair
(c) Metabolism (d)Reproduction

111. Which of the following is incorrect for reproduction?
(a) Unicellular organisms reproduce by cell – division
(b) Reproduction is a characteristic of all living organisms
(c) In unicellular organisms, reproduction and growth are linked together
(d) Non – living objects are incapable of reproducing

112. Mark the incorrect statement w.r.t. metabolism
(a) Microbes exhibit the metabolism
(b) It is the property of all living forms
(c) The metabolic reactions can be demonstrated *in vitro*
(d) It is not a defining feature of life forms

113. Which of the following is incorrect w.r.t. binomial nomenclature?
(a) Biological names are generally in Latin
(b) The first word in a biological name represents the genus
(c) Biological names are printed in italics
(d) The first word of the genus starts with a small letter

114. What do A, B and C represent in the give scientific name respectively?
Mangifera *indica* Linn
C B A
(a) Generic name, specific name and author's name
(b) Specific name generic name an author's name
(c) Author's name, specific name and generic name
(d) Generic name, author's name and specific name

115. Which of the following is incorrect w.r.t. species?
(a) A group of individual organisms with fundamental similarities
(b) Two different species breed together to produce fertile offsprings
(c) Human beings belong to the species *sapiens*
(d) *Panthera* has many specific epithet as *tigris, leo* and *pardus*

116. The correct sequence of taxonomic study of a newly discovered organism is
(a) First classification then identification, nomenclature and characterisation
(b) First identification then classifying
(c) First nomenclature then characterisation, identification and classification
(d) First characterisation then identification and nomenclature and then classification

117. Which one of the following criteria is/are essential and form the basis of modern taxonomic studies?
(a) Ecological information of organisms
(b) Development process
(c) External and internal structure
(d) More than one option is correct

118. Herbarium consists of
(a) Collection of living plants
(b) Collection of plant and animal specimens preserved in the containers
(c) Preserved insects in boxes after collecting killing and pinning
(d) Herbarium sheets carrying dried, pressed and preserved plant specimens on them

119. Reproduction is synonymous with growth in
(a) Most of the fungi and *Planaria*
(b) Desmids, diatoms, and protozoans
(c) Cyanobacteria, fungi and mosses
(d) Mosses, algae and hydra

120. Given organisms belongs to how many genera?
Wheat, Brinjal, Potato, Lion, Dog, Tiger
(a) Three (b) Two
(c) Four (d) Five

121. Which cannot be the correct definition of biology:-
(a) Biology is the science of life forms and living processes.
(b) Biology the story of life on earth.
(c) Biology is the story of arrangement of organisms into groups.
(d) Biology is the story of evolution of living organisms on earth.

122. Order Primata and Carivora are placed in the same class, i.e.,
(a) Hominidae (b) Mammalia
(c) Insecta (d) Chordata

123. Potato and brinjal belong to the genus *Solanum*, which reflects that
(a) They belong to single species
(b) They are a group of related species
(c) They both are morphologically and structurally similar to each other in all respects
(d) They can always produce fertile hybrid

124. Plants belonging to different classes, with a few similar characters are assigned to a category called
(a) Phylum (b) Order
(c) Division (d) Genus

125. Animal, Mammals and dogs represent
(a) Taxa at different level
(b) Taxa at same level
(c) Taxa at the level of Genus
(d) Taxa at the level of species

126. Herbarium
(a) Contains complete description of plant specimen
(b) Is used to conserve live plants
(c) may be used to preserve animals
(d) Is a store house of collected plant specimens

127. Biological museums
(a) Contain animals but not insects
(b) Are also set up in school and colleges
(c) Preserve only animal specimens
(d) Conserve live plants and animals

128. The term 'Systematics' refers to
(a) Identification and study of organ system
(b) Identification and preservation of plants and animals
(c) Diversity of different kinds of organisms and their evolutionary relationship
(d) Study of habitats of organisms and their classification

129. Isolated metabolic reactions in-vitro are
(a) Non-living things (b)Living beings
(c) Living reactions (d)Not possible

