Aakash BYJU'S

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MM : 720

REVISION TEST SERIES

Time : 3 Hrs. 20 Min.

(*for* NEET-2022)

Test – 9

Complete Syllabus of Class XI & XII

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:

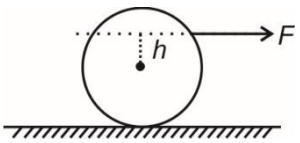
SECTION-A

1. The famous Big Ben clock tower in London has hour hand of approximate length 10 feet. Calculate the magnitude of change in velocity of top of hour hand of Big Ben in six hours is (1 feet = 0.305 m)

   (1) 0.4189 m/s (2) 0.06912 m/s

   (3) 0.341 m/s (4) 0.887 mm/s

2. A solid sphere, under the influence of a horizontal force F undergoes pure rolling on a smooth horizontal surface as shown in the figure. The value of height h of point of application of force from centre is (Radius of sphere is R)



   (1) 0.4 R (2) 0.8 R

   (3) 0.6 R (4) R

3. A point source of electromagnetic radiation has an average power output of 800 W. The maximum value of electric field at a distance 3.5 m from source will be

   (1) $12\,\frac{V}{m}$ (2) $40\,\frac{V}{m}$

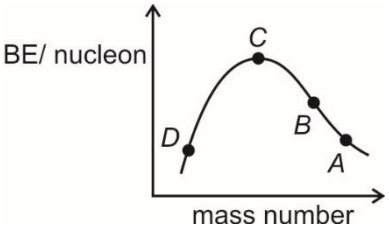
   (3) $31.3\,\frac{V}{m}$ (4) $62.6\,\frac{V}{m}$

4. Two plates (area: a each) given charges $+q_1$ and $+q_2$ ($q_2 < q_1$) are brought closer to form a capacitor of capacitance C. The potential difference across the plates is

   (1) $\frac{q_1 - q_2}{2C}$ (2) $\frac{q_1 - q_2}{C}$

   (3) $\frac{q_1 - q_2}{4C}$ (4) $\frac{2(q_1 - q_2)}{C}$

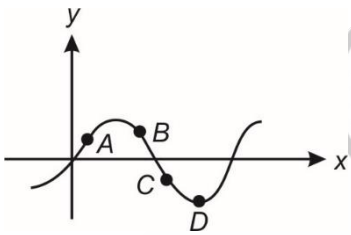
5. Binding energy per nucleon versus mass number curve for nuclei is indicated in the following figure. *A*, *B*, *C* and *D* are four nuclei indicated on the curve. Among the following, the process that would yield maximum energy is



(1) $C \rightarrow 2D$ (2) $A \rightarrow C + D$

(3) $A \rightarrow B + C$ (4) $B \rightarrow C + D$

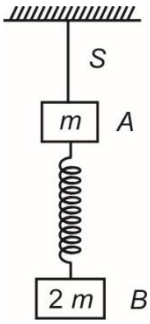
6. Snapshot of a transverse disturbance on a stretched string is shown in the following figure. The wave is travelling along positive *x*-direction. The particles for which velocity is directed along negative *y*-direction is



(1) *A* (2) *B*

(3) *C* (4) *D*

7. A spring–block system suspended vertically as shown in the figure is in equilibrium. The masses of blocks are indicated. The acceleration of block *B*, immediately after string *S* is cut, will be



(1) *g*

(2) $\frac{g}{2}$

(3) $\frac{g}{3}$

(4) Zero

8. An artificial satellite of the earth releases a package. If air resistance is neglected the package reaches the earth

(1) With very high speed

(2) With almost zero speed

(3) The package never reaches the earth

(4) Package will escape to infinity

9. A polariser and an analyser are inclined to each other at 45°. The intensity of polarised light emerging from the analyser is *I*. The intensity of unpolarized light incident on the polariser is

(1) $\frac{I}{4}$ (2) $2I$

(3) $4I$ (4) I

10. Telescopes have larger diameter of objective

(1) To improve resolving power

(2) To increase limit of resolution

(3) To decrease chromatic aberrations

(4) To decrease spherical aberrations

11. Arrange the following steps in correct order for formation of a secondary rainbow

(a) Refraction with dispersion

(b) Internal reflection

(c) Refraction

(1) (a) → (c) → (b) → (c)

