21/03/2024

Phase-I
CODE-A

Aakash
Medical | IIT-JEE | Foundations

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FINAL TEST SERIES for NEET-2024

MM : 720 **Test -I** **Time : 3 Hrs. 20 Mins.**

Topics covered :

Physics : Units & Measurements, Motion in a Straight Line, Motion in a Plane

Chemistry : Some Basic Concepts of Chemistry, Structure of Atom, Classification of Elements and Periodicity in Properties

Botany : The Living World, Biological Classification, Plant Kingdom

Zoology : Animal Kingdom

Instructions :

(i) There are two sections in each subject, i.e. Section-A & Section-B. You have to attempt all 35 questions from Section-A & only 10 questions from Section-B out of 15.

(ii) Each question carries 4 marks. For every wrong response 1 mark shall be deducted from the total score. Unanswered / unattempted questions will be given no marks.

(iii) Use blue/black ballpoint pen only to darken the appropriate circle.

(iv) Mark should be dark and completely fill the circle.

(v) Dark only one circle for each entry.

(vi) Dark the circle in the space provided only.

(vii) Rough work must not be done on the Answer sheet and do not use white-fluid or any other rubbing material on the Answer sheet.

PHYSICS

Choose the correct answer :

SECTION - A

1. When a body moves along a straight line in one particular direction then

(1) Distance < |displacement|

(2) Distance > |displacement|

(3) Distance = |displacement|

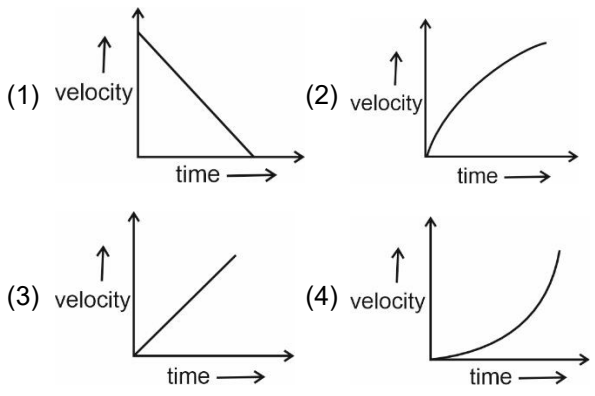
(4) Distance ≠ |displacement|

2. A particle covers first one third distance with speed 3 m/s and remaining distance with speed 6 m/s. Then the average speed of the particle is

(1) 5 m/s (2) 4.5 m/s

(3) $\frac{9}{4}$ m/s (4) $\frac{1}{2}$ m/s

3. In figures, variation of velocity of a body with respect to time is depicted. Choose the curve in which acceleration goes on decreasing w.r.t time.



4. Choose the **incorrect** statement among the following (Assume air resistance to be negligible)
   (1) In case of motion under gravity, the speed with which a body is projected vertically upwards is equal to the speed with which it comes back to point of projection
   (2) In case of motion under gravity when a particle is projected vertically up the magnitude of velocity at any point on the path is same whether the body is moving in upward or downward direction
   (3) For a body dropped from some height the graph of velocity with respect to time is a straight line parallel to time axis
   (4) A heavy and light body when released from the same height, reach the ground simultaneously and with same velocity

5. An insect crawling up a wall crawls 6 cm up in first second and then slides 4 cm down in next second. It again crawls up 6 cm in third second and again slides 4 cm downwards in 4th second. How long will insect take to reach a hole in wall at a vertical height of 24 cm from starting point?
   (1) 20 s (2) 27 s
   (3) 25 s (4) 19 s

6. The angle subtended at the centre of a circle by an arc equal in length to the radius of the circle is
   (1) 1 steradian (2) 1 radian
   (3) 1 degree (4) 1 minute

7. The dimensions of b if F represents the force and x represents the position in the given relation $F = a \log\left\lfloor \frac{b}{x} \right\rfloor$ is
   (1) $[M^0L^0T^0]$ (2) $[M^0L^1T^0]$
   (3) $[M^1L^1T^{-2}]$ (4) $[M^1L^1T^{-3}]$

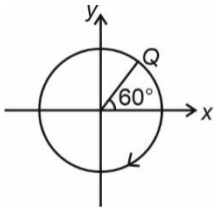
8. Ajay is running on a straight horizontal road on a rainy day, with a speed 4 m/s. He observes that the rain is falling down vertically with a speed of 3 m/s. The actual speed of raindrops is
   (1) 2 m/s (2) 4 m/s
   (3) 7 m/s (4) 5 m/s

9. A physical quantity y depends on quantities x and z as $y = Ax + B \sin(Cz)$, where A, B and C are constants. Which of the following have same dimensions?
   (1) y and Ax (2) y and B
   (3) C and z^{-1} (4) All of these

10. Pick out the **incorrect** statement among the following statements.
   (1) Systematic errors can be minimised by improving experimental techniques
   (2) Instrumental errors are due to imperfect design of instrument
   (3) Systematic errors are those errors that tend to be in one direction
   (4) Least count error belongs to category of random error only

11. A police jeep is chasing a culprit going on motorcycle. The motorcycle crosses a turning at 20 m/s. The jeep follows at speed of 30 m/s, crossing the turning 6 second later than motorcycle. If they travel at constant speeds, how far from turning point jeep catches up the motorcycle?
   (1) 40 m (2) 50 m
   (3) 360 m (4) 120 m

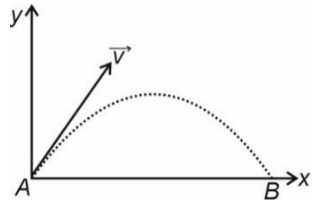
12. A particle is moving in a circle of radius 3 m with constant angular velocity of 2 rad/s in clockwise direction as shown. The acceleration (in m/s^2) of particle at point Q is



   (1) $\left(-6\hat{i} - 6\sqrt{3}\hat{j}\right)$
   (2) $\left(2\hat{i} + 3\sqrt{3}\hat{j}\right)$
   (3) $\left(4\hat{i} + 6\hat{j}\right)$
   (4) $\left(5\hat{i} + 2\hat{j}\right)$

13. The velocity of a particle projected in vertical plane at the initial point A is $\vec{v} = \left(4\hat{i} + 6\hat{j}\right)$ m/s. Its velocity (in m/s) at point B is (Assume air resistance to be negligible).

Space for Rough Work



(1) $-4\hat{i}-6\hat{j}$ (2) $4\hat{i}-6\hat{j}$

(3) $2\hat{i}+3\hat{j}$ (4) $-2\hat{i}+3\hat{j}$

14. The mass of a box measured by a grocer's balance is 3.3 kg. Two gold piece of masses 10.15 g and 10.17 g are added to the box. The total mass of the box is

(1) 3.3 kg

(2) 3.2 kg

(3) 3.4 kg

(4) 3.6 kg

15. Some physical quantity are given in Column-I while their dimensions are given in Column-II. Match the correct entries in Column-I with corresponding correct entries in Column-II.