130. Match the column – I with Column – II and select the correct option.

Column – I		Column - II	
A.	Herbaria	(i)	Ex-situ conservation strategy
B.	Zoological park	(ii)	Arranged according to universally accepted system of classification
C.	Taxonomic key	(iii)	Information of one taxon
D.	Monograph	(iv)	Lead

(a) A – (i), B – (ii), C – (iii), D – (iv)
(b) A – (ii), B – (i), C – (iv), D – (iii)
(c) A – (iv), B – (iii), C – (ii), D – (i)
(d) A – (ii), B – (i), C – (iii), D – (iv)

131. Select the incorrectly matched pair with respect to means of asexual reproduction
(a) Hydra-Budding
(b) Amoeba-Fragmentation
(c) Flatworm -Regeneration
(d) Fragmentation-Protonema stage of moss

132. Brinjal and potato belong to the same genus *Solanum* which shows that
(a) They have same chromosome number
(b) It is a group of related species
(c) They are included in a single species
(d) They always produce a fertile hybrid when cross breed

133. Correctly written scientific name of mango is
(a) *Mangifera indica Linn*.
(b) *Mangifera Indica* L.
(c) Mangifera indica Linn.
(d) *Mangifera indica* Linn.

134. A group of taxa representing same rank of taxonomic hierarchy is
(a) *Triticum*, Poaceae, Poales
(b) Cat, Dog, Mammal
(c) *Mangifera*, Anacardiaceae, Sapindales
(d) Lion, Tiger, Leopard

135. Read the following statements
A. Taxonomical aids which provide habitat and distribution of plants found in an area are manuals
B. Linnaeus used binomial system of nomenclature of plants for the first time in Systema Naturae
C. Identification is the process of recognising the characteristic features of an organisms
D. Set of contrasting characters (in pairs) in a key is called couplet
How many of the above statements are correct?
(a) One (b) Two (c) Three (d) Four

SECTION - B

136. The enzyme which possess both protein and non – protein part are called.
(a) Apoenzymes (b) Cofactros
(c) Coenzymes (d) Holoenzyme

137. Which of the following is a ribonucleotide?
(a) Cytidine monophosphate
(b) Cytidylic acid
(c) Ribose + cytosine + phosphate
(d) All of these

138. Biologist describe the protein structure at four levels. Which level described the sequence of amino acids, i.e., the positional information in a protein?
(a) Primary structure
(b) Secondary structure
(c) Tertiary structure
(d) Quaternary structure

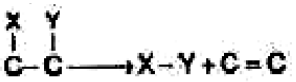
139. Which of the following statement is incorrect?
(a) The acid insoluble fraction, has only four types of organic compounds, proteins, polysaccharides nucleic acids and lipids
(b) Chemical compounds found in living organisms are of two types, acid soluble and acid insoluble
(c) The compounds which are found in the acid insoluble fraction are called imcromolecules
(d) The acid soluble pool represents roughly the cytoplasmic composition

140. Which of the following is incorrect w.r.t. enzymes?
(a) An active site of an enzyme is a pocket into which the substrate fits.
(b) Enzymes through their active site, catalyse reactions at a high rate
(c) Inorganic catalysts work efficiently at high temperature and high pressure
(d) Enzymes retain their catalytic power even at high temperature

141. Mark the incorrect statement.
(a) Co – enzyme are also organic compounds but their association with apoenzyme is only transient
(b) V_{max} (maximum velocity) represent that there are no substrate molecules to bind with free enzyme molecule
(c) Living state is non – equilibrium steady state to be able to perform work
(d) Enzymes eventually bring down the energy barrier making the transition of substrate to product more easy

142. Lecithin is formed by.
(a) Fatty acid (2) + Phosphoric acid (1) + Ethanolamine
(b) Fatty acid (2) + Phosphoric acid (1) + Serine
(c) Fatty acid (3) + Glycerol
(d) Glycerol (1) + Fatty acid (2) + Phosphoric acid (1) + Choline

143. Enzymes that catalyse removal of groups substrates by mechanisms other than hydrolysis leaving double bonds are.



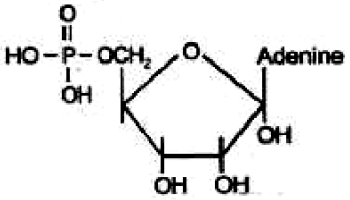
(a) Ligases (b) Lyases
(c) Hydrolases (d) Isomerases

144. Following are the examples of secondary metabolites except one. Mark the except one
(a) Morphine (b) Vinblastine
(c) Lecithin (d) Cellulose

145. Which of the following can't be considered as difference point between nucleotide and nucleoside?
(a) Nucleotide is formed through phosphorylation of nucleoside
(b) Nucleotide is a compounds formed by the union of nitrogen base, a pentose sugar and phosphate
(c) It is acidic in nature
(d) Presence of hydrogen bond in its structure

146. Inulin is a polymer of
(a) One glucose and one fructose molecules
(b) Many fructose molecules
(c) One – glucose and galactose molecules
(d) Many N – acetylglucosamine molecules

147. The structure given below is of



(a) A Purine base (b) Adenosine
(c) Adenylate (d) A pyrimidine base

148. Which of the following is the correct set of primary metabolites?
(a) Codeine, Lecithin, Carotenoid, Glycerol
(b) Cholesteerol, Uridine, Lecithin, Palmitic acid
(c) Anthocyanin, Cellulose, Rubber, Morphine
(d) Gums, Vinblastin, Cellulose, Codeine

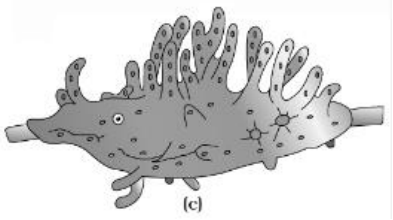
149. The backbone of nucleic acid structure is made up of.
(a) Peptide bonds (b) Glycosidic bonds
(c) Phosphodiester (d) bridges

150. Which of the following statement about enzymes is false?
(a) Enzymes are catalyst within the cells
(b) All the cells of an organisms contain same enzyme
(c) Enzymes bring the substances together so that they undergo a reaction
(d) Enzymes lower the activation energy of spontaneous reactions in the cell

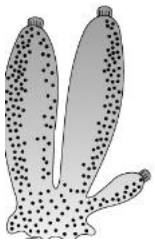
ZOOLOGY

SECTION - A

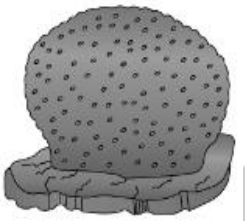
151. Identify the figure A, B and C :



(A)



(B)



(c)

	A	B	C
(a)	Euspongia	Spongilla	Sycon
(b)	Spongilla	Euspongia	Sycon
(c)	Spongilla	Sycon	Euspongia
(d)	Sycon	Euspongia	Spongilla

152. Choose the correct pathway of water flow in the canal system of porifera :
(a) Osculum → Spongocoel → Ostia → Exterior
(b) Ostia → Osculum → Spongocoel → Exterior
(c) Spongocoel → Ostia → Soculum → Exterior
(d) Ostia → Spongocoel → Osculum → Exterior

153. Identify the organisms A, B and C :

(A)

(B)

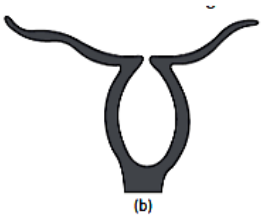
(C)

	A	B	C
(a)	Pleurobrachia	Adamsia	Aurelia
(b)	Aurelia	Adamsia	Pleurobrachia
(c)	Pleurobrachia	Aurelia	Adamsia
(d)	Aurelia	Pleurobrachia	Adamsia

154. Read the following statements w.r.t. cnidarians :
(i) Cnidarians exhibits tissue level of organisation and are triploblastic
(ii) Digestion is extracellular and intracellular
(iii) Corals secrete calcium bicarbonate to form a soft skeleton commonly
(iv) Corals may harbor some photosynthetic dinoflagellates for taking nutrition
(v) They possess a central gastro-vascular cavity with a single opening, mouth on hypostome.
Which of the above statements are correct ?
(a) (i), (iii) (b) (i), (ii), (iii)
(c) (ii), (iv), (v) (d) (iii), (iv)