(2) (a) → (b) → (b) → (c)

(3) (a) → (b) → (c)

(4) (a) → (c) → (b)

12. Three identical non-conducting spheres, each of charge 1μC uniformly distributed and radius 1m are kept such that each touches the other two. The magnitude of electric force on any sphere due to the other two will be

(1) 5.6×10^{-3} N (2) 4.1×10^{-3} N

(3) 6.8×10^{-3} N (4) 3.9×10^{-3} N

13. A motor vehicle moves such that the velocity is a linear function of time. The graph between acceleration and time and velocity and time, respectively will be

(1) Straight line, straight line

(2) Straight line, parabola

(3) Parabola, straight line

(4) Parabola, parabola

14. A stone of mass 4 kg is whirled in a horizontal circle by attaching it to a 169 m long string. The string can withstand a maximum tension of 4 N. The maximum speed of revolution of the stone such that the string does not break is

(1) 10 m/s (2) 13 m/s

(3) 16 m/s (4) 12 m/s

15. The upper portion of an inclined plane is smooth and lower portion is rough. A particle slides down from rest from the top and just comes to rest at the foot. If the ratio of the smooth length to the rough length is $m : n$, the coefficient of friction is (α : angle of inclination)

(1) $\left(\frac{m+n}{n}\right)\tan\alpha$ (2) $\left(\frac{m+n}{n}\right)\cot\alpha$

(3) $\left(\frac{m-n}{n}\right)\cot\alpha$ (4) $\frac{1}{2}$

16. Two blocks A and B of masses 2 kg and 4 kg respectively are interconnected by an ideal spring of spring constant 200 N/m and placed on a smooth horizontal surface. If the spring is initially unstretched and block B is given a rightward velocity 10 m/s, then the maximum extension attained in the spring will be

(1) $\frac{2}{\sqrt{6}}$ m (2) 2 m

(3) $\frac{\sqrt{6}}{4}$m (4) 1.89 m

17. Suppose the gravitational force varies inversely as the n^{th} power of distance. Then, time period of a planet in circular orbit of radius R around the sun will be proportional to

(1) $R^{\left(\frac{n+1}{2}\right)}$ (2) $R^{\left(\frac{n-1}{2}\right)}$

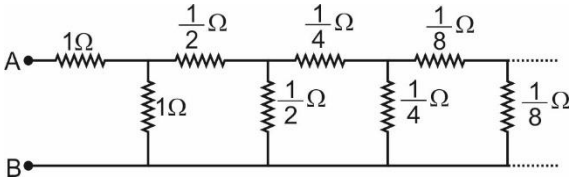
(3) R^n (4) $R^{\left(\frac{n-2}{2}\right)}$

18. A particle starts oscillating simple harmonically from its equilibrium position. Then, ratio of kinetic energy and potential energy of particle at $\frac{T}{12}$ is

(1) 2 : 1 (2) 3 : 1

(3) 1 : 1 (4) 1 : 4

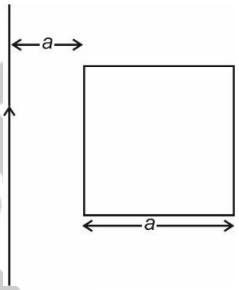
19. In the circuit diagram shown, a large number of resistors are connected. Using the value of resistances indicated in the figure, find the equivalent resistance between terminals A and B.



(1) $\sqrt{8}\ \Omega$ (2) $\sqrt{4}\ \Omega$

(3) $\sqrt{3}\ \Omega$ (4) $\sqrt{2}\ \Omega$

20. A square loop and a long straight wire are situated in a common plane such that one edge of the square is parallel to the wire. The mutual inductance between the wire and loop is



(1) $\frac{\mu_0 a}{4\pi}\ln(2)$ (2) $\frac{\mu_0 a}{2\pi}\ln(2)$

(3) $\frac{\mu_0 a}{\pi}$ (4) $\frac{\mu_0 a}{2\pi}$

21. A sonometer wire of length 280 cm is divided into 3 segments having fundamental frequencies in the ratio 4 : 1 : 2. The lengths of the segments are