	Column – I		**Column – II**
a.	Angular momentum	(i)	$[ML^2T^{-1}]$
b.	Density	(ii)	$[ML^2T^{-2}]$
c.	Pressure	(iii)	$[ML^{-3}]$
d.	Energy	(iv)	$[ML^{-1}T^{-2}]$

(1) a(i), b(ii), c(iii), d(iv) (2) a(ii), b(i), c(iv), d(iii)

(3) a(i), b(iii), c(iv), d(ii) (4) a(iv), b(i), c(iii), d(ii)

16. An object is dropped from the top of a tower. It travels a distance of 5 m in the first second and 25 m in the last second. The speed with which object strikes the ground is (g = 10 m/s^2)

(1) 30 m/s (2) 50 m/s

(3) 40 m/s (4) 20 m/s

17. A player throws a ball such that maximum range of ball is 240 m then maximum height attained by ball under same condition is

(1) 600 m (2) 60 m

(3) 24 m (4) 1200 m

18. The horizontal range of a projectile fired at an angle of 15º with horizontal is 30 m. If it is fired at an angle of 45º angle with the vertical with same speed then its range will be

(1) 90 m (2) 120 m

(3) 60 m (4) 100 m

19. Person *A* is moving with speed 10 km/h along west and *B* is moving with same speed along south. The velocity of *A* with respect to *B* is (take + x axis towards east and + *y* axis towards north)

(1) $10\hat{i}$ (2) $10\hat{i}+10\hat{j}$

(3) $-10\hat{i}+10\hat{j}$ (4) $10\hat{i}+20\hat{j}$

20. A boat takes 1 hour to go 8 km and come back in still water. If water starts moving with 4 km/h then the time taken to go 5 km upstream and return back is

(1) 2 h (2) $\frac{2}{3}$ h

(3) $\frac{9}{10}$ h (4) $\frac{5}{2}$ h

21. A wire has a mass (0.3 ± 0.003) gm, radius (0.5 ± 0.005) mm and length (6 ± 0.06) cm. The percentage error in the measurement of density is

(1) 2 % (2) 3 %

(3) 4 % (4) 5 %

22. In a vernier calliper it was found that the 4th division of main scale coincides with 5th division of vernier scale (given 1 MSD = 1 unit). The least count of vernier calliper is

(1) $\frac{2}{5}$ unit (2) $\frac{1}{5}$ unit

(3) $\frac{3}{8}$ unit (4) $\frac{5}{2}$ unit

23. Which of the following statements among the given options may be **incorrect**?

(1) Velocity may be positive, negative or zero

(2) Direction of velocity is always in the direction of change in position

(3) Speedometer measures the instantaneous speed of a vehicle

(4) Rate of change of speed is momentum

Space for Rough Work

24. The displacement of a particle moving along a straight line is given by $s = 5t^2 + 5t - 10$. (Here s is in cm and t is in s). The initial velocity of the particle is
(1) 10 cm/s (2) 5 m/s
(3) 5 cm/s (4) 6 m/s

25. A projectile is thrown from a point in a horizontal plane such that the horizontal and vertical component of initial velocity is 10 m/s and 20 m/s respectively. Its horizontal range is
(1) 20 m (2) 10 m
(3) 40 m (4) 60 m

26. The dimensional formula for pressure gradient is
(1) $[ML^{-2}T^{-3}]$ (2) $[ML^{-2}T^{-3}]$
(3) $[ML^2T^2]$ (4) $[ML^{-2}T^{-2}]$

27. Which among the following statements is **incorrect**?
(1) Accuracy of measurement is the closeness of observed value to the true value
(2) As we reduce the errors, measurement's accuracy increases
(3) Smaller is the least count, greater is the precision
(4) More accurate measurement must have high precision

28. A motor boat covers the distance between two spots in river in 8 h and 12 h downstream and upstream respectively. What is time required by boat to cover this distance in still water?
(1) 10 h (2) 10.8 h
(3) 9.6 h (4) 9 h

29. Water drops are falling from water tap in regular time interval. When first drop reaches the ground third drop is about to leave. If height of water tap from ground is 8 m, then height of second drop from ground is
(1) 2.5 m (2) 4 m
(3) 6 m (4) 2 m

30. A lift undergoes the first part of its ascent from the lowest position with uniform acceleration x and the remaining to the topmost position with uniform retardation $2x$. If t is the time of ascent, then the depth of the shaft is
(1) $\frac{xt^2}{2}$ (2) $2xt^2$
(3) $\frac{3}{4}xt^2$ (4) $\frac{xt^2}{3}$

31. A ball is thrown vertically upward with a velocity of 20 m/s from top of a tower 25 m high. What is the maximum height reached by ball from ground?
(g = 10 m/s^2)
(1) 30 m (2) 40 m
(3) 45 m (4) 75 m

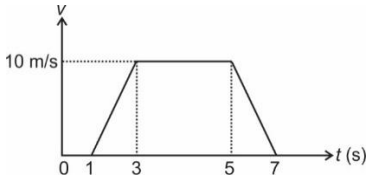
32. From top of a tower 100 m high, a ball is dropped and at the same time another ball is projected vertically up from ground with speed of 40 m/s. The two balls will meet at (g = 9.8 m/s^2)
(1) 56 m above ground
(2) 30.6 m below the top
(3) 40.8 m below the top
(4) 40.8 m above ground

33. **Assertion (A):** Light year and astronomical unit, both measure time.
Reason (R): Both light year and astronomical unit are very small units.
In the light of above statement choose the correct option.
(1) Both Assertion & Reason are true and the reason is the correct explanation of the assertion
(2) Both Assertion & Reason are true and the reason is not the correct explanation of the assertion
(3) Assertion is true statement but Reason is false
(4) Both Assertion and Reason are false statements

34. The acceleration of a body starting from rest varies with time according to the equation $a = 3t + 4$, where a is in ms^{-2} and t in s. The velocity of body at t = 2 s will be
(1) 18 m/s (2) 14 m/s
(3) 12 m/s (4) 20 m/s

Space for Rough Work

35. The velocity (v) – time (t) graph for a particle is shown. The average velocity of particle during first 7 seconds is



(1) 4.2 m/s (2) 6.5 m/s
(3) 5.7 m/s (4) 5.0 m/s

SECTION - B

36. Two ends of a train moving at constant acceleration pass a point with speed of 12 m/s and 24 m/s respectively. The speed with which middle point of the train passes the same point is (approximately)

(1) 16 m/s (2) 19 m/s
(3) 22 m/s (4) 20 m/s

37. The area under acceleration-time graph gives

(1) Velocity of object
(2) Speed of object
(3) Change in velocity
(4) Change in acceleration

38. A particle moving along a straight line has velocity v m/s and it covers a distance x along positive x axis, the relation between two quantities is $v = \sqrt{49 + x}$. Its acceleration is

(1) 1 m/s² (2) 7 m/s²
(3) 2 m/s² (4) 0.5 m/s²

39. A unit vector along the direction of resultant of two vectors $\vec{A}$ and $\vec{B}$, where $\vec{A} = \hat{i} + 2\hat{j} - 4\hat{k}$ and $\vec{B} = -2\hat{i} + 3\hat{j} + \hat{k}$, is

(1) $\frac{\hat{i} + 2\hat{j} - 4\hat{k}}{\sqrt{35}}$ (2) $\frac{-\hat{i} + 5\hat{j} - 3\hat{k}}{\sqrt{35}}$
(3) $\frac{-\hat{i} + 5\hat{j} - 3\hat{k}}{\sqrt{29}}$ (4) $\frac{-\hat{i} + 5\hat{j} - 3\hat{k}}{\sqrt{25}}$

40. The position vector of a particle at any time is given as $\vec{r} = 3t\,\hat{i} + 2t^2\hat{j} + 5\hat{k}$. The direction of velocity of particle at t = 1 is

(1) Making an angle of 53° with x-axis
(2) Making an angle of 37° with x-axis
(3) Making an angle of 30º with y-axis
(4) Making an angle of 45º with x-axis

41. Which of the following is correct conclusion regarding position vector and acceleration vector of a body executing uniform circular motion?

(1) Both of them are perpendicular to each other
(2) Both of them are along same direction
(3) Both of them are in opposite direction
(4) Both of them may be inclined at any angle

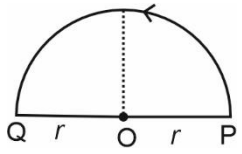
42. The equation of path of projectile is given by $y = \sqrt{3}x - 6x^2$, then the angle of projection of projectile from vertical is

(1) 60° (2) 30°
(3) 45° (4) 90°

43. The relation between power P, distance x and time t is given as $P = \frac{b + x^2}{at}$. The dimensions of b/a is

(1) $[ML^2T^{-2}]$ (2) $[M^{-1}LT^{-2}]$
(3) $[M^{-1}L^2T^{-2}]$ (4) $[ML^{-2}T^{-2}]$

44. A particle start moving from point P and reaches at point Q along a semicircular path as shown, then the displacement of particle is



(1) $\frac{r}{\sqrt{2}}$ (2) πr
(3) $2r$ (4) $2\pi r$

Space for Rough Work

45. A truck moves such that its velocity is a linear function of time. The curve acceleration vs time and velocity vs time respectively will be
(1) Straight line, straight line
(2) Straight line, parabola
(3) Parabola, straight line
(4) Parabola, parabola

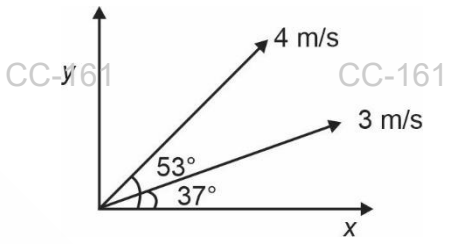
46. The motion of a particle is described by an equation $x = at + bt^2$ where $a = 15$ cm/s and $b = 3$ cm/s^2. The instantaneous speed of particle at $t = 3$ s is
(1) 32 cm/s (2) 16 cm/s
(3) 18 cm/s (4) 33 cm/s

47. A boy walks on a straight road from his home to market, 3 km away, with speed of 6 km/h. He stays at market for 20 minute and returns back home with speed of 6 km/h. His average speed over round trip is
(1) 6 km/h (2) 5 km/h
(3) 4.9 km/h (4) 4.5 km/h

48. The position x of a particle with respect to time along x-axis is given by equation $x = 9t^2 - t^3$, where x is in meter and t in second. What will be position of particle when it achieves maximum speed along +ve x-axis?
(1) 54 m (2) 42 m
(3) 32 m (4) 46 m

49. The speed of the projectile at maximum height is $\frac{1}{\sqrt{2}}$ times initial speed. If the range of the projectile is N times the maximum height attained by it, then N equals
(1) 2 (2) 3
(3) 4 (4) 5

50. Two particles are projected simultaneously with different speed from same point in a plane as shown in figure. The **incorrect** statement is



(1) Their relative acceleration is zero
(2) Their relative velocity is constant
(3) The magnitude of relative velocity along horizontal direction is non zero.
(4) The magnitude of relative velocity along vertical direction is non zero

CHEMISTRY

SECTION - A

51. Number of urea molecules present in 200 mL of 1 M aqueous solution of urea is
(1) 1.2×10^{26} (2) 1.2×10^{24}
(3) 6.0×10^{21} (4) 1.2×10^{23}

52. Empirical formula of a hydrocarbon that contains 20% hydrogen is
(1) C_2H_3 (2) CH_4
(3) CH_3 (4) CH

53. If the mass ratio of carbon dioxide and methane is 5 : 3 then the ratio of their number of atoms is
(1) 5 : 3 (2) 8 : 5
(3) 4 : 11 (4) 2 : 7

54. The pair of series of spectral lines for hydrogen atom which falls in infrared region is
(1) Lyman and Pfund
(2) Paschen and Brackett
(3) Balmer and Brackett
(4) Lyman and Balmer

55. Correct order of energy of 2s orbital of the given atoms is
(1) K > Na > Li > H (2) Li > Na > K > H
(3) H > Li > Na > K (4) H > K > Na > Li

56. The pair which contains representative elements is
(1) Cd and Hg (2) Sn and Os
(3) In and Bi (4) Br and Ti

Space for Rough Work

57. Consider the following statements about photoelectric effect
    (a) The number of electrons ejected is proportional to the intensity of light
    (b) There is no time lag between the striking of light beam and the ejection of electrons from metal surface
    (c) Work function of magnesium is greater than copper
    The correct statements are
    (1) (a) and (b) only (2) (b) and (c) only
    (3) (a) and (c) only (4) (a), (b) and (c)

58. What is the energy of one mole of photons of radiation whose wavelength is 440 nm? (Planck's constant, h = 6.6 ×10^{-34} Js)
    (1) 4.5 × 10^4 J (2) 2.7 × 10^5 J
    (3) 7.5 × 10^6 J (4) 1.2 × 10^3 J

59. Correct order of atomic radii of given elements is
    (1) Cl > S > O > F (2) S > Cl > O > F
    (3) S > Cl > F > O (4) Cl > S > F > O

60. How many grams of concentrated nitric acid solution should be used to prepare 800 mL of 1.6 M HNO_3 ? (The concentrated HNO_3 is 70% (w/w) HNO_3)
    (1) 175.5 g (2) 115.2 g
    (3) 225.8 g (4) 80 g

61. Mass of $CaCO_3$ required to react with 400 mL of 1.5 M HCl solution is
    (1) 30 g (2) 15 g
    (3) 45 g (4) 60 g

62. Select the incorrect statement.
    (1) Canal rays are positively charged particles
    (2) Cathode rays start from anode and move towards cathode
    (3) Characteristics of cathode rays do not depend upon the material of electrodes
    (4) The charge to mass ratio of canal rays depends on the gas from which these originate

63. A biomolecule contains 0.24% Mg by mass. The minimum molecular mass of the biomolecule is
    (1) 100 u (2) 1000 u
    (3) 10000 u (4) 2400 u

64. Match the atomic number given in List-I with their IUPAC official name given in List-II and choose the correct answer

List-I		List-II	
a.	107	(i)	Dubnium
b.	102	(ii)	Bohrium
c.	104	(iii)	Nobelium
d.	105	(iv)	Rutherfordium

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

65. Consider the following observations
    (a) Photoelectric effect
    (b) Variation of heat capacity of solids as a function of temperature
    (c) Black body radiation
    The observations which could be explained by particle nature of electromagnetic radiations are
    (1) (a) and (b) only (2) (b) and (c) only
    (3) (a) and (c) only (4) (a), (b) and (c)

66. Volume of CO_2(g) obtained at STP by burning 32 g of CH_4 with 64 g of oxygen is
    (1) 5.6 L (2) 11.2 L
    (3) 22.4 L (4) 44.8 L

67. If 10^{20} molecules of H_2O are removed from 18 mg of H_2O, then moles of H_2O left approximately is
    (1) 7.2 × 10^{-3} (2) 8.3 × 10^{-4}
    (3) 2.67 × 10^{-3} (4) 1.66 × 10^{-4}

68. Match the oxides given in column-I with their chemical nature given in column-II and choose the correct answer

	Column-I		**Column-II**
a.	NO	(i)	Acidic
b.	Al_2O_3	(ii)	Neutral
c.	Cl_2O_7	(iii)	Basic
d.	Na_2O	(iv)	Amphoteric

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

Space for Rough Work

69. The wavelength of light emitted when the electron in hydrogen atom undergoes transition from an energy level with n = 3 to an energy level with n = 1 is (R_H = Rydberg constant for hydrogen atom)

(1) $\frac{1}{R_H}$ (2) $\frac{2}{R_H}$

(3) $\frac{9}{8R_H}$ (4) $\frac{1}{9R_H}$

70. Minimum negative electron gain enthalpy among the following is of

(1) O (2) S

(3) Se (4) Te

71. If the density of 4M solution of NaOH is 1.25 g mL^{-1} then the (w/w)% of NaOH in the solution will be

(1) 25.4% (2) 32.4%

(3) 12.8% (4) 20%

72. If the mole fraction of urea in aqueous solution is 0.08 then the molality of urea in the solution will be

(1) 6.4 m (2) 4.8 m

(3) 2.6 m (4) 3.5 m

73. Given below are the two statements

Statement I : 0.0071 has two significant figures

Statement II : Zeros preceding to first non-zero digit are not significant

In the light of the above statements, choose the correct answer

(1) Statement I is correct but statement II is incorrect

(2) Both statement I and statement II are correct

(3) Both statement I and statement II are incorrect

(4) Statement I is incorrect but statement II is correct

74. The number of protons, electrons and neutrons in $^{193}_{77}Ir$ respectively are

(1) 77, 116 and 77 (2) 77, 77 and 116

(3) 77, 193 and 77 (4) 77, 154 and 193

75. Chlorine has two isotopes ^{35}Cl and ^{37}Cl. If the % abundance of lighter isotope is 75% then the average atomic mass of Cl atom is

(1) 36.5 u (2) 35.5 u

(3) 32.2 u (4) 36.8 u

76. Burning a small sample of hydrocarbon in oxygen gives 8.8 g CO_2 and 5.4 g H_2O. The possible molecular formula of the hydrocarbon is

(1) CH_4 (2) C_2H_6

(3) C_2H_2 (4) C_2H_4

77. Which of the following set of quantum numbers is not possible for an electron in an atom?

	n	l	m	s
(1)	3	2	–1	$+\frac{1}{2}$
(2)	3	1	–2	$-\frac{1}{2}$
(3)	4	0	0	$+\frac{1}{2}$
(4)	4	3	–2	$+\frac{1}{2}$

78. A metal sheet has work function of 5 eV. The kinetic energy of photoelectron when the metal sheet is irradiated by an electromagnetic wave of frequency 2×10^{15} Hz is ($h = 6.6 \times 10^{-34}$ Js)

(1) 5.2×10^{-19} J (2) 3.6×10^{-20} J

(3) 2.4×10^{-18} J (4) 7.2×10^{-18} J

79. The de Broglie wavelength associated with a particle of mass 100 mg moving with a velocity of 20 ms^{-1} is ($h = 6.6 \times 10^{-34}$ Js)

(1) 3.3×10^{-36} m (2) 3.3×10^{-30} m

(3) 3.3×10^{-33} m (4) 3.3×10^{-31} m

80. Orbital angular momentum of 3*d* electron is

(1) 0 (2) $\sqrt{2}\hbar$

(3) $\sqrt{6}\hbar$ (4) $\sqrt{12}\hbar$

Space for Rough Work

81. Correct order of energy of given orbitals for multielectronic species is
(1) $4f > 5d > 5p > 4d$ (2) $4f > 5d > 4d > 5p$
(3) $5p > 4d > 4f > 5d$ (4) $5d > 4f > 5p > 4d$

82. Charge to mass ratio is maximum for
(1) Electron (2) Proton
(3) Neutron (4) Alpha particle

83. Maximum number of spectral lines obtained during the transition of electron from fourth excited state to ground state in hydrogen atoms is
(1) 8 (2) 5
(3) 6 (4) 10

84. Maximum number of unpaired electrons are present in
(1) Cu (2) Cr
(3) Zn (4) Mn

85. Given below are two statements : one is labelled as Assertion (A) and other is labelled as Reason (R).
Assertion (A) : Negative electron gain enthalpy of fluorine is more than negative electron gain enthalpy of chlorine
Reason (R): Electronegativity of fluorine is more than chlorine
In the light of the above statements, choose the correct answer
(1) Both (A) and (R) are true and (R) is the correct explanation of (A)
(2) (A) is false but (R) is true
(3) (A) is true but (R) is false
(4) Both (A) and (R) are true and (R) is not the correct explanation of (A)