155. Identify the structures A and B of Cnidarians and mention their ploidy correctly :

(a)



(b)

options	A	B
(a)	Medusa, n	Polyp, n
(b)	Medusa, n	Polyp, 2n
(c)	Medusa, 2n	Polyp, n
(d)	Medusa, 2n	Polyp, 2n

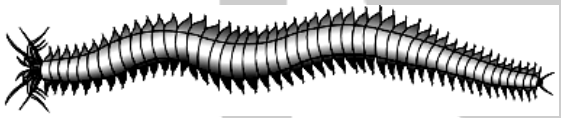
156. 'Sea walnuts' :
(a) Perform internal fertilization with indirect development
(b) Perform external fertilization with indirect development
(c) Both (a) and (b)
(d) Possess excretory, respiratory, skeletal and circulatory systems

157. Flatworms :
(a) Are bilaterally symmetrical, triploblastic and coelomate animals with organ-system level of organisation
(b) Are dioecious i.e., sexes are separate
(c) Have internal fertilization and development is direct
(d) Have hooks and suckers in the parasitic forms

158. Read the following statement w.r.t. Aschelminthes/Nemathelminthes :
(i) Development may be direct or indirect
(ii) Fertilization is internal
(iii) Females are often shorter than males
(iv) *Wuchereria* causes elephantiasis or filariasis
(v) Ascaris possess cuticle which is resistant to the digestive enzymes of host.

Which of the above statements are correct ?
(a) (ii), (iii), (iv), (v) (b) (i), (ii), (iv), (v)
(c) (i), (ii), (iii) (d) (iii), (iv), (v)
.

159. Which of the following is true for the organism shown below :



(a) Exhibits organ system level of body organisation
(b) Possess bilateral symmetry
(c) Is triploblastic, metamerically segmented and coelomate animal
(d) All of the above

160. Read the following statements w.r.t. Arthropoda :
(i) Circulatory system is of open type
(ii) Eyes may be compound or simple
(iii) Are mostly monoecious
(iv) Are mostly viviparous
(v) Development may be4 direct or indirect
Which of the above statement are correct ?
(a) (ii), (iii), (iv) (b) (i), (ii), (v)
(c) (iii), (iv), (v) (d) (i), (ii), (iii)

161. Match the columns :

Column I	Column II
A. Gills	(i) King crab
B. Tracheal system	(ii) Crab, prawn
C. Book gills	(iii) Butterfly, cockroach
D. Book lungs	(iv) Scorpion, spider

(a) A = (ii), B = (iii), C = (i), D = (iv)
(b) A = (ii), B = (i), C = (iv), D = (iii)
(c) A = (iii), B = (ii), C = (i), D = (iv)
(d) A = (iv), B = (i), C = (ii), D = (iii)

162. How arthropods are different from annelids ?

Options	**Arthropods**	**Annelids**
(a)	Closed circulatory system	Open circulatory system
(b)	Chitinous exoskeleton present	Chitinous exoskeleton absent
(c)	Nephridia present	Malpighian tubules present
(d)	Ventral nerve cord	Dorsal nerve cord

163. Select the wrong match :
(a) Sepia - Cuttle fish
(b) Loligo - Squid
(c) Dentalium - Tusk shell
(d) Chaetopleura - Sea hare

164. Which of the following is not a mollusc?
(a) Chiton (b) Sea
(c) Devil fish (d) Sea fan

165. Which of the following is an echinoderm ?
(a) *Ophiura* (b) *Octopus*
(c) *Apis* (d) *Dentalium*

166. Water vascular system of echinoderms help in :
(a) Locomotion
(b) Respiration
(c) Food transport
(d) More than one option is correct

167. Read the following w.r.t. hemichordates :
(i) Are exclusively fresh water organisms
(ii) Possess metameric segmentation
(iii) Body is cylindrical
(iv) Respiration occur through gills
(v) Excretion of nitrogenous waste occurs through proboscis gland
Which of the above statements are correct ?
(a) (iii), (iv), (v) (b) (i), (ii)
(c) (i), (iii) (d) (ii), (iv), (v)