(1) 20 cm, 40 cm, 220 cm

(2) 40 cm, 160 cm, 80 cm

(3) 40 cm, 180 cm, 60 cm

(4) 80 cm, 80 cm, 120 cm

22. Length, breadth and height of a cuboid are measured as 1.61 m, 2.2 m, and 3.1 m. The volume of cuboid up to correct number of significant figures is

(1) 10.98 m^3

(2) 1.1×10^1 m^3

(3) 10.9 m^3

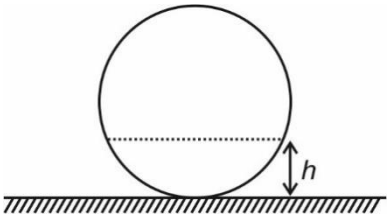
(4) 10.81 m^3

23. A calorimeter contains 100 g of ice at –20°C. *X* g of water at 80°C is added to the calorimeter such that the final contents of the calorimeter are in thermal equilibrium with 40°C mercury. The value of *X* is

(1) 325 (2) 400

(3) 100 (4) 60

24. A liquid is filled in a spherical container of radius *R* till a height *h*. At this position, the liquid surface at the edges are horizontal. The contact angle is



(1) 0 (2) $\cos^{-1}\left(\frac{R-h}{R}\right)$

(3) $\sin^{-1}\left(\frac{R-h}{R}\right)$ (4) $\sin^{-1}\left(\frac{R-h}{h}\right)$

25. Arrange red light, blue light, green light and yellow light in increasing order of resolving power.

(1) Red, Green, Blue, Yellow

(2) Red, Blue, Yellow, Green

(3) Blue, Yellow, Green, Red

(4) Red, Yellow, Green, Blue

26. A galaxy moving with speed 150 km/s shows blue shift. At what wavelength sodium line of 580.0 nm will be observed?

(1) 580.29 nm (2) 579.71 nm

(3) 581 nm (4) 575.2 nm

27. The light waves having displacements $y_1 = 10\sin(\omega t - kx)$ and $y_2 = 2\sin(\omega t - kx)$ interfere. The ratio of maximum to minimum average intensity of light in interference pattern is

(1) $\frac{6}{7}$ (2) $\frac{9}{4}$

(3) $\frac{9}{5}$ (4) $\frac{4}{5}$

28. Which among the following has smallest wavelength?

(1) Radio wave (2) Microwave

(3) UV-Rays (4) X-Rays

29. The amplifiers *A*, *B* and *C* are connected in series. If the voltage gain of *A*, *B* and *C* are 10, 15 and 20, respectively and input signal 2 mV peak value. Then, the output signal voltage's peak value will be

(1) 6 V (2) 5 V

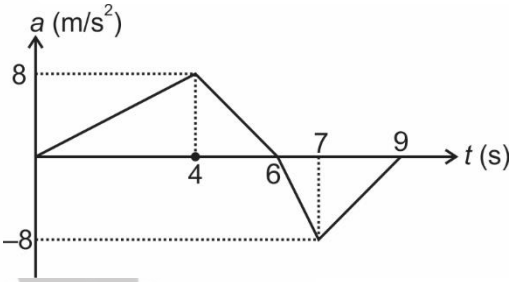
(3) 3 V (4) 4 V

30. A body falls freely from rest for 4 s. The average speed will be (g = 10 m/s^2)

(1) 20 m/s (2) 10 m/s

(3) 40 m/s (4) 80 m/s

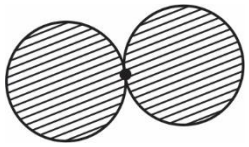
31. Acceleration versus time graph for a particle is as shown in the figure. If the particle starts its motion from rest, then the maximum speed of the particle during the motion is



(1) 24 m/s (2) 6 m/s

(3) 18 m/s (4) 16 m/s

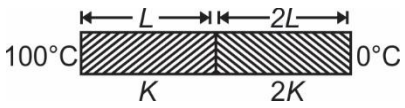
32. Two discs having mass *M* and radius *R* are placed in contact with each other as shown in figure. If both discs are in same plane, then moment of inertia of the system about an axis passing through their point of contact and perpendicular to the plane of disc will be