SECTION - B

86. Number of radial and angular nodes present in 4*p* orbital respectively are
(1) 1 and 2 (2) 2 and 1
(3) 2 and 3 (4) 3 and 2

87. The quantum number which defines the three dimensional shape of an orbital is
(1) n (2) l
(3) m (4) m_s

88. Which of the following transition results in the formation of spectral line in Balmer series of hydrogen atom?
(1) $3 \rightarrow 2$ (2) $2 \rightarrow 1$
(3) $4 \rightarrow 3$ (4) $5 \rightarrow 4$

89. Radius of 3rd excited state of Li^{2+} ion is
(a_0 = radius of 1st orbit of hydrogen atom)
(1) a_0 (2) $3a_0$
(3) $\frac{a_0}{3}$ (4) $\frac{16}{3}a_0$

90. If the energy of two different electromagnetic waves are in ratio of 1 : 2 then ratio of wave number of the two radiations are
(1) 2 : 3 (2) 1 : 2
(3) 1 : 4 (4) 4 : 1

91. If the uncertainty in the position is two times that of momentum for a moving particle then the uncertainty in the velocity of the particle will be
(1) $\frac{h}{4\pi}$ (2) $\sqrt{\frac{h}{8\pi m^2}}$
(3) $\sqrt{\frac{h}{4\pi m}}$ (4) $\frac{h}{2\pi m}$

92. Total number of electrons present in 27 g of Al^{3+} ions is
(1) $1N_A$ (2) $10N_A$
(3) $13N_A$ (4) $27N_A$

93. Correct order of ionisation enthalpy of the given elements is
(1) Li < Be < B (2) C < N < O
(3) Be < B < C (4) B < C < N

94. Given below are the two statements
Statements I : The maximum number of electrons in the shell with principal quantum number n is equal to $2n^2$.
Statements II : The maximum number of degenerate orbitals in the 3rd shell of hydrogen atom is 6.

Space for Rough Work

In the light of the above statements, choose the correct answer

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

95. Correct order of metallic nature of the given metals is
(1) K > Mg > Al > B (2) Mg > K > Al > B
(3) Mg > Al > K > B (4) B > K > Mg > Al

96. Correct order of wavelength of the given electromagnetic radiations is
(1) IR > Microwaves > Radio waves
(2) Radio waves > IR > Microwaves
(3) Radio waves > Microwaves > IR
(4) IR > Radio waves > Microwaves

97. If the electronic configuration of an element is $[Kr]5s^2 4d^{10} 5p^2$ then the element belongs to
(1) 4^{th} period, 4^{th} group (2) 4^{th} period, 14^{th} group
(3) 5^{th} period, 4^{th} group (4) 5^{th} period, 14^{th} group

98. Which of the following elements is also known as eka-aluminium?
(1) B (2) Ga
(3) Si (4) Ge

99. Li resembles diagonally with
(1) Be (2) Mg
(3) Na (4) B

100. General electronic configuration of *f*-block elements is
(1) $(n-2)f^{14}\ (n-1)d^{10}ns^2$
(2) $(n-2)f^{1-14}(n-1)d^{10}ns^2$
(3) $(n-2)f^{1-14}(n-1)d^{0-1}ns^2$
(4) $(n-2)f^{1-14}(n-1)d^{0-1}ns^{0-2}$

BOTANY

SECTION - A

101. Major pigments of Chlorophyceaen members are
(1) Chlorophyll c and phycoerythrin
(2) Chlorophyll a and d
(3) Fucoxanthin and chlorophyll a
(4) Chlorophyll a and b

102. Which of the following plants is used as a packing material for trans-shipment of living material and also provides peat?
(1) *Marchantia* (2) *Sphagnum*
(3) *Riccia* (4) *Funaria*

103. Select the imperfect fungi from the options given below.
(1) *Colletotrichum* (2) *Puccinia*
(3) *Aspergillus* (4) *Albugo*

104. *Trypanosoma* which causes sleeping sickness, belongs to the kingdom
(1) Fungi (2) Protista
(3) Plantae (4) Monera

105. In *Rhizopus,*
(a) Fruiting body ascocarp is formed
(b) Mycelium is aseptate and coenocytic
(c) Asexual spores are exogenously produced.
Choose the **correct** option.
(1) (a) and (b) only (2) (a) and (c) only
(3) (b) only (4) (b) and (c) only

106. Viroids differ from prions as the former
(1) Causes mad cow disease
(2) Has RNA of high molecular weight
(3) Consists of abnormally folded protein.
(4) Is smaller than viruses

107. Read the following statements and choose the **correct** option.
Statement A : In gymnosperms, the male and female gametophyte do not have an independent free-living existence.
Statement B : In numerical taxonomy, each character is given equal importance and at the same time hundreds of characters can be considered.

Space for Rough Work

(1) Both statements A and B are correct
(2) Both statements A and B are incorrect
(3) Only statement A is correct
(4) Only statement B is correct

108. Leafy stage of gametophyte in mosses
(1) Directly develops from a spore
(2) Is the first stage of gametophyte
(3) Bears sex organs
(4) Is creeping non-green filamentous stage

109. Read the following statements and select the **correct** option.
Assertion (A) : In *Fucus*, the sporophytic generation is represented only by one-celled zygote.
Reason (R) : *Fucus* shows haplontic life cycle pattern.
(1) Both (A) and (R) are true and (R) is the correct explanation of (A)
(2) Both (A) and (R) are true but (R) is not the correct explanation of (A)
(3) (A) is true but (R) is false
(4) Both (A) and (R) are false

110. Match List-I with List-II.

List-I	List-II
a. *Ustilago*	(i) Causes ergot disease
b. TMV	(ii) ssRNA
c. Dinoflagellate	(iii) Causes smut disease
d. *Claviceps*	(iv) Marine autotrophs

Choose the **correct** option.
(1) a(ii), b(i), c(iii), d(iv) (2) a(iv), b(iii), c(i), d(ii)
(3) a(iii), b(ii), c(iv), d(i) (4) a(i), b(ii), c(iv), d(iii)

111. Double fertilisation which includes triple fusion and syngamy is seen in
(1) Mosses (2) Flowering plants
(3) Ferns (4) Gymnosperms

112. Fungi differ from bacteria in having
(1) 70S ribosomes
(2) Chitinous cell wall
(3) Plasma membrane
(4) Prokaryotic cellular organisation

113. All of the following multiply by fragmentation, **except**
(1) Fungi (2) Filamentous algae
(3) Protonema of moss (4) Unicellular algae

114. Sexual reproduction is absent in all of these, **except**
(1) *Alternaria* (2) *Euglena*
(3) *Nostoc* (4) *Gonyaulax*

115. Mark the **incorrect** option regarding the scientific name of mango.
(1) *Mangifera* represents the genus while *indica* is a particular species
(2) It is in Latin language
(3) It is binomial name
(4) It should be underlined whether handwritten or printed

116. Which of the following organisms are **not** placed in kingdom Plantae of two kingdom classification system proposed by Linnaeus?
(1) Bacteria (2) Algae
(3) Protozoans (4) Fungi

117. Which of the following statements is **correct** for the first terrestrial plants possessing vascular tissues *i.e.* xylem and phloem?
(1) Dominant phase in life cycle is gametophytic plant body
(2) Sporangia produce spores by mitosis in spore mother cells
(3) Prothallus formed is multicelled, free living and mostly photosynthetic
(4) They do not need water for fertilization

118. Scientific names of mango and brinjal are based on agreed principles and criteria which are provided in
(1) ICZN (2) ICNB
(3) ICBN (4) ICVCN

119. Select the common characteristic of mosses and ferns.
(1) External fertilisation
(2) Diplontic life cycle pattern
(3) Gametophyte as dominant plant body
(4) Gametes formed by mitosis

Space for Rough Work

120. In certain cyanobacteria, heterocyst is found to perform special activities. Which of the following is **not true** about the heterocyst?
(1) It lacks PS-II activities
(2) It is site of nitrogenase activity
(3) It is absent in *Nostoc*
(4) It performs N_2-fixation

121. Select the **odd** one out w.r.t. taxonomic categories of wheat
(1) Poales (2) Sapindales
(3) Monocotyledonae (4) Angiospermae

122. Quick referral system in taxonomical studies is
(1) Herbarium (2) Museum
(3) Zoological park (4) Botanical garden

123. Gemmae are
(1) Non green structures
(2) Asexual buds
(3) Absent in *Marchantia*
(4) Unicellular buds

124. *Cuscuta* is
(1) An insectivorous plant
(2) A parasite
(3) A gymnosperm
(4) An autotrophic plant

125. State **true (T)** or **false (F)** to the below given statements and select the **correct** option.
(a) In majority of higher animals and plants, growth and reproduction are mutually exclusive events.
(b) Photoperiod affects reproduction in seasonal breeders, both plants and animals
(c) Fungi and microbes do not exhibit metabolism.
(d) Self consciousness is the defining feature of all living organisms.

	(a)	(b)	(c)	(d)
(1)	F	F	T	T
(2)	T	T	F	F
(3)	F	T	F	T
(4)	F	F	T	F

126. Which of the following is **not** a feature of brown algae?
(1) Food is stored in the form of mannitol
(2) Zoospores have two equal apically placed flagella
(3) Vegetative cells have a cellulosic wall usually covered on outside by a gelatinous coating of algin
(4) They are found primarily in marine habitats

127. Select the **correctly** matched pair.
(1) Sphenopsida – *Selaginella*
(2) Unbranched stem – *Cedrus*
(3) Non-motile asexual spores – *Porphyra*
(4) Largest angiosperm – *Sequoia*

128. Select the **correct** statement.
(1) *Mycoplasma* are the smallest living cells and cannot survive without oxygen
(2) Sporozoans include diverse organisms that have an infectious spore-like stage in their life cycle
(3) In lichens, mycobiont partner prepares food for its phycobiont partner
(4) The boundaries of kingdom protista are well defined

129. Museums are/have
(1) Collections of preserved plant and animal specimens for study and reference
(2) The places where wild animals are kept in protected environment under human care.
(3) The storehouse of collected living plant specimens only
(4) Collections of insects which are conserved in insect boxes after killing

130. Which of the following arrangement of taxonomic categories of housefly is **correct** in descending order?
(1) Animalia → Arthropoda → Insecta → Diptera → Muscidae → *Musca*
(2) Arthropoda → Animalia → Diptera → Insecta → Muscidae → *Musca*
(3) Animalia → Insecta → Arthropoda → Diptera → Muscidae → *Musca*
(4) Animalia → Diptera → Insecta → Arthropoda → Muscidae → *Musca*

Space for Rough Work

131. In angiosperms, embryo sac has egg apparatus which includes one egg cell and
(1) One synergid cell
(2) Two antipodal cells
(3) Two synergid cells
(4) One antipodal cell

132. Mark the **incorrect** statement.
(1) Animals are multicellular eukaryotic organisms
(2) *Mycoplasma* is insensitive to penicillin
(3) Bacteria reproduce mainly by fission
(4) Typhoid is caused by a virus

133. (a) The plant body is divided into holdfast, stipe and frond.
(b) The gametes are pyriform and bear two laterally attached flagella.
Above given statements are **true** for
(1) *Laminaria* (2) *Chara*
(3) *Polysiphonia* (4) *Marchantia*

134. The main plant body of bryophyte
(1) Is diploid
(2) Produces gametes
(3) Is not free living
(4) Is called sporophyte

135. Microphylls are found in
(1) *Dryopteris*
(2) *Selaginella*
(3) *Pteris*
(4) *Adiantum*

SECTION - B

136. All of the following are **true** for virus **except**
(1) They are non-cellular in nature
(2) They are inert crystalline structure outside the living cell
(3) Presence of both RNA and DNA in the same virus
(4) They need host cell machinery to replicate

137. _____ contains information on any one taxon.
(1) Catalogue (2) Monograph
(3) Manual (4) Flora

138. Fruiting bodies are formed by
(1) Slime moulds (2) Euglenoids
(3) Dinoflagellates (4) Diatoms

139. Which of the following stores food in the form of floridean starch?
(1) *Sargassum* (2) *Ectocarpus*
(3) *Polysiphonia* (4) *Laminaria*

140. In *Cycas*
a. Pinnate leaves persist for a few years
b. Male cones and megasporophylis are borne on different trees
c. Roots have fungal associations in the form of mycorrhiza
Choose the option having **correct** statements
(1) a and c (2) a and b
(3) c only (4) b and c

141. The process of describing the characteristic features of an organism is known as
(1) Systematics
(2) Identification
(3) Nomenclature
(4) Classification

142. An example of free living aerobic nitrogen-fixing bacteria is
(1) *Azotobacter*
(2) *Nitrosomonas*
(3) *Nitrobacter*
(4) *Rhizobium*

143. Which of the following is **not** the criteria for five kingdom system of classification given by Whittaker?
(1) Thallus organisation
(2) Mode of reproduction
(3) Cell structure
(4) Reserve food material

Space for Rough Work

144. Mark the statements as **true (T)** or **false (F)** and select **correct** option

A. Algae are of paramount importance as primary producers of energy rich compounds.

B. Both brown algae and red algae produce hydrocolloids.

C. *Chlorella* is filamentous algae used as food supplement by space travellers.

	A	B	C
(1)	T	T	F
(2)	T	F	F
(3)	F	T	T
(4)	F	F	T

145. How many of the following kingdoms possess members with cell wall?

A. Monera

B. Fungi

C. Plantae

D. Animalia

(1) Only one

(2) Only two

(3) Only three

(4) All four

146. Green algae have a rigid cell wall made of an inner layer of A and an outer layer of B. A and B respectively are

(1) Cellulose, Pectose

(2) Pectose, Cellulose

(3) Cellulose, Carrageen

(4) Pectose, Funori

147. Find the **correct** match.

(1)	*Fucus*	–	Non-motile male gametes
(2)	*Chlamydomonas*	–	Thalloid filamentous algae
(3)	*Ectocarpus*	–	Filamentous alga
(4)	*Porphyra*	–	Isogamous reproduction

148. Mark the **correct** statement about red tide.

(1) It is caused by terrestrial microorganisms

(2) Red dinoflagellates such as *Gonyaulax* are responsible for this

(3) It is due to rapid multiplication of green algae

(4) It is caused by multicellular autotroph

149. Read the following features and identify the organism on this basis.

A. Flagellum is absent

B. Has chlorophyll *a*

C. Possess rigid cell wall

D. Fixes atmospheric nitrogen as well as carbon dioxide

(1) *E. coli*

(2) Methanogens

(3) *Nostoc*

(4) Halophiles

150. All of the given are included in cytotaxonomy, **except**

(1) Chromosome number

(2) Chromosome behaviour

(3) DNA sequence

(4) Chromosome structure

Space for Rough Work

ZOOLOGY

SECTION - A

151. Which of the following is not used as the basis of animal classification?
(1) Arrangement of cells
(2) Body symmetry
(3) Habit and habitat
(4) Nature of coelom

152. Organ system level of organisation is not exhibited by
(1) *Obelia* (2) *Echinus*
(3) *Ascaris* (4) *Pheretima*

153. In open type of circulatory system, the blood is pumped out of the heart and the cells and tissues
(1) Take nutrients and O_2 directly from veins
(2) Are directly bathed in it
(3) Do not take nutrients and O_2 from blood
(4) Contain respiratory pigment for transport of only CO_2

154. In which of the following animals, any longitudinal plane that passes through the central axis of the body does not divide the animal into two equal halves?
(1) *Pennatula* (2) *Psittacula*
(3) *Spongilla* (4) *Macropus*

155. Choose the incorrect statement w.r.t. diploblastic, radially symmetric acoelomate animals.
(1) The cells are arranged into two embryonic layers.
(2) They have tissue level of organisation.
(3) Mesoderm is not present between ectoderm and endoderm.
(4) These are the most primitive multicellular animals.

156. Choose the correct option to complete the analogy.
Pseudocoelomate : *Ascaris* :: Coelomate : _____
(1) *Hydra* (2) *Fasciola*
(3) *Ancylostoma* (4) *Locusta*

157. **Assertion (A) :** Earthworms are segmented invertebrates.
Reason (R) : Their body is externally and internally divided into segments with a serial repetition of at least some organs.
In the light of above statements, choose the correct answer from the options given below.
(1) Both (A) and (R) are true and (R) is the correct explanation of (A)
(2) (A) is true but (R) is false
(3) Both (A) and (R) are false
(4) Both (A) and (R) are true but (R) is not the correct explanation of (A)

158. Notochord is a mesodermally derived rod-like structure formed on the dorsal side during embryonic development in
(1) Most invertebrates (2) All chordates
(3) All animals (4) Only vertebrates

159. Members of which of the following phyla exhibit radial or bilateral symmetry depending on the stages of their life cycle?
(1) Porifera (2) Echinodermata
(3) Annelida (4) Hemichordata

160. Read the following statements A and B w.r.t. sponges.
Statement A : Water enters through ostia present in the body cavity from where it goes out through spongocoel.
Statement B : They are dioecious as sexes are not separate in them.

Space for Rough Work

Choose the correct option.

(1) Both statements A and B are correct

(2) Both statements A and B are incorrect

(3) Only statement A is correct

(4) Only statement B is correct

161. The name of a phylum of diploblastic animals is derived from specialised type of stinging cells present on their tentacles. The capsule present in these cells is called

(1) Cnidoblast

(2) Cnidocyte

(3) Nematocyte

(4) Nematocyst

162. Choose the animal from the options given below that bears a pair of tentacles and has property to emit the light.

(1) *Limulus*

(2) *Pleurobrachia*

(3) *Hydra*

(4) *Nereis*

163. Hooks and suckers are parasitic adaptations found in

(1) *Ascaris* (2) *Fasciola*

(3) *Taenia* (4) *Hirudinaria*

164. Complete alimentary canal with well developed muscular pharynx and presence of excretory pore for removal of wastes was first observed in

(1) Aschelminths

(2) Annelids

(3) Arthropods

(4) Platyhelminths

165. Choose the incorrect match.

(1) *Nereis* – Parapodia

(2) *Bombyx* – Statocysts

(3) *Locusta* – Three pairs of jointed legs

(4) *Anopheles* – Vector of a protozoan

166. Choose the correct statement w.r.t. molluscs.

(1) Body of molluscs is covered by chitinous shell.

(2) Body is segmented with a distinct head, muscular foot and visceral hump.

(3) The anterior head region has sensory tentacles.

(4) They are usually dioecious, oviparous and without a larval stage during embryonic development.

167. All of the following functions are supported by water vascular system present in echinoderms, **except**

(1) Locomotion (2) Capture of food

(3) Transport of food (4) Digestion of food

168. *Balanoglossus* is similar to *Pila* in

(1) Having radial symmetry

(2) Possessing feather like gills in mantle cavity

(3) Number of body regions which consists of three parts

(4) Having stomochord in collar region

169. Which of the following is not a fundamental characteristic present in chordates?

(1) Notochord

(2) Ventral heart

(3) Dorsal hollow nerve cord

(4) Paired pharyngeal gill slits

170. Read the following statements w.r.t. chordates.

a. All protochordates are chordates but all chordates are not protochordates.

b. All gnathostomes are vertebrates but all vertebrates are not gnathostomes.

c. All chordates are vertebrates but all vertebrates are not chordates.

d. All tetrapods are gnathostomes but all gnathostomes are not tetrapods.

Choose the option with only correct statements.

(1) a and b only (2) b and c only

(3) a, b, c and d (4) a, b and d only

Space for Rough Work

171. In which of the following marine animals both hatching of young ones (larva) and death of mother takes place in fresh water?

(1) *Scoliodon*

(2) *Hippocampus*

(3) *Petromyzon*

(4) *Pristis*

172. The teeth are modified placoid scales and are backwardly directed in

(1) *Labeo*

(2) *Carcharodon*

(3) *Clarias*

(4) *Myxine*

173. Comprehend the following features.

a. Mouth is located ventrally

b. Presence of four pairs of gills covered with operculum.

c. Air bladder is present for buoyancy

d. Males pelvic fins bear claspers

How many of the feature(s) mentioned above is/are true for a marine bony fish?

(1) Four

(2) One

(3) Two

(4) Three

174. All of the following are common features of birds and insects, **except**

(1) Presence of wings for flight

(2) Additional chambers, crop and gizzard in the digestive tract

(3) Separate sexes

(4) Presence of air sacs

175. Match the column I with column II and choose the correct option.

	Column I		**Column II**
a	*Corvus*	(i)	Crawling mode of locomotion
b.	*Calotes*	(ii)	Flying fox
c.	*Ornithorhynchus*	(iii)	Pneumatic bones
d.	*Pteropus*	(iv)	Homoiothermous

(1) a(i), b(ii), c(iii), d(iv)

(2) a(iii), b(i), c(ii), d(iv)

(3) a(iii), b(ii), c(iv), d(i)

(4) a(iii), b(i), c(iv), d(ii)

176. Presence of which of the following features represents a difference between open type and closed type circulation in animals?

(1) Heart (2) Blood

(3) Heart chambers (4) Blood capillaries

177. Choose the incorrect option w.r.t. ctenophores.

(1) They are commonly known as comb jellies

(2) Digestion is both extracellular and intracellular

(3) Stinging cells are present exclusively in tentacles

(4) Reproduction takes place only by sexual means

178. Select the odd one w.r.t. metameric segmentation.

(1) Arthropods (2) Annelids

(3) Chordates (4) Molluscs

179. Complete the analogy and select the correct option

Porifers : Choanocytes : : _____ : Flame cells

(1) Ctenophores (2) Platyhelminthes

(3) Cnidarians (4) Echinoderms

Space for Rough Work

180. All of the following animals exhibit internal fertilization, **except**
(1) *Sycon* (2) *Pleurobrachia*
(3) *Taenia* (4) *Scoliodon*

181. Platyhelminthes include
(1) Only roundworms
(2) Flatworms
(3) Segmented worms
(4) Only unisexual worms

182. Read the following features carefully w.r.t. members of phylum Annelida and choose the option with only **correct** features.
a. Includes segmented worms
b. All members are bisexual.
c. Alimentary canal is complete
d. Development may be direct or indirect.
(1) a and b only
(2) b and c only
(3) a, c and d only
(4) a and d only

183. Select the **incorrect** match w.r.t. animals and their respiratory organs which participate in gaseous exchange.
(1) *Locusta* – Tracheoles
(2) *Pinctada* – Feather-like gills
(3) *Pheretima* – Moist cuticle
(4) *Psittacula* – Air sacs

184. Largest phylum in Kingdom Animalia (w.r.t. number of species) is
(1) Mollusca
(2) Arthropoda
(3) Annelida
(4) Chordata

185. Read the following statements A and B and choose the **correct** answer.

Statement-A : Members of Phylum Arthropoda are similar to that of Mollusca as both have ventral and solid nerve cord.

Statement-B : Radula is a file-like rasping organ for feeding in molluscs and echinoderms.

(1) Only statement A is correct
(2) Only statement B is correct
(3) Both statements A and B are correct
(4) Both statements A and B are incorrect

SECTION - B

186. In which one of the following, the genus name, its two characters and its class are **incorrectly** matched?

	Genus	Two characters	Class
(1)	*Petromyzon*	(i) Circular mouth without jaws (ii) Body is devoid of scales and paired fins	Cyclostomata
(2)	*Rana*	(i) Tympanum represents the ear (ii) Respiration through buccal cavity, lungs and skin	Amphibia
(3)	*Torpedo*	(i) Presence of electric organ (ii) Poikilothermous	Pisces
(4)	*Naja*	(i) Presence of poison gland (ii) Limbs are completely absent	Reptilia

187. Phylum of exclusively marine animals among the following is
(1) Mollusca
(2) Arthropoda
(3) Coelenterata
(4) Echinodermata

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188. Flying fish is the common name of
(1) *Hippocampus*
(2) *Exocoetus*
(3) *Betta*
(4) *Pterophyllum*

189. Select the **correct** match.
(1) *Labeo* – Persistent notochord
(2) *Ichthyophis* – Limbless amphibia
(3) *Bufo* – Tree frog
(4) *Pristis* – Stingray

190. Select the **incorrect** statement w.r.t. animals.
(1) All animals and their primitive relatives are multicellular.
(2) All animals do not exhibit the same pattern of organisation of body cells.
(3) Organ system in different group of animals exhibit various patterns of complexities
(4) In sponges, the cells are arranged as loose cell aggregates.

191. Select the correct option to complete the analogy.
Porifers : Pore bearing animals :: _____ : Spiny bodied animals
(1) Molluscs
(2) Echinoderms
(3) Ctenophores
(4) Cnidarians

192. Internal fertilization occurs in
(1) *Ctenoplana*
(2) *Psittacula*
(3) *Saccoglossus*
(4) *Exocoetus*

193. Animals belonging to the phylum Platyhelminthes possess
(1) Triangular and flat head
(2) Dorsoventrally flattened body
(3) Both coelom and anus
(4) A dorsal nervous system

194. Read the following statements w.r.t. members of the phylum Aschelminthes and choose the option with only **incorrect** statements.
(a) Body is circular in cross-section
(b) They are not the parasite in plants
(c) Mesoderm is present as scattered pouches in between ectoderm and endoderm
(d) They do not represent sexual dimorphism
(1) (a) and (b) (2) (b) and (c)
(3) (c) and (d) (4) (b) and (d)

195. Arthropods are **not** characterised by the presence of the
(1) Chitinous exoskeleton
(2) Jointed appendages
(3) Metameric segmentations
(4) Ventral tubular heart

196. Absence of excretory system, presence of unsegmented body and endoskeleton of calcareous ossicles are the characters of members placed in the phylum
(1) Mollusca (2) Arthropoda
(3) Chordata (4) Echinodermata

197. Select the **incorrect** match w.r.t. presence of given features.
(1) Aves – Presence of feathers
(2) Reptilia – Creeping mode of locomotion
(3) Mammalia – Presence of body hair
(4) Cyclostomata – Presence of operculated gills

198. Which of the following is **not** a mammalian feature?
(1) Homeothermy
(2) Pulmonary respiration
(3) Internal fertilization
(4) Indirect development

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199. From the list of animals given below in box, how many have only cellular level of organisation?

Euspongia, *Hydra*, *Sycon*, *Spongilla*, *Aurelia*, *Adamsia*

Select the correct option

(1) Six (2) Three

(3) Four (4) Two

200. Select the animal that is a living fossil and have jointed appendages.

(1) *Limulus*

(2) *Bombyx*

(3) *Apteryx*

(4) *Pinctada*

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