168. Which of the following is not incorrect for Saccoglossus ?
(a) Fertilization is internal
(b) is dioecious
(c) Digestive system is incomplete
(d) All of the above

169. Which of the following is incorrect ?

	Non-chordates	Choerdates
(a)	Heart is dorsal (if present)	Heart is ventral
(b)	Post and tail is absent	Post-anal tail is present
(c)	Central nervous system is ventral, solid and double	Central nervous system is dorsal, hollow and single
(d)	Gill slits are present	Pharynx lack gill slits

170. How many of the following represents Urochordates (U) and Cephalochordates (C)

Ascidia, Branchiostoma, Salpa, Doliolum

(a) U = 2, C = 2 (b) U = 1, C = 3
(c) U = 3, C = 1 (d) U = 4, C = 0

171. All vertebrates :
(a) Are chordates but all chordates are not vertebrates
(b) Lack notochord in embryonic stage but possess it in adult stage
(c) Have heart with two, three or four chambers
(d) More than one option is correct

172. Match the columns :

Column I	Column II
A. Petromyzon	(i) Sea-horse
B. Hippocampus	(ii) Hag-fish
C. Myxine	(iii) Lamprey
D. Exocoetus	(iv) Flying fish

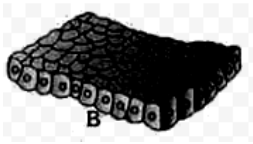
(a) A = (i), B = (iv), C = (iii), D = (ii)
(b) A = (ii), B = (iv), C = (i), D = (iii)
(c) A = (iii), B = (i), C = (iv), D = (ii)
(d) A = (iii), B = (i), C = (ii), D = (iv)

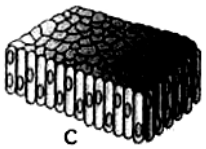
173. The tubular parts of nephrons of kidneys and ducts of glands have :
(a) Cuboidal epithelium
(b) Columnar epithelium
(c) Compound epithelium
(d) Squamous epithelium

174. Which of the following is true for simple columnar epithelium ?
(a) Cells are composed of single layer of tall and slender cells
(b) Their nuclei are located at the base
(c) These are found in the lining of stomach and intestine and help in secretion and absorption
(d) All of the above

175. Identify the diagrams of epithelial tissue along with their correct location :

(A) 

(B) 

(C) 

Options	Tissue	Location
(a)	A = Columnar epithelium	Lining of stomach and intestine
(b)	B = Cuboidal epithelium	Ducts of glands
(c)	A = Columnar ciliated epithelium	Lining of stomach and intestine
(d)	C = squamous epithelium	Walls of blood vessels

176. Find the incorrect match :

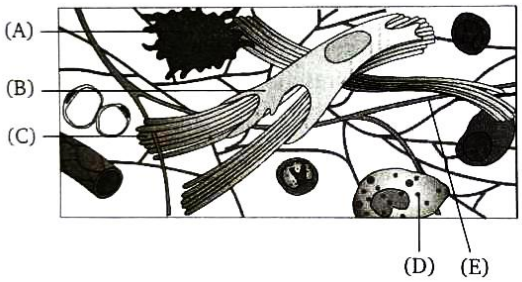
A. Gap Junction	Facilitates cell to cell cytoplasmic communication
B. Tight junction	Stops substances leaking across epithelial tissue
C. Adhering junction	Perform comenting to keep neighbouring cells together
D. Tight junction	For rapid transfer of ions, small /big molecules

177. Which of the following is correct for the most abundant and widely distributed tissue in the body of complex animals
(a) It links and supports other tissues or organs
(b) In includes blood
(c) It is soft and structurally less complex than epithelial tissue
(d) More than one option is correct

178. The cells of connective tissue secrete fibres of structural proteins, except :
(a) Blood (b) Bone
(c) Areolar tissue (d) Cartilage

179. Adipose tissue :
(a) Stores fat and mainly present beneath the skin
(b) Is a type of loose connective tissue
(c) Possess abundant mast cells
(d) More than one option is correct

180. Identify A, B, C, D and E, in the areolar tissue given below :



Options	A	B	C	D	E
(a)	Macro-phage	Fibro-blast	Yellow fibres	Mast cell	Collagen fibres
(b)	Mast cell	Yellow fibres	Macro-phage	Collagen fibres	Fibroblast
(c)	Fibro-blast	Macro-phage	Mast cell	Collagen fibre	Mast cell
(d)	Macro-phage	Fibro-blast	Collagen fibres	Mast cell	Yellow fibres

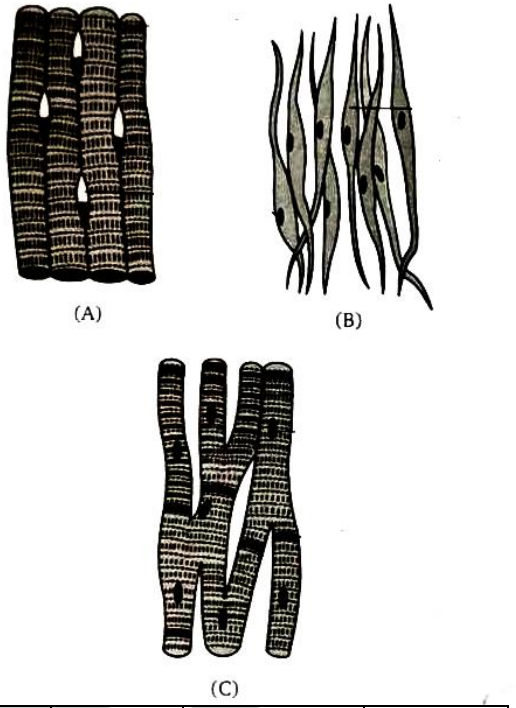
(d)

181. The fibres responsible for the tough resistance properties of tendons are :
(a) Collagenous fibres
(b) Spindles fibres
(c) Elastin fibres
(d) Fibrin fibres

182. Read the following statements w.r.t. cartilage
(i) Cells are enclosed in lacunae
(ii) Most of the cartilages in vertebrate embryos are replaced by bones in adults
(iii) Matrix is solid, pliable and do not resist compression
(iv) Cartilate is a specialised connective tissue
(v) White fibrous cartilages are transparent
Which of the above statements are incorrect ?
(a) (i) and (iv) (b) (iii) and (v)
(c) (ii) and (iv) (d) (i), (ii) and (iv)

183. The cardiac muscle differs from the skeletal muscle because these are :
(a) Voluntary in nature
(b) Non-striated
(c) Smooth and voluntary
(d) Branched and involuntary

184. Identify the muscular tissues labeled as A, B and C :



	A	B	C
(a)	Striated muscle	Smooth muscle	Cardiac muscle
(b)	Skeletal muscle	Cardiac muscle	Smooth muscle
(c)	Smooth muscle	Cardiac muscle	Skeletal muscle
(d)	Cardiac muscle	Smooth muscle	Skeletal muscle

185. Which of the following is contractile protein of muscle ?
(a) Myosin (b) Tubulin
(c) Tropomyosin (d) None of these

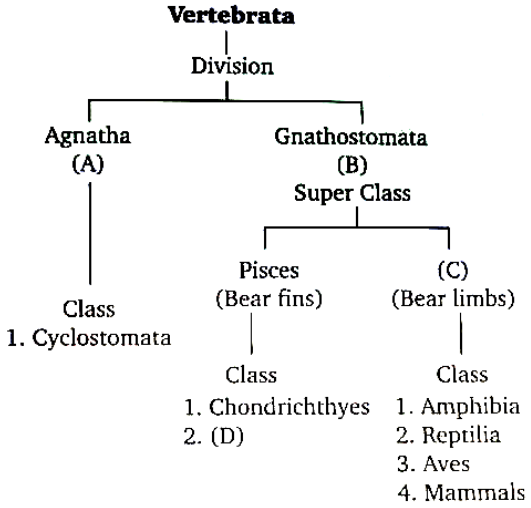
SECTION - B

186. Identify X, Y and Z in the table given below :

Cyclostomata	Scales and paired fins absent	X	Vertebral column cartilaginous
Chondrichthyes	Scales and paired fins present	Y	Cartilaginous endoskeleton
Osteichthyes	Scales and paired fins present	Circulation closed type	

(a) X = Circulation closed type, Y = Circulation closed type, Z = Bony endoskeleton
(b) X = Circulation open type, Y = Circulation closed type Z = Bony endoskeleton
(c) X = Circulation open type, Y = Circulation open type, Z = Cartilaginous endoskeleton
(d) X = Circulation closed type, Y = Circulation closed type, Z = Cartilaginous endoskeleton

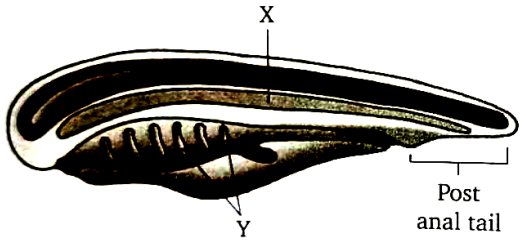
187. Read the flow chart given below and identify A, B, C and D :



	A	B	C	D
(a)	Lacks jaw	Bears jaws	Apoda	Osteichthyes
(b)	Bears jaw	Lacks jaw	Octapoda	Osteichthyes
(c)	Lacks jaw	Lacks jaw	Tetrapoda	Osteichthyes
(d)	Lacks jaw	Bears jaw	Tetrapoda	Osteichthyes

188. Choose the odd one out w.r.t. reptiles:
(a) Mostly terrestrial
(b) Body covered by scutes
(c) Homeotherms
(d) Internal fertilization

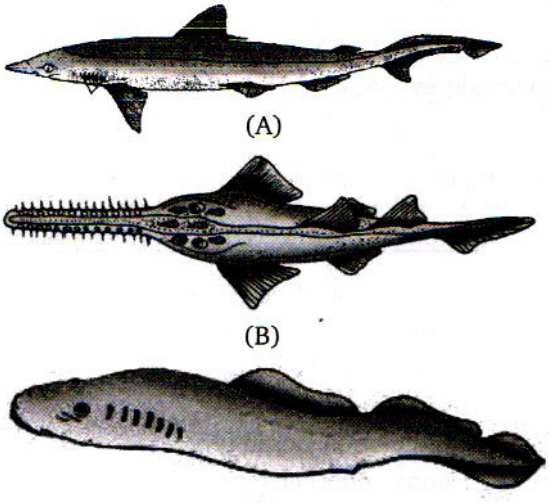
189. Identify the correct statement w.r.t. structures marked X and Y in the diagram given below :



(Chordate characters)

(a) Both X and Y are present throughout the life in Urochordates
(b) Both X and Y takes part in circulation of water for respiration
(c) In vertebrates X is replaced by a cartilaginous or bony vertebral column in adults and Y occur only in embryonic stages in higher chordates
(d) X may be present in few non-chordates but Y is completely absent in them

190. Identify the organism and their respective classes correctly :


(A)
(B)
(C)

	A	B	C
(a)	Scoliodon, Chondrichthyes	Pristis, Cyclostomata	Petromyzon, Osteichthyes
(b)	Pristis, Osteichthyes	Scoliodon, Chondrichthyes	Petromyzon, Cyclostomata
(c)	Hippocampus, Osteichthyes	Pristis, Chondrichthyes	Scoliodon, Chondrichthyes
(d)	Scoliodon, Chondrichthyes	Pristis, Chondrichthyes	Petromyzon, Cyclostomata

191. Match the following and choose the correct options

A. Adipose tissue	i. Nose
B. Stratified epithelium	ii. Blood
C. Hyaline cartilage	iii. Skin
D. Fluid connective tissue	iv.Fat storage

(a) A = (i), B = (ii), C = (iii), D = (iv)
(b) A = (iv), B = (iii), C = (i), D = (ii)
(c) A = (i), B = (iii), C = (ii), D = (i)
(d) A = (ii), B = (iv), C = (iii), D = (i)

192. Read the following statements about the class Amphiba :
(i) A tympanum represents the ear
(ii) The heart is three chambered with one auricle and two ventricles
(iii) Are poikilotherms
(iv) Alimentary canal, urinary and reproductive tracts open into a common chamber called cloaca which opens to the exterior
(v) Respriration occurs only by lungs, gills and skin has no such role
Which of the above statements are correct ?
(a) (i), (ii) (b) (i), (iii), (iv)
(c) (iii), (iv), (v) (d) (iv), (v)

Instructions:
(a) If both statement A and B are true and the statement B is the correct explanation of statement A then mark (a)
(b) If both statement A and B are true but the statement B is not the correct explanation of statement A then mark (b)
(c) If statement A is true but statement B is false, then mark (c)
(d) If both statement A and B are false statements then mark (d)

193. A: Birds possess moist skin.
B : Birds possess oil glands throughout their body.
(a) (b) (c) (d)

194. A : The duck billed platypus and the spiny ant-eater, both are egg laying animals yet they are grouped under mammals.
B : Both of them have seven cervical vertebrae and 12 pairs of cranial nerves.
(a) (b) (c) (d)

195. A : Mast cells in the human body release excessive amounts of inflammatory chemical which cause allergic reactions.
B : Allergens on reaching the human body stimulate mast cell in certain individuals.
(a) (b) (c) (d)

196. A : Neuroglia found in brain and spinal cord supports the neurons.
B : Approximately 95% of all the brain cells are neuroglial cells.
(a) (b) (c) (d)

197. Identify (A), (B), (C) in the table given below.

Tendon	Ligament
It is composed of white fibrous tissue	It is composed of yellow elastic tissue
A	It is strong and elastic
The fibroblast lie in almost continuous rows	The fibroblast are acattered
B	C

(a) A = It is tough and inelastic
B = It connects skeletal muscle to bones
C = It connects bone to another bone
(b) A = It is weak and inelastic
B = It connects skeletal muscles to viscera
C = It connects a bone to another bone
(c) A = It is strong and highly elastic
B = It connects skeletal muscles to bone
C = It connects a bone to another bone
(d) A = It is tough and inelastic
B = It contains scanty collagen fibres
C = It contains abundant collagen fibres

198. Choose the odd one out from the following :

Adipose tissue, Tendon, Lymph, Bone, Neural tissue

(a) Neural tissue (b) Lymph
(c) Adipose tissue (d) Tendon

199. Identify (A), (B), (C) and (D) from the table given below.

Bone	Cartilage
Matrix is composed of inflexible material called ossein	A
Lacuna gives out canaliculi	B
C	D

(a) A = Matrix made of inflexible material
B = Lacuna possesses canaliculi
C = Osteoblast forms chondrocytes
D = Chondroblast form chondrocytes
(b) A = Matrix is made of flexible material called chondrin
B = Lacuna lacks canaliculi
C = Osteoblast forms osteocytes
D = Chondroblast forms chondrocytes
(c) A = Matrix composed of chondrin
B = Lacuna lacks canaliculi
C = Chondroblasts are present in abundance
D = Osteoblasts are present in abundance
(d) A = Matrix composed of ossein
B = Lacuna lacks canaliculi
C = It grows by the division of osteoblasts
D = It grows by the division of chondroblast

200. Choose the correct statement :
(a) Blubber of whale is made of adipose tissue
(b) Both RBC and WBC are formed in the cartilage
(c) Bone matrix is hard due to the presence of calcium phosphate
(d) More than one option is correct

TEST ASSESMENT AND ANALYSIS SHEET

Name……..……Test topic - ……Date ……

Physics	**Marks per question**	**Total Ques.**	**Attempted**	**Unattempted**	**Correct**	**Incorrect**	**Net score**
Multiple choice questions							
Q. No. (Incorrect)							
Q. No. (Unattempted)							
Chemistry	**Marks per question**	**Total Ques.**	**Attempted**	**Unattempted**	**Correct**	**Incorrect**	**Net score**
Multiple choice questions							
Q. No. (Incorrect)							
Q. No. (Unattempted)							
Biology	**Marks per question**	**Total Ques.**	**Attempted**	**Unattempted**	**Correct**	**Incorrect**	**Net score**
Multiple choice questions							
Q. No. (Incorrect)							
Q. No. (Unattempted)							
Total net score							