(1) $\frac{5}{2}MR^2$ (2) $\frac{3}{2}MR^2$

(3) $3MR^2$ (4) $4MR^2$

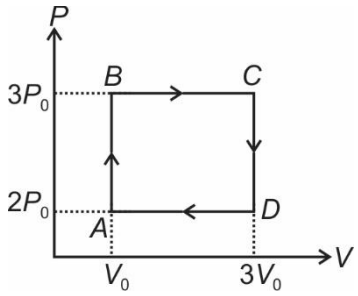
33. Two rods of equal cross-sectional areas and lengths *L* and 2*L* are connected end to end as shown in the figure. If there conductivities are *K* and 2*K*, respectively and their ends are maintained at 100°C and 0°C, then temperature of the junction of two rods is



(1) 70°C (2) 50°C

(3) 30°C (4) 45°C

34. An ideal diatomic gas is carried around the cycle *ABCDA* as shown in figure. The efficiency of the cycle is



(1) $\frac{3}{14}$ (2) $\frac{11}{81}$

(3) $\frac{4}{47}$ (4) $\frac{7}{64}$

35. A transformer of 100% efficiency has 400 turns in primary and 20,000 turns in the secondary. It is connected to a 220 V main supply and the secondary feeds a 200 kΩ resistance. Power delivered to the load will be

(1) 1.21 kW (2) 12.1 kW

(3) 605 W (4) 60.5 W

SECTION-B

36. In space, two point masses of mass 10 kg each are fixed. The masses are separated by a distance 10 m. Another point mass of mass 1 kg is to be projected from the midpoint of line joining the fixed masses such that it escapes to infinity. The minimum speed of the projection is

(1) $\sqrt{G}$ m/s (2) $\sqrt{2G}$ m/s

(3) $\sqrt{8G}$ m/s (4) $\sqrt{6G}$ m/s

37. A charged beam consisting of electrons and positrons enter into a region of uniform magnetic field *B* perpendicular to field, with a speed *v*. The maximum separation between an electron and a positron will be (mass of electron = mass of positron = *m*)

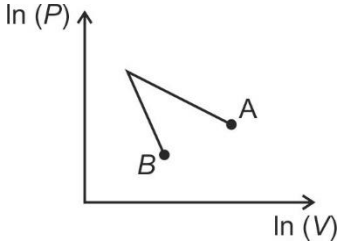
(1) $\frac{mv}{qB}$

(2) $\frac{2mv}{qB}$

(3) $\frac{4mv}{qB}$

(4) $\frac{mv}{2qB}$

38. The graph shows logarithmic readings of pressure and volume for two ideal gases *A* and *B* undergoing adiabatic process. It can be conduded that (one of the gases *A* and *B* is monoatomic and one is diatomic)



(1) *A* is diatomic

(2) *B* is diatomic

(3) *B* is monatomic

(4) Both (1) and (3)

39. While visiting the orthopedics department of AIIMS Delhi, Ram notices a datasheet which mentions that the human femoral cortical bone has an average Young's modulus equal to 19000 MPa. A stress of approximately 200 MPa is the tensile strength of the bone. The maximum bearable strain of the bone will be

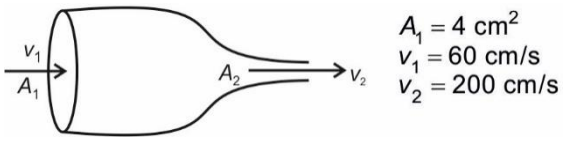
(1) 3.5 % (2) 2.9 %

(3) 1.05 % (4) 0.15 %

40. The degree of aortic valve stenosis (abnormal narrowing of blood vessels) can be determined by calculating the area A_2 of valvular opening and comparing with data given

Stenosis degree	Area (cm^2)
Severe	< 1
Moderate	1 – 1.5
Mild	1.5 – 2.5

Consider following aortic flow and blood as incompressible fluid.



The degree of stenosis in cross-section A_2 is

(1) Severe

(2) Moderate

(3) Mold

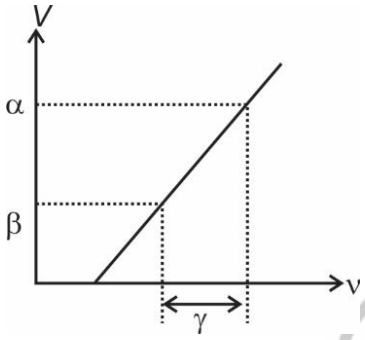
(4) Insufficient data

41. An electron is moving on a circle of radius 2 Å with a frequency of 4×10^{16} Hz in anti-clock direction. The equivalent dipole moment will be

(1) $25.6\ \pi \times 10^{-22}$ A m^2 (2) $256\ \pi \times 10^{-22}$ A m^2

(3) $0.256\ \pi \times 10^{-22}$ A m^2 (4) $2.56\ \pi \times 10^{-22}$ A m^2

42. In a photoelectric effect experiment, the graph of frequency ν of incident light (in Hz) and stopping potential V (in volt) is as shown in the figure. From figure, value of the plank's constant is equal to



(1) $e\dfrac{\alpha-\beta}{\gamma}$ (2) $e\dfrac{\alpha\beta}{\gamma}$

(3) $\dfrac{\alpha\beta}{\gamma e}$ (4) $\dfrac{\alpha-\beta}{\gamma e}$

43. Two positive ions, each carrying a charge 'q', are separated by a distance r. If force of repulsion between the ions is F, then, number of electrons missing from each ion will be (e is charge on an electron)

(1) $\sqrt{\dfrac{4\pi\varepsilon_0 Fr^2}{e^2}}$ (2) $\dfrac{4\pi\varepsilon_0 Fr^2}{e^2}$

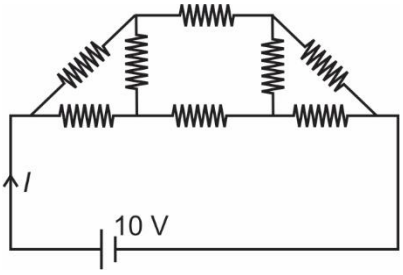
(3) $\sqrt{\dfrac{4\pi\varepsilon_0 r^2 r^2}{F}}$ (4) $\dfrac{4\pi\varepsilon_0 Fr^2}{q^2}$

44. A spherical conducting shell of inner radius r_1 and outer radius r_2 has a charge Q. A charge $-q$ is placed at the centre of the shell. Surface charge densities on the inner and outer surfaces of the shell will be respectively.

(1) $\dfrac{-q}{4\pi r_1^2}, \dfrac{Q}{4\pi r_2^2}$ (2) $\dfrac{q}{4\pi r_1^2}, \dfrac{Q+q}{4\pi r_2^2}$

(3) $\dfrac{q}{4\pi r_1^2}, \dfrac{Q-q}{4\pi r_2^2}$ (4) $\dfrac{-q}{4\pi r_1^2}, \dfrac{Q+q}{4\pi r_2^2}$

45. Figure shows as network of eight resistors, each equal to 3 Ω connected a 10 V battery of negligible internal resistance. The current I in the circuit is



(1) 2.22 A (2) 1.11 A

(3) 3.33 A (4) 4.44 A

46. An alternating voltage given by $V = 300\sqrt{2}\sin(100t)$ volts is connected to 1 μF capacitor through an ideal ac ammeter in series. The reading of the ammeter and the average power consumed in the circuit will be respectively.

(1) $30\sqrt{2}$ mA, zero (2) 30 mA, zero

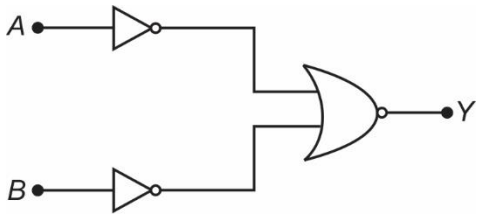
(3) $30\sqrt{2}$ mA, 4 W (4) 30 mA, $4\sqrt{2}$ W

47. Two radioactive samples A and B contain equal amount of radioactive substances. If $\left(\dfrac{1}{32}\right)^{\text{th}}$ of the sample A and $\left(\dfrac{1}{512}\right)^{\text{th}}$ of the sample B remain after 18 hours, then the ratio of half periods of A and B is

(1) $\dfrac{3}{2}$ (2) $\dfrac{9}{5}$

(3) $\dfrac{1}{4}$ (4) $\dfrac{4}{1}$

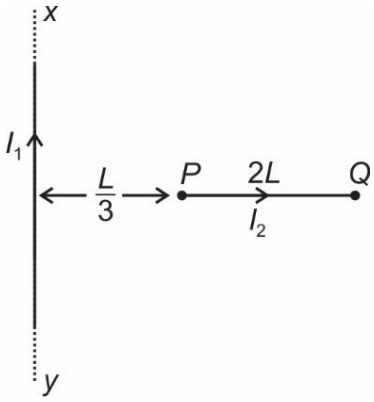
48. Which logic gate is represented by the following combination of logic gate?



(1) NAND (2) AND

(3) NOR (4) OR

49. A conductor PQ of length $2L$, carrying a current I_2, is placed perpendicular to a long straight conductor xy carrying current I, as shown in figure. The force on wire PQ will have magnitude.



(1) $\frac{\mu_0 I_1 I_2}{4\pi}\ln 7$ (2) $\frac{\mu_0 2I_1 I_2}{4\pi}\ln\left(\frac{7}{4}\right)$

(3) $\frac{\mu_0 2I_1 I_2}{2\pi}\ln\left(\frac{7}{4}\right)$ (4) $\frac{\mu_0 2I_1 I_2}{4\pi}\ln 7$

50. Match the information given in column-I with the information given in column-II

	Column-I		Column-II
a.	Relative humidity	(i)	Barometer
b.	Atmospheric pressure	(ii)	Searle's apparatus
c.	Temperature	(iii)	Thermometer
d.	Young's modulus of a wire	(iv)	Hygrometer

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

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

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

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

CHEMISTRY

SECTION-A

51. The **correct** order of acidic character is

(1) $H_2Te < H_2Se < H_2S < H_2O$

(2) $H_2S < H_2O < H_2Se < H_2Te$

(3) $H_2Se < H_2Te < H_2O < H_2S$

(4) $H_2O < H_2S < H_2Se < H_2Te$

52. 18 g of glucose is present in 100 mL of its solution. The concentration of solution in mol L^{-1} will be

(1) 2 mol L^{-1} (2) 0.1 mol L^{-1}

(3) 1 mol L^{-1} (4) 0.2 mol L^{-1}

53. In which of the following options, the order of arrangement does not agree with the variation of property indicated against it?

(1) I < Br < F < Cl (negative electron gain enthalpy)

(2) $Cl^- < S^{2-} < Ca^{2+} < K^+$ (increasing ionic size)

(3) B < C < O < N (first ionisation enthalpy)

(4) C < N < O < F (electronegativity)

54. The total number of nodes in 4p orbital is

(1) 1 (2) 2

(3) 3 (4) 4

55. Which of the following has the shortest bond length?

(1) N_2 (2) N_2^+

(3) N_2^- (4) O_2^+

56. The paramagnetic species among the following is

(1) N_2 (2) O_2^{2-}

(3) O_2^- (4) C_2

57. The density of CO_2 gas at 127°C and 2 atm pressure is

(1) 1.98 g L^{-1} (2) 1.68 g L^{-1}

(3) 3.62 g L^{-1} (4) 2.68 g L^{-1}

58. Extensive property among the following is

(1) Internal energy (2) Temperature

(3) Density (4) Pressure

59. Unit of van der Waals constant a is

(1) atm mol^{-2} (2) atm L^2 mol^{-2}

(3) atm L^{-2} mol^{-2} (4) atm L^{-1} mol^{-1}

60. In which of the following processes, volume is constant?

(1) Isochoric process (2) Isobaric process

(3) Adiabatic process (4) Isothermal process

61. If the solubility of XY_3 at a certain temperature is 2×10^{-1} mol L^{-1}, then the solubility product of XY_3 will be

(1) 4.3×10^{-2} (2) 4.8×10^{-3}

(3) 5.1×10^{-2} (4) 2.1×10^{-4}

62. The species which will not undergo disproportionation reaction is

(1) S_8 (2) Cl_2

(3) P_4 (4) F_2

63. The method used to remove only temporary hardness is

(1) Calgon's method

(2) Clark's method

(3) Ion-exchange method

(4) Synthetic resin method

64. The element which will not impart colour to flame is

(1) Be (2) Ca

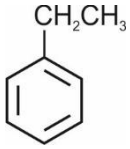
(3) Sr (4) Ba

65. The mixture of gases which is known as producer gas is

(1) $CO + H_2$ (2) $CO + N_2$

(3) $CO_2 + H_2$ (4) $CO_2 + N_2$

66. The number of σ and π bonds in the compound



respectively are

(1) 18, 4 (2) 18, 3

(3) 19, 2 (4) 20, 3

67. In Carius method of estimation of halogen, 0.28 g of an organic compound gave 0.2 g of AgBr. The percentage of bromine in the compound is

(Atomic mass of Ag = 108 u, Br = 80 u)

(1) 38.2% (2) 36.2%

(3) 30.4% (4) 25.6%

68. The maximum limit of nitrate in drinking water is

(1) 500 ppm (2) 50 ppm

(3) 50 ppb (4) 10 ppm

69. Atoms of element X forms fcc lattice and those of the element Y occupy $\frac{1}{3}$rd of the tetrahedral voids. The formula of the compound will be

(1) XY_2 (2) XY

(3) X_3Y_2 (4) X_2Y_3

70. Which of the following substances is ferrimagnetic in nature?

(1) Fe_3O_4 (2) MnO

(3) Ni (4) CrO_2

71. 5% (w/v) solution of urea is isotonic with 2% (w/v) solution of a non-electrolyte substance. The molar mas of the substance is

(1) 180 g/mol (2) 24 g/mol

(3) 120 g/mol (4) 30 g/mol

72. The pH of a solution at 25°C that contains 10^{-2} M OH^- is

(1) 10 (2) 12

(3) 4 (4) 2

73. The IUPAC name of the compound

is

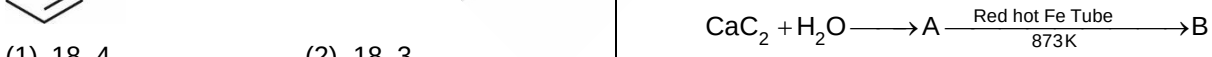
(1) Pent-2-enoic acid

(2) Pent-3-enoic acid

(3) But-2-en-4-oic acid

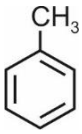
(4) Pent-2-en-5-oic acid

74. In the reaction,



B is

(1) $CH_2 = CH_2$ (2) 

(3)  (4) $CH_3 - C \equiv CH$

75. In Li_2O, having the antifluorite structure, the coordination numbers for O^{2-} ions and Li^+ ions, respectively, are

(1) 4 and 4 (2) 4 and 8

(3) 8 and 4 (4) 6 and 6

76. A solution of urea has been prepared by dissolving 30 g of urea in 500 g of water. Freezing point of the solution will be

(K_f for water = 1.86 K kg mol^{-1})

(1) 1.86°C (2) –1.86°C

(3) –0.93°C (4) 0.93°C

77. The metal which is used in galvanising iron is

(1) Mg (2) Al

(3) Zn (4) Ag

78. Which of the following is an example of homogeneous catalysis?

(1) $N_2(g) + 3H_2(g) \xrightarrow{Fe(s)} 2NH_3(g)$

(2) $4NH_3(g) + 5O_2(g) \xrightarrow{Pt(s)} 4NO(g) + 6H_2O(g)$

(3) $2SO_2(g) + O_2(g) \xrightarrow{NO(g)} 2SO_3(g)$

(4) Vegetable oils(l) + $H_2(g) \xrightarrow{Ni(s)}$ Vegetable ghee (s)

79. The ore of Iron, among the following is

(1) Haematite (2) Bauxite

(3) Malachite (4) Zincite

80. The gaseous product obