

NEW STANDARD ACADEMY

Test Type : Unit Test # 02

Do not open this Test Booklet until you are asked to do so.

31-07-2023

PRE-MEDICAL :11th Undergoing Students

Read carefully the Instructions on the Back Cover of this Test Booklet.

Important Instructions :

1. On the answer sheet, fill in the particulars on Side-1 and Side -2 carefully with blue/black ball point pen only.
2. The test is of 3 hours 20 minutes duration and this Test Booklet contains 200 questions. Each question carries 4 marks. For each correct response, the candidate will get 4 marks. For each incorrect response, one mark will be deducted from the total scores. The maximum marks are 720.
3. In this Test Paper, each subject will consist of two sections. Section A will consist of 35 questions (all questions are mandatory) and Section B will have 15 questions. Candidate can choose to attempt any 10 question out of these 15 questions. In case if candidate attempts more than 10 questions, first 10 attempted questions will be considered for marking
4. In case of more than one option correct in any question, the best correct option will be considered as answer.
5. Use Blue/Black Ball Point Pen only for writing particulars on this page/markings responses.
6. Rough work is to be done on the space provided for this purpose in the Test Booklet only.
7. On completion of the test, the candidate must hand over the Answer Sheet to the Invigilator before leaving the Room/Hall. The candidates are allowed to take away this Test Booklet with them.
8. The candidates should ensure that the Answer Sheet is not folded. Do not make any stray marks on the Answer Sheet. Do not write your Form No. anywhere else except in the specified space in the Test Booklet/Answer Sheet.
9. Use of white fluid for correction is not permissible on the Answer Sheet.

Name of the Candidate(In Capitals) _____

Date of Examination _____

Candidate`s Signature: _____ Invigilator`s Signature: _____

SECTION - A (PHYSICS)

1. The displacement of a body $S = \frac{gt^2}{3}$ where g is constant. The velocity of the body at any time 't' is

- (1) $\frac{2gt}{5}$ (2) $\frac{2gt}{3}$ (3) $gt/3$ (4) $gt/5$

2. A body can't have

- (1) A constant speed and varying velocity
 (2) An acceleration and a constant speed
 (3) A constant velocity and varying speed
 (4) Non-zero speed and zero acceleration

3. The velocity of a body depends on time according to equation, $v = 0.1 t^2 + 10t + 20$, the body has motion –

- (1) Uniform acceleration
 (2) Uniform retardation
 (3) Non-uniform acceleration
 (4) Zero acceleration

4. A car travels from A to B at a speed of 10 km/h and then B to A at a speed of 20 km/h and then again A to B at a speed of 40 km/h. The average speed of the car for the whole journey is

- (1) $\frac{120}{7}$ km/h (2) 20 km/h
 (3) 35 km/h (4) $\frac{70}{3}$ km/h

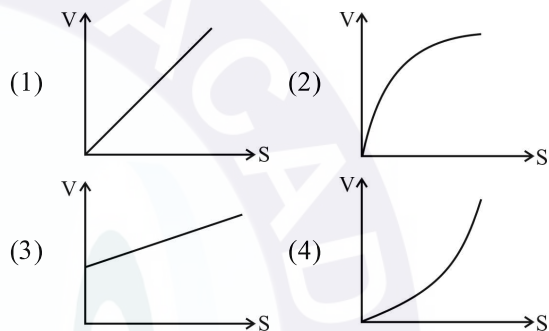
5. A stone is thrown vertically upward with an initial speed U from the top of a tower and it reaches the ground with a speed $4U$ then the height of the tower is :

- (1) $7.5 \frac{U^2}{g}$ (2) $7 \frac{U^2}{g}$
 (3) $6.5 \frac{U^2}{g}$ (4) $6 \frac{U^2}{g}$

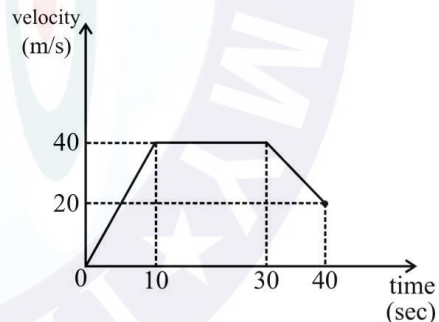
6. Two particles held at different height 8 m and 12 m above the ground are allowed to fall from rest. The ratio of their speeds on reaching the ground is :

- (1) $\sqrt{\frac{3}{2}}$ (2) $\frac{2}{\sqrt{6}}$ (3) $\frac{2}{3}$ (4) $\frac{4}{9}$

7. A particle starts from rest and moves along a straight line with constant acceleration. The graph of velocity v with displacement s is -

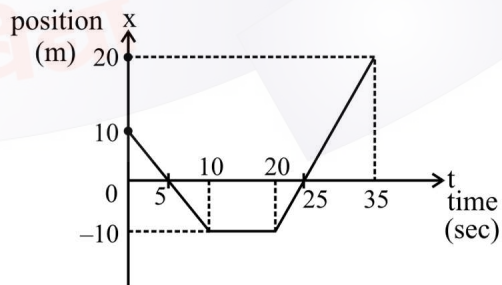


8. In the given velocity-time graph, magnitude of average acceleration of body is –



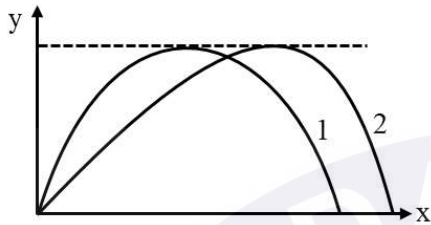
- (1) 0.5 m/s^2 (2) 1 m/s^2
 (3) 2 m/s^2 (4) 1.5 m/s^2

9. Position-time graph of a body is given. Average velocity of body for time interval $t = 0$ to $t = 35$ second is



- (1) $\frac{4}{7} \text{ m/s}$ (2) $\frac{2}{7} \text{ m/s}$
 (3) $\frac{6}{7} \text{ m/s}$ (4) 1 m/s

22. Two stones are projected from level ground (as shown). Both have same max heights attained. Then, their time of flights T_1 & T_2 is-



- (1) $T_1 > T_2$
 (2) $T_2 > T_1$
 (3) $T_1 = T_2$
 (4) None
23. If two stones are projected from level ground and their time of flights $T_1 = 2T_2$ then ratio of their maximum vertical height attained is-

- (1) $\frac{1}{2}$ (2) $\frac{1}{4}$ (3) $\frac{2}{1}$ (4) $\frac{4}{1}$

24. A particle is projected at 30° to the vertical with a kinetic energy K . The kinetic energy at the highest point is

- (1) K (2) Zero
 (3) $\frac{K}{4}$ (4) $\frac{K}{2}$

25. A boy can throw a stone up to a maximum height of 15 m. The maximum horizontal distance that the boy can throw the same stone up to will be-

- (1) 15 m (2) 20 m
 (3) 25 m (4) 30 m

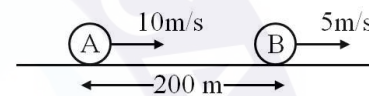
26. A particle is projected with an initial velocity $2\hat{i} + \hat{j}$ m/s, the equation of trajectory is - ($g = 10\text{m/s}^2$)

- (1) $4y = 2x - 5x^2$
 (2) $y = 2x - 5x^2$
 (3) $y = \frac{x}{2} - 5x^2$
 (4) $y = x - 5x^2$

27. An elevator is ascending at a constant speed 10m/s. A passenger drops a coin. What will be the acceleration of coin as seen by the passenger. ($g = 10\text{m/s}^2$)

- (1) 10 m/s^2 downward
 (2) Zero
 (3) 10 m/s^2 Upward
 (4) 5 m/s^2 downward

28. A body A is moving with 10m/s and B is moving with 5 m/s in same direction. A is 200 m behind B. Time taken by A to meet B is

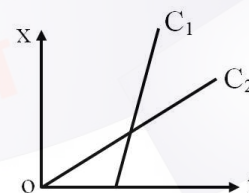


- (1) 40 sec (2) 20 sec
 (3) $\frac{40}{3}$ sec (4) 15 sec

29. Four particles situated at the corners of square of side 10 m move at a constant speed of 2m/s. Each particle maintains a direction towards the next particle in succession. Calculate the time when they meet :

- (1) 5 sec
 (2) 10 sec
 (3) $5\sqrt{2}$ sec
 (4) $\frac{5}{\sqrt{2}}$ sec

30. Graph shown in figure are the position time graph for two children going home from school, their relative velocity -



- (1) First increases and then decreases
 (2) First decreases and then increases
 (3) is zero
 (4) is non zero constant

31. It is raining vertically downward with 5 km/h. A man walks in the rain with 6 km/h. The rain drops will fall on the man with a relative velocity of-

- (1) 11 km/h
 (2) $\sqrt{61}$ km/h
 (3) 1 km/h
 (4) $\sqrt{11}$ km/h

32. A body is projected horizontally with speed 30 m/s from a tower what will be its speed after 4 sec

- (1) 20 m/s (2) 50 m/s
 (3) 54 m/s (4) 70 m/s

33. A particle is projected with a velocity $10\sqrt{2}$ m/s at 45° to horizontal. Then height of particle above point of projection after 1 second is ($g = 10 \text{ m/s}^2$)

- (1) 5 m (2) 10 m (3) 15 m (4) 20 m

34. The co-ordinates of a projectile is $y = 4t - 5t^2$ and $x = 3t$. Find the angle of projection with x - direction.

- (1) $\tan^{-1} \frac{3}{5}$
 (2) $\tan^{-1} \frac{4}{5}$
 (3) $\tan^{-1} \frac{4}{3}$
 (4) $\tan^{-1} \frac{3}{4}$

35. **Assertion (A)** : In the projectile motion, horizontal component of velocity remains constant.

Reason (R) : The only force acts on the projectile is its weight acting vertically downward.

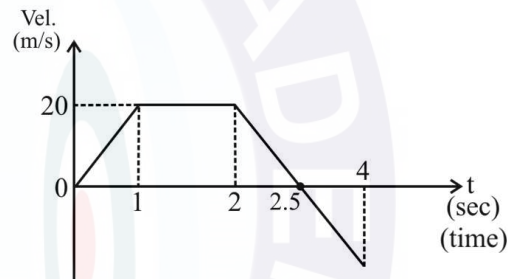
- (1) A & R are correct and R is the correct explanation of A
 (2) A & R are correct and R is not the correct explanation of A
 (3) A is true and R is false
 (4) A is false and R is true

SECTION - B (PHYSICS)

36. A particle starts from rest with uniform acceleration a. Its velocity after n seconds is v. The displacement of the particle in the last three seconds is-

- (1) $3V - \frac{9V}{2n}$
 (2) $\frac{3(V-3)}{2n}$
 (3) $\frac{3(V-3)}{n}$
 (4) $\frac{3(V-1)}{n}$

37. The distance travelled by the particle in 4 second is-



- (1) 50 m (2) 45 m (3) 40 m (4) 80 m

38. Water drops fall at regular intervals from a tap which is 10 m above the ground. The fifth drop is leaving the tap at the instant, the first drop touches the ground. How far above the ground is the third drop at that instant. ($g = 10 \text{ m/s}^2$)

- (1) $\frac{15}{2}$ m (2) $\frac{25}{4}$ m
 (3) 5 m (4) 6 m

39. A body freely falling from rest has a velocity v after it falls through distance 4 m. The distance it has to fall down further in meter for its velocity to become triple is

- (1) 16 m (2) 32 m (3) 48 m (4) 64 m

40. The position of a particle is given by $x = (t - t^2)$ x in meter t in second. The total distance travelled by the particle between $t = 0$ to $t = 1$ sec is :

- (1) 0 m (2) 2 m (3) 1 m (4) $\frac{1}{2}$ m

41. If a body loses $\frac{3}{4}$ of its velocity after penetrating 3 cm in a wooden block, then how much will it penetrate more before coming to rest.

- (1) $\frac{16}{5}$ cm (2) $\frac{1}{5}$ cm (3) 9 cm (4) 6 cm

42. From a tower of height H, a particle is thrown up with speed 5 m/s. The time taken to hit the ground is 3 times that of time to reach by it to highest point. Height of the tower H is :

- (1) H = 10.5 m (2) H = 5.25 m
(3) H = 3.75 m (4) H = 7.25 m

43. A body is projected such that its horizontal range is thrice of its max vertical height attained. Find angle of projection.

- (1) $\tan^{-1} 4/3$ (2) $\tan^{-1} 4$
(3) $\tan^{-1} 1/3$ (4) $\tan^{-1} 2/3$

44. The equation of a projectile is $y = \sqrt{3}x - \frac{g x^2}{2}$. Find the max height attained by the projectile-

- (1) $\frac{3}{10}$ m (2) $\frac{3}{20}$ m
(3) $\frac{3}{40}$ m (4) $\frac{3}{5}$ m

45. A projectile is thrown with a speed v at angle θ with vertical upward. Its average velocity between the instants at which it crosses $\frac{1}{4}$ of maximum height is-

- (1) $v \sin \theta$ horizontal
(2) $v \cos \theta$ horizontal
(3) $2 v \sin \theta$ vertical
(4) $2 v \cos \theta$ vertical

46. A particle is kept at rest at origin another particle starts from $(-5, 0)$ m with a velocity of $4\hat{i} - 3\hat{j}$ m/s then their closest distance of approach is-

- (1) 3 m (2) 4 m (3) 5 m (4) 2 m

47. A particle is projected at an angle of projection 60° with the horizontal and after 2 sec, it appears to have an angle 30° with the horizontal. The initial velocity is :

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

48. A stone is dropped from a certain height which can reach the ground in 10 sec. It is stopped momentarily after 6 sec of its fall and then it is again released. The total time taken by stone to reach the ground will be -

- (1) 8 sec. (2) 14 sec. (3) 12 sec. (4) 20 sec.

49. From the top of a tower, a stone is dropped. If it covers 25 m in the last second of its motion, then height of tower is ($g = 10 \text{ m/s}^2$)

- (1) 45 m (2) 15 m (3) 50 m (4) 40 m

50. Match the column -

Column-I		Column-II	
(a)	Instantaneous velocity	(P)	vector quantity
(b)	Instantaneous speed	(Q)	Scalar quantity
(c)	Average velocity	(R)	depends only on initial and final position
(d)	Average speed	(S)	Its magnitude can increase with time

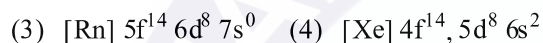
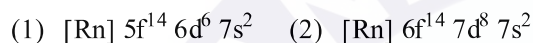
- (1) (a) P, S (2) (a) P, R
(b) Q, S (b) Q, R
(c) P, R, S (c) P, R
(d) Q, S (d) Q, S
(3) (a) P, S (4) (a) P, R
(b) Q, R (b) P, S
(c) P, Q, S (c) P, Q, R
(d) Q, R (d) Q, S

SECTION-A (CHEMISTRY)

51. General electronic configuration of normal elements :-



52. Element upto atomic no. 112 have been discovered till now. What will be the electronic configuration of the element possessing atomic no. 108 :-



53. IUPAC name of 109 is represented by symbol :-

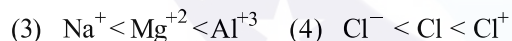
(1) Unn (2) Uun (3) Une (4) Uuu

54. The order of screening effect of electrons of s, p, d and f orbitals of a given shell of an atom on its outer shell electron is :-

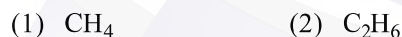
(1) $s < p < d < f$ (2) $s > p > d > f$

(3) $s > p > f > d$ (4) $p > s > d > f$

55. According to Slater's rule incorrect order of Z_{eff} on valence shell electron is :-



56. Single bonded covalent radius of carbon-atom can be calculated easily by :-

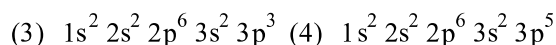
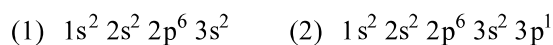


57. Atomic radius of nitrogen and boron in angstrom unit is given by :-

(1) 1.60, 1.60 (2) 0.78, 0.78

(3) 0.78, 1.60 (4) 1.60, 0.78

58. Which of the following has largest radius :-



59. Radius of which of the following elements is almost similar, but not due to Lanthanoid contraction :-

(1) Mo, W (2) Al, Ga

(3) Sn, Pb (4) In, Tl

60. **Assertion** :- Vanderwaal radii of Ne is more than the covalent radii of F.

Reason :- Ne has more Z_{eff} than F.

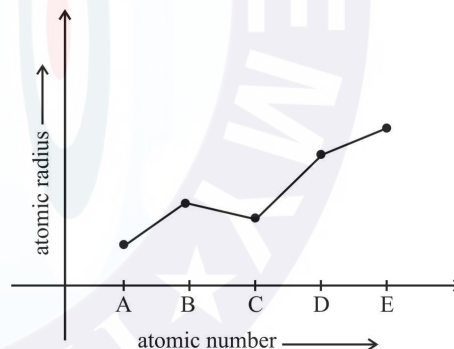
(1) Both Assertion & Reason are True & the Reason is a correct explanation of the Assertion.

(2) Both Assertion & Reason are True but Reason is not a correct explanation of the Assertion.

(3) Assertion is True but the Reason is False.

(4) Both Assertion & Reason are False.

61. Atomic radius vs atomic number graph of elements of a particular group in the periodic table is as shown :-



The elements B and C are:-

(1) Si and Ge (2) Al and Ga

(3) Cl and Br (4) Be and Mg

62. **Assertion (A)** : Fluorine has greater atomic radius than nitrogen.

Reason (R) : Atomic radius decreases along a period.

(1) Both assertion and Reason are correct and Reason is correct for the assertion

(2) Both assertion and reason are correct but reason is not correct for assertion

(3) Assertion is correct but reason is incorrect

(4) Assertion is incorrect but reason is correct

63. Reason of lanthanoid contraction is :-

- (1) Negligible screening effect of 'f' orbitals
- (2) Increasing nuclear charge
- (3) Decreasing nuclear charge
- (4) Decreasing screening effect

64. Which of the following radius order is correct :-

- (1) $\text{Ca}^{+2} < \text{K}^+ < \text{Cl}^- < \text{S}^{-2}$
- (2) $\text{Al}^{+3} < \text{Mg}^{+2} < \text{Na}^+ < \text{F}^-$
- (3) $\text{Li} < \text{Mg} < \text{Ca} < \text{K}$
- (4) All

65. Compared to the 2nd ionisation potential, the value of first ionisation potential of an element is :-

- (1) Negligible
- (2) Smaller
- (3) Greater
- (4) Double

66. $\text{M} \xrightarrow{x} \text{M}^+ \xrightarrow{y} \text{M}^{+2} \xrightarrow{z} \text{M}^{+3}$

Which of the following statement is correct regarding 'z' :

- (1) It is IP_3 of M_n^{+2}
- (2) It is IP_3 of M^+
- (3) It is IP_1 of M^+
- (4) It is IP_1 of M^{+2}

67. The ionization energy of beryllium is more than that of boron because :-

- (1) beryllium has a higher nuclear charge than boron
- (2) beryllium has a lower nuclear charge than boron
- (3) the outermost electron in boron occupies a 2p-orbital
- (4) the 2s and 2p-orbitals of boron are degenerate

68. Which transition involves maximum amount of ionisation energy :-

- (1) $\text{M}^+(\text{g}) \rightarrow \text{M}^{2+}(\text{g}) + \text{e}^-$
- (2) $\text{M}^{2+}(\text{g}) \rightarrow \text{M}^{3+}(\text{g}) + \text{e}^-$
- (3) $\text{M}^-(\text{g}) \rightarrow \text{M}(\text{g}) + \text{e}^-$
- (4) $\text{M}(\text{g}) \rightarrow \text{M}^+(\text{g}) + \text{e}^-$

69. **Assertion** : Noble gases have highest ionization enthalpies in their respective periods.

Reason : Noble gases have stable octet.

- (1) Both Assertion and Reason are true and Reason is the correct explanation of Assertion.
- (2) Both Assertion and Reason are true but Reason is not the correct explanation of Assertion.
- (3) Assertion is true but Reason is false.
- (4) Both Assertion and Reason are false.

70. Select the correct order of IP_1 :-

- (1) $\text{Li} > \text{Be} > \text{B} > \text{C}$
- (2) $\text{Li} < \text{Be} < \text{B} < \text{C}$
- (3) $\text{Li} < \text{B} < \text{Be} < \text{C}$
- (4) $\text{Li} < \text{B} < \text{C} < \text{Be}$

71. In a period minimum and maximum IP would be of respectively :-

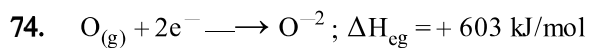
- (1) Alkali metals, Halogens
- (2) Alkali metal, Noble gas
- (3) Noble gas, Alkali metal
- (4) None

72. The incorrect statement among the following is –

- (1) The first ionisation potential of Al is less than the first ionisation potential of Mg
- (2) The second ionisation potential of Mg is greater than the second ionisation potential of Na.
- (3) The first ionisation potential of Na is less than the first ionisation potential of Mg
- (4) The third ionisation potential of Mg is greater than the third ionisation potential of Al.

73. The first ionisation energy of Mg, Al, P and S follows the order -

- (1) $\text{Mg} < \text{Al} < \text{P} < \text{S}$
- (2) $\text{Al} < \text{Mg} < \text{P} < \text{S}$
- (3) $\text{Al} < \text{Mg} < \text{S} < \text{P}$
- (4) $\text{Mg} < \text{Al} < \text{S} < \text{P}$



The positive value of ΔH_{eg} is due to :-

- (1) Energy is needed to add $1e^{-}$ to O
- (2) Energy is required to add $1e^{-}$ to O^{-1}
- (3) Energy is released to add $1e^{-}$ to O^{-1}
- (4) Magnitude of energy consumed during addition of 2^{nd} e^{-} is more than the magnitude of energy released during addition of 1^{st} e^{-} in 'O' atom

75. Which of the following step is exothermic?

- (1) $S_{(g)}^{-} \longrightarrow S_{(g)}^{-2}$
- (2) $Na_{(g)}^{+} + Cl_{(g)}^{-} \longrightarrow NaCl_{(s)}$
- (3) $N_{(g)} \longrightarrow N_{(g)}^{-}$
- (4) $Al_{(g)} \longrightarrow Al_{(g)}^{+}$

76. The process requiring absorption of energy is :

- (1) $N \longrightarrow N^{-}$
- (2) $F \longrightarrow F^{-}$
- (3) $Cl \longrightarrow Cl^{-}$
- (4) $H \longrightarrow H^{-}$

77. Which of the following has highest electron affinity (ΔH_{eg}) :-

- (1) $[Ne]3s^2 3p^3$
- (2) $[Ne]3s^2 3p^4$
- (3) $[Ne] 3s^2 3p^5$
- (4) $[Ne] 3s^2 3p^2$

78. Among halogens, the correct order of amount of energy released in electron gain (electron gain enthalpy) is :

- (1) $F > Cl > Br > I$
- (2) $F < Cl < Br < I$
- (3) $F < Cl > Br > I$
- (4) $Cl < F < Br < I$

79. **Assertion (A)** : Ionisation energy and electron affinity of nitrogen is greater than oxygen (magnitude only).

Reason (R) : Due to half-filled stability of $2p^3$ configuration in nitrogen removal or addition of electron is difficult

- (1) (A) and (R) both are correct and (R) is the correct explanation of (A)
- (2) (A) and (R) both are correct but (R) is not the correct explanation of (A)
- (3) (A) is true but (R) is false
- (4) (A) is false but (R) is true

80. The outermost electronic configuration of most electronegative element amongst the following is :

- (1) $ns^2 np^3$
- (2) $ns^2 np^5$
- (3) $ns^2 np^4$
- (4) $ns^2 np^1$

81. Among the following least and most polar bonds are respectively :-

- (a) C – I (b) N – O (c) C – F (d) P – F
- (1) d and c
 - (2) a and d
 - (3) b and d
 - (4) b and c

82. Which one of the following orders is correct for the increasing basic nature of the oxide :-

- (1) $Na_2O < MgO < Al_2O_3$
- (2) $Na_2O < Al_2O_3 < MgO$
- (3) $Al_2O_3 < MgO < Na_2O$
- (4) $Al_2O_3 < Na_2O < MgO$

83. Correct order of acidic nature of oxyacids is :-

- (1) $HClO_3 < HClO_4 < HClO_2 < HClO$
- (2) $HClO_2 < HClO_3 < HClO_4 < HClO$
- (3) $HClO < HClO_2 < HClO_3 < HClO_4$
- (4) $HClO_4 < HClO_3 < HClO_2 < HClO$

84. Which of the following oxide is not expected to react with NaOH :-

- (1) BeO
- (2) B_2O_3
- (3) MgO
- (4) ZnO

85. Which compound strongly absorb CO_2 ?
 (1) BeO (2) K_2O (3) H_3PO_4 (4) P_4O_6

SECTION-B (CHEMISTRY)

86. Match the columns :-

	Column-I (Atomic No.)		Column-II (Block)
(a)	52	(p)	s-block
(b)	56	(q)	p-block
(c)	57	(r)	d-block
(d)	60	(s)	f-block

- (1) a-(q), b-(p), c-(r), d-(s)
 (2) a-(r), b-(p), c-(q), d-(s)
 (3) a-(p), b-(r), c-(q), d-(s)
 (4) a-(q), b-(r), c-(p), d-(s)

87. **Assertion (A)** : Ionisation energy of ns^2 - electron is more than np^1 -electron of same shell.

Reason (R) : s - electron are closer to the nucleus than p-electron hence more tightly attached.

- (1) (A) and (R) both are correct and (R) is the correct explanation of (A)
 (2) (A) and (R) both are correct but (R) is not the correct explanation of (A)
 (3) (A) is true but (R) is false
 (4) (A) is false but (R) is true

88. Al and Ga have nearly same covalent radii because of :-

- (1) Poor shielding power of d-electrons of Ga atom
 (2) Greater shielding power of d-electrons of Ga atoms
 (3) Greater shielding power of s-electrons of Ga atoms
 (4) Poor shielding power of s-electrons of Ga atoms

89. **Statement-1** : Transition metals shows similarity in properties in both horizontal and vertical direction.

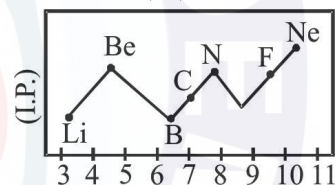
Statement-2 : Transition metals have comparable size in both direction.

- (1) Both statement-1 and 2 are correct
 (2) Both statement-1 and 2 are incorrect
 (3) Statement-1 is correct but statement-2 is incorrect
 (4) Statement-1 is incorrect but statement-2 is correct

90. The 1st I.P. of Na, Mg, Al and Si are in the order :-

- (1) $\text{Na} > \text{Mg} > \text{Si} > \text{Al}$ (2) $\text{Na} < \text{Al} < \text{Mg} < \text{Si}$
 (3) $\text{Na} < \text{Mg} < \text{Al} < \text{Si}$ (4) $\text{Na} > \text{Mg} > \text{Al} > \text{Si}$

91. Following graph shows variation of I.P. with atomic number in second period (Li - Ne). Position of I.P. of Na (11) will be :-



- (1) Above Ne
 (2) Below Ne but above O
 (3) Below Li
 (4) Between N and O

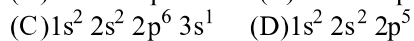
92. Successive ionisation energies of an element (x) are given below (in K/cal) :-

IP_1	IP_2	IP_3	IP_4
165	195	556	595

Which of the following set is correct?

	electronic configuration	Stable O.S.	Group No.
(1)	ns^2	+2	12^{th}
(2)	ns^1	+1	1^{st}
(3)	ns^2	+2	2^{nd}
(4)	ns^2np^1	+3	13^{th}

93. Electronic configurations of four elements A, B, C and D are given below :



Which of the following is the correct order of increasing order to ionization energy:



94. Be & Mg have +ve value of ΔH_{eg} this can be explained by :-

(1) By their stable configuration

(2) By their extremely small size

(3) By weak shielding of 's' electrons

(4) By strong shielding of 's' electrons

95. **Assertion (A)** : Second E.A. for halogen is almost zero.

Reason (R) : Fluorine has maximum value of E.A.

(1) (A) and (R) both are correct and (R) is the correct explanation of (A)

(2) (A) and (R) both are correct but (R) is not the correct explanation of (A)

(3) (A) is true but (R) is false

(4) (A) is false but (R) is true

96. Match the Column I with Column II and select the correct answer using given codes.

Column -I (order)	Column -II (properties)
(A) $Al^{+3} < Mg^{+2} < Li^+ < K^+$	(1) EA (Electron affinity)
(B) $Li < Na = K$	(2) Ionic radii
(C) $Cl > F > Br > I$	(3) EN (electronegativity)
(D) $F > Cl > Br > I$	(4) ENC (Effective nuclear charge)

	(A)	(B)	(C)	(D)
(1)	2	4	3	1
(2)	2	4	1	3
(3)	4	2	3	1
(4)	4	2	1	3

97. Match the following

	Column-I		Column-II
a	Helium	p	Largest radius
b	Cesium	q	Most electronegative element
c	Nitrogen	r	Highest first Ionisation energy
d	Fluorine	s	Positive value of electron gain enthalpy

(1) a-p; b-q; c-r; d-s (2) a-r; b-p; c-s; d-q

(3) a-r; b-p; c-q; d-s (4) a-p; b-r; c-s; d-q

98. Correct match is :-

(1) $I^- > Cl^- > S^{2-} > N^{3-}$ = size order

(2) $P > S > O > N$ = I.P. order

(3) $Cl > F > O > S$ = E.A. order

(4) $F > O > N > P$ = E.N. order

99. Oxygen is more electronegative than sulphur yet H_2S is more acidic than H_2O .

(1) Water is highly associated compound

(2) Molecular mass of H_2S is more than that of H_2O

(3) H_2S is a gas under ordinary condition while H_2O is liquid

(4) H—S bond is weaker than H—O bond

100. Match the compounds given in Column I with type of oxide given in column II and choose the correct option :-

	Column I		Column II
A	BeO	1	Neutral oxide
B	N_2O	2	Acidic oxide
C	Mn_2O_7	3	Basic oxide
D	Bi_2O_3	4	Amphoteric oxide

(1) A-1, B-2, C-3, D-4 (2) A-4, B-1, C-2, D-3

(3) A-3, B-2, C-4, D-1 (4) A-4, B-3, C-1, D-2

SECTION - A (BOTANY)

101. Gametes formed in *Spirogyra* are :-

- (1) Flagellated and similar in size
- (2) Non-flagellated and dissimilar in size
- (3) Flagellated and dissimilar in size
- (4) Non-flagellated and similar in size

102. Which of the following alga is rich in proteins and used as food supplement by space travellers ?

- (1) *Porphyra*
- (2) *Chlorella*
- (3) *Laminaria*
- (4) *Gelidium*

103. Green Algae usually have a rigid cell wall made of an inner layer of __A__ and an outer layer of __B__.

- (1) A = Pectose, B = Cellulose
- (2) A = Cellulose, B = Pectose
- (3) A = Algin, B = Carrageen
- (4) A = Cellulose, B = Algin

104. Select the correct match pair from the following :-

(1)	Pyrenoids	Oil droplets
(2)	Gametes of brown algae	Pyriform
(3)	Kelps	Un branched forms of brown algae
(4)	Floridean starch	Stored food of green algae

105. Main plant body of bryophytes is :-

- (1) Haploid and produces spores
- (2) Diploid and produces gametes
- (3) Haploid and produces gametes
- (4) Diploid and produces spores

106. Select the incorrect statement from the following :-

- (1) Zygotes undergo reduction division immediately in bryophytes.
- (2) Sex organs in bryophytes are multicellular.
- (3) Plant body of bryophytes lack true roots, stem or leaves.
- (4) Bryophytes play an important role in plant succession on bare rocks

107. Gemma formed in liverworts are :-

- (1) Green, unicellular and asexual buds.
- (2) Green, multicellular and sexual buds
- (3) Green, multicellular and asexual buds
- (4) Non-Green, unicellular and sexual buds

108. The free-living gametophytes of liverworts are formed due to germination of :-

- (1) Gametes
- (2) Spores
- (3) Lateral buds
- (4) Protonema

109. The first stage in the life cycle of moss, which develops directly from a spore is :-

- (1) Prothallus
- (2) Leafy stage
- (3) Strobilus
- (4) Protonema

110. **Statement-1** : Pyrenoids are storage bodies located in cytoplasm of green algae.

Statement-2 : Pyrenoids contain starch besides protein.

- (1) Statement-1 is correct but statement-2 is incorrect
- (2) Statement-1 is incorrect but statement-2 is correct
- (3) Both statement-1 and 2 are correct
- (4) Both statement-1 and 2 are incorrect

111. Assertion : The members of rhodophyceae are commonly called red algae.

Reason : Red algae have predominance of the red pigment, r-phycoerythrin in their body.

- (1) Both Assertion and Reason are correct and Reason is the correct explanation of Assertion
- (2) Both Assertion and Reason are correct but Reason is not the correct explanation of Assertion
- (3) Assertion is correct but reason is incorrect
- (4) Assertion is incorrect but Reason is correct

112. Statement-I : The capsule of mosses contains spores.

Statement-II : In mosses, spores are formed after meiosis.

- (1) Both statement-I and II are correct.
- (2) Statement-I correct but II incorrect
- (3) Statement-I incorrect but II correct
- (4) Both statement-I and II are incorrect

113. Assertion : In bryophytes, zygote produce a multicellular body called a sporophyte.

Reason : Zygote donot undergo reduction division immediately.

- (1) Both Assertion & Reason are correct & Reason is correct explanation of the Assertion.
- (2) Both Assertion & Reason are correct but Reason is not correct explanation of Assertion.
- (3) Assertion is correct but Reason is incorrect.
- (4) Assertion is incorrect but Reason is correct.

114. Which of the following is the correct sequence of structure formed during life cycle of Moss?

- (1) Gametophyte → Buds → Protonema → Spores → Sporophyte
- (2) Sporophyte → Spores → Protonema → Buds → Gametophyte
- (3) Sporophyte → Zygote → Buds → Spores → Gametophyte
- (4) Gametophyte → Zygote → Sporophyte → Embryo → Buds

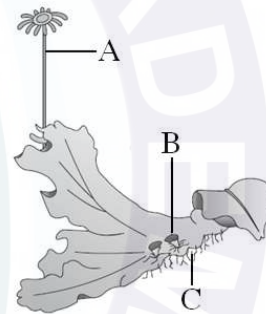
115. Which of the following characters are true for *Marchantia* ?

- (a) It is a moss.
- (b) Gemma cups are located on its thalli
- (c) It is the leafy member of liverworts
- (d) Its plant body is thalloid.

Options :

- (1) a and c only
- (2) b and c only
- (3) b and d only
- (4) a, b and d only

116. Identify labelling A, B and C in figure given below and choose the correct option :-



	A	B	C
(1)	Antheridiophore	Gemma cup	Rhizoids
(2)	Archegoniophore	Gemma cup	Roots
(3)	Antheridiophore	Rhizoids	Gemma cup
(4)	Archegoniophore	Gemma cup	Rhizoids

117. Which of the following is not true for protonema of moss ?

- (a) Creeping
- (b) Non-Green
- (c) Unbranched
- (d) Filamentous
- (e) Develops from gamete

Options :

- (1) a and d only
- (2) a, d and e only
- (3) b and d only
- (4) b, c and e only

- 118.** How many of the following statements are true?
 (a) No marine algae is used as a food.
 (b) Majority of the red algae are marine.
 (c) Red algae reproduce asexually by motile spores
 (d) Leaf-like photosynthetic organ in brown algae is called frond.

Option :

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

- 119.** Root first originated in :

- (1) Bryophyta
 (2) Pteridophyta
 (3) Algae
 (4) Gymnosperm

- 120.** Independent alternation of generation is found in -

- (1) Moss (2) *Furaria*
 (3) Fern (4) *Cycas*

- 121.** Which group includes green leaf microphyllous plants -

- (1) Fern (2) *Lycopodium*
 (3) *Pteridium* (4) *Dryopteris*

- 122.** In pteridophyta meiosis takes place in

- (1) Prothallus (2) Zygote
 (3) Spore mother cell (4) Gametangia

- 123.** Heterospory is found in :

- (1) *Salvinia* (2) *Selaginella*
 (3) *Azolla* (4) All of the above

- 124.** Evolution of seed habit started in which plant group :-

- (1) Algae (2) Bryophyta
 (3) Pteridophyta (4) Gymnosperm

- 125.** Which is the dominant phase of pteridophyta ?

- (1) Zygote (2) Gametes
 (3) Gametophyte (4) Sporophyte

- 126.** Find out incorrect statements from the following ?

- (1) Majority of pteridophytes are homosporous
 (2) *Selaginella* and *Salvinia* are heterosporous pteridophyta
 (3) In *Selaginella* leaves are small (microphylls)
 (4) Male gametophyte in pteridophytes is archegonium

- 127.** Select the correct match ?

- (1) *Selaginella* - Macrophylls
 (2) Fern - Microphylls
 (3) Gametophyte (Pteridophyte) - Prothallus
 (4) *Salvinia* - Homosporous

- 128.** How many of the following are the examples of pteropsida ?

Pteris, Marsilea, Selaginella, Equisetum

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

- 129.** Identify the diagram ?



- (1) *Equisetum* (2) *Salvinia*
 (3) *Selaginella* (4) Fern

- 130.** Find the incorrect match -

- (1) Sporophyll - diploid (2n)
 (2) Prothallus - Haploid (n)
 (3) Spore mother cell - Haploid (n)
 (4) Archegonia - Haploid (n)

- 131.** Sexual reproduction in pteridophyte is :-

- (1) Oogamous type (2) Isogamous type
 (3) Anisogamous type (4) All of the above

132. Select the mismatch :-

- (1) *Pinus* Dioecious
- (2) *Selaginella* - Heterosporous
- (3) *Cycas* - Dioecious
- (4) *Equisetum* - Homosporous

133. Read the following statements and select the correct option :




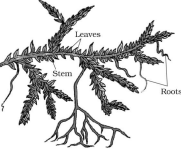
- (1) All gymnosperm are heterosporous
- (2) In *pinus*-5 cells and in *cycas*-6 cells are present in mature male gametophyte.
- (3) In *cycas* male gametes are nonmotile
- (4) In *cycas* male cone is absent

134. How many plants in the list given below are related to gymnosperm ?

Cycas, *Pteris*, *Fern*, *Ginkgo*, *Cedrus*

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

135. Find out the incorrect match ?

(1)	(A)		<i>Salvinia</i>
(2)	(B)		<i>Pinus</i>
(3)	(C)		Angiosperm
(4)	(D)		Fern

SECTION - B (BOTANY)

136. Fusion between large, non-motile female gamete and smaller motile male gamete in *Volvox* is termed as :-

- (1) Isogamous
- (2) Anisogamous
- (3) Oogamous
- (4) Both isogamous and anisogamous

137. Which of the following pigment is absent in the members of phaeophyceae?

- (1) Chlorophyll-a (2) Chlorophyll-c
- (3) Phycoerythrin (4) Fucoxanthin

138. The members of red algae reproduce sexually by :-

- (1) Fragmentation
- (2) Non-motile spores
- (3) Motile gametes
- (4) Non-motile gametes

139. Which of the following is not a moss ?

- (1) *Funaria* (2) *Polytrichum*
- (3) *Sphagnum* (4) *Marchantia*

140. Which of the following character is not related to brown algae ?

- (1) Presence of cellulosic cell wall
- (2) Presence of gelatinous coating of carrageen
- (3) Plant body usually attached to substratum by hold fast
- (4) Presence of pear-shaped biflagellated zoospores

141. From the list given below, how many of them belongs to green algae and brown algae respectively?

Volvox, *Laminaria*, *Porphyra*, *Ulothrix*, *Fucus*, *Chara*, *Polysiphonia*

- (1) 3, 2 (2) 3, 3 (3) 2, 3 (4) 3, 4

142. Which of the following characters are common in Algae and bryophytes?

- (a) Photosynthetic nature
- (b) Zygotic meiosis
- (c) Multicellular sex organs
- (d) Vegetative reproduction by fragmentation
- (e) Gamete formation

Options :

- (1) a, b, c and d only (2) a, c d and e only
- (3) b, c and e only (4) a, d and e only

143. Smallest Angiosperm is :-

- (1) *Eucalyptus* (2) Wheat
- (3) Grass (4) *Wolffia*

144. In angiosperm embryo sac :-

- (1) 7-celled and 8 nucleated
- (2) 8-celled and 7-nucleated
- (3) 5-celled and 6-nucleated
- (4) 6-celled and 5-nucleated

145. When the male and female cones are produced on same tree, the member is known as :-

- (1) Dioecious (2) Monoecious
- (3) Both (1) and (2) (4) None of these

146. Which plant group is called vascular cryptogames ?

- (1) Bryophyta (2) Gymnosperm
- (3) Algae (4) Pteridophyta

147. Match the column :-

	Column-I		Column-II
(A)	Psilopsida	(i)	<i>Equisetum</i>
(B)	Lycopsida	(ii)	<i>Psilotum</i>
(C)	Sphenopsida	(iii)	<i>Pteris</i>
(D)	Pteropsida	(iv)	<i>Selaginella</i>

Option :

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

148. **Assertion** :- *Salvinia* and *Selaginella* are heterosporous pteridophytes.

Reason : *Salvinia* and *Selaginella* form two types of spores.

- (1) Assertion correct and Reason is incorrect.
- (2) Assertion incorrect and Reason is correct.
- (3) Both Assertion and Reason are correct and reason is correct explanation of assertion.
- (4) Both Assertion and Reason are incorrect.

149. Given diagram is equisetum, identify the labelling A ?



- (1) A → Branch
- (2) A → Rhizome
- (3) A → Strobilus
- (4) A → Node

150. *Cycas* has two cotyledons but not included in angiosperms because of :-

- (1) Circinate vernation
- (2) Pinnately compound leaf
- (3) Naked ovule
- (4) Presence of roots

SECTION - A (ZOOLOGY)

- 151.** Which of the following cell type is capable of giving rise to other cell types in sponges?
- (1) Archaeocytes
 - (2) Pinacocytes
 - (3) Choanocyte
 - (4) Porocyte
- 152.** Which of the following is not applicable to coelenterates ?
- (1) Choanocytes
 - (2) Coelenteron
 - (3) Radial symmetry
 - (4) Nematoblasts
- 153.** Function of contractile vacuole in protozoa is
- (1) Osmoregulation
 - (2) Digestion of food
 - (3) Respiration
 - (4) All of these
- 154.** Which of the following is commonly known as bath sponge ?
- (1) Euplectella
 - (2) Sycon
 - (3) Spongilla
 - (4) Euspongia
- 155.** Which of the following class of protozoa is totally parasitic ?
- (1) Ciliata
 - (2) Sporozoa
 - (3) Sarcodina
 - (4) Mastigophora
- 156.** Gastrovascular cavity is the characteristic of
- (1) Hydra
 - (2) Spongilla
 - (3) Ctenoplana
 - (4) Both 1 and 3
- 157.** Amphiblastula and parenchymula larval stages are found in the
- (1) Coelenterata
 - (2) Platyhelminthes
 - (3) Porifera
 - (4) None of these
- 158.** Most appropriate term designate to the life cycle of Obelia is
- (1) Neoteny
 - (2) Metagenesis
 - (3) Metamorphosis
 - (4) Diapedasis
- 159.** The phylum of comb jelly is
- (1) Mollusca
 - (2) Echinodermata
 - (3) Coelenterata
 - (4) Ctenophora
- 160.** Brain coral is :
- (1) Obelia
 - (2) Meandrina
 - (3) Gorgonia
 - (4) Pennantula
- 161.** Solenocytes and nephridia are respectively found in
- (1) Platyhelminths and Annelids
 - (2) Annelids and Nematoda
 - (3) Cnidaria and Annelida
 - (4) Mollusca and Annelida
- 162.** The free living Platyhelminthes are :
- (1) Planaria
 - (2) Fasciola
 - (3) Schistosoma
 - (4) Taenia
- 163.** Miracidium larva occurs in the life history of
- (1) Round worm
 - (2) Liver fluke
 - (3) Earthworm
 - (4) Tapeworm
- 164.** The scientific name of pin worm or seat worm is
- (1) Trichinella
 - (2) Ancylostoma
 - (3) Enterobius vermicularis
 - (4) Wuchereria
- 165.** Ladder like Nervous system is the characteristic of :
- (1) Platyhelminthes
 - (2) Porifera
 - (3) Annelida
 - (4) Aschelminthes

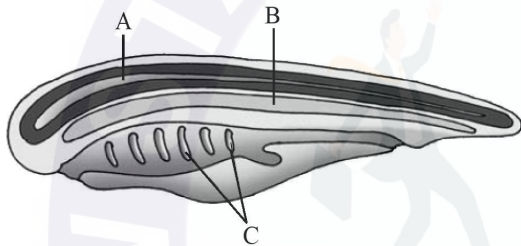
166. Roundworms differ from flatworms in having a

- (1) Circulatory system
- (2) Pseudocoel
- (3) Dorsal nerve cord
- (4) Circular muscle layer

167. Which of the following animal is Dioecious is :

- (1) Earthworm
- (2) Taenia
- (3) Euspongia
- (4) Ascaris

168. Identify the structures A,B,C and choose the right option in following diagram :-



	A	B	C
(1)	Nerve cord	Notochord	Gill slits
(2)	Gill slits	Nerve cord	Notochord
(3)	Nerve cord	Gill slits	Noto chord
(4)	Notochord	Nerve cord	Gill slits

169. File like rasping organ radula for feeding is present in :-

- (1) Arthropoda
- (2) Annelida
- (3) Mollusca
- (4) Echinodermata

170. Which one of the following pair is correctly matched ?

- (1) Echinus - sea cucumber
- (2) Asterias - Brittle star
- (3) Cucumaria - sea urchin
- (4) Antedon - sea lily

171. Identify the following animal & this belongs to which phylum/subphylum.



- (1) Ascidia, urochordata
- (2) Balanoglossus, Hemichordata
- (3) Nereis, Annelida
- (4) Octopus, Mollusca

172. In body of which animal electric organ is present?

- (1) Trygon
- (2) Torpedo
- (3) Pristis
- (4) Scoliodon

173. Out of following which fishes belongs to osteichthyes :-
Exocoetus, carcharodon, pristis hippocampus, labeo, Trygon, catla.

- (1) Three
- (2) Four
- (3) Five
- (4) Six

174. Airbladder which helps in respiration present in:-

- (1) Cartilagenous fishes
- (2) Bony fishes
- (3) Lung fishes
- (4) Jaw less fishes

175. Which member of amphibia is limbless ?

- (1) Bufo
- (2) Hyla
- (3) Salamander
- (4) Ichthyophis

176. Identify the following animal, larva of this animal is :-



- (1) Rana, Tadpole
- (2) Salamander, Axolotal
- (3) Petromyzon, Ammocoete
- (4) Balanoglossus, Tornaria

177. Which of following pair is correctly matched ?

- (1) Exocoetus - sea horse
- (2) Clarias - Rohu
- (3) Hippocampus - Flying fish
- (4) Betta - Aquarium fish

178. Chelone belongs to which class ?

- (1) Pisces
- (2) Amphibia
- (3) Reptelia
- (4) Aves

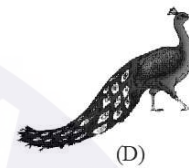
179. In amphibian cloaca is common chamber for :-

- (1) Alimentary canal + urinary tract
- (2) Alimentary canal + Reproductive tract
- (3) Alimentary canal + Respiratory tract
- (4) Alimentary canal + urinary tract + Reproductive tract

180. Out of following which animal is non poisonous snake :-

- (1) Chelone
- (2) Draco
- (3) Sphenodon
- (4) Python

181. Identify the following birds A, B, C and D :-



	A	B	C	D
(1)	Struthio	Pavo	Neophron	Psittacula
(2)	Psittacula	Struthio	Pavo	Neophron
(3)	Neophron	Struthio	Psittacula	Pavo
(4)	Pavo	Psittacula	Struthio	Neophron

182. Retrogressive metamorphosis is present in :-

- (1) Balanoglossus
- (2) Ascidia
- (3) Branchiostoma
- (4) Petromyzon

183. In cartilagenous fishes copulatory organ clasper is modification of :-

- (1) Pectoral fin
- (2) Pelvic fin
- (3) Dorsal fin
- (4) Caudal fin

184. Which one of the following pair is correctly matched ?

- (1) Exocoetus - Flying fish
- (2) Hippocampus - sea lion
- (3) Scoliodon - cat fish
- (4) Pristis - sting ray

185. In which animal notocord is extends from head to tail :-

- (1) Saccoglossus
- (2) Ascidia
- (3) Branchiostoma
- (4) Balanoglossus

SECTION - B (ZOOLOGY)

186. Radial symmetry is usually exhibited by which animal :

- (1) Pila
- (2) Hydra & spongilla
- (3) Asterias
- (4) Cockroach

187. Which one is not typical to all Porifers

- (1) Perforated body
- (2) Choanocytes
- (3) External fertilisation
- (4) Osculum

188. Which of the following do not have polyp form

- (1) Hydra
- (2) Aurellia
- (3) Adamsia
- (4) All the above

189. Pleurobrachia is :

- (1) Herbivorous
- (2) Sanguivore
- (3) Carnivorous
- (4) Omnivorous

190. Trochophor is the larva of :

- (1) Aschelminthes
- (2) Mollusca
- (3) Ctenophora
- (4) Arthropoda

191. Canal system is found in

- (1) Amoeba
- (2) Paramecium
- (3) Sycon
- (4) Hydra

192. Syncytial epidermis is present in

- (1) Ascaris
- (2) Cockroach
- (3) Earthworm
- (4) Housefly

193. One of the following is not a nematode parasite

- (1) Trichinella
- (2) Ascaris
- (3) Dracunculus
- (4) Schistosoma

194. Read the following statements carefully from A to D.

- (A) Mouth is located ventrally
- (B) Notochord persistent throughout life
- (C) Skin containing minute placoid scales
- (D) Air bladder present which regulate buoyancy

For cartilagenous fishes how many statements are incorrect ?

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

195. Read the following statements from A-D :-

- (A) All animals ectoparasites on few fishes
- (B) Circular mouth without jaw
- (C) In their body scales and paired fins absent
- (D) Circulatory system closed type

These statements are correct for which class.

- (1) Chondrichthyes
- (2) Osteichthyes
- (3) Cyclostomata
- (4) Amphibia

196. Read the following statement from A → D.

- (A) Body is divided into head and trunk
- (B) Skin is moist without scales
- (C) Respiration by gills, lungs, and through skin
- (D) Fertilization is internal

How many statements are correct for *Rana tigrina*.

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

197. Read the following statements from A-D ?

- (A) Forelimb modified into wings.
- (B) Skin is dry without glands.
- (C) Digestive tract has additional chambers, the crop and gizzard.
- (D) They are warm blooded.

These statements are correct for which animal ?

- (1) Vipera
- (2) Columba
- (3) Labeo
- (4) Pteropus

198. How many fishes in list given below have bony endoskelton :-

Scoliodon, Exocoetus, Pristis, Hippocampus, Labeo, Carcharodon, Clarias, Trygon, Pterophyllum, Catla.

- (1) Five
- (2) Six
- (3) Seven
- (4) Eight

199. What is common character among pisces, amphibian and reptiles ?

- (1) All are poikilothermal
- (2) All have scales on body
- (3) All have gills for respiration
- (4) All belongs to amniota group

200. Read the following statements A-D :-

- (A) Members are worm like and marine
- (B) Body divided into probosis, collar and trunk
- (C) Respiration by gills
- (D) Flame cells are excretory organs

How many statements are incorrect for Balanoglossus.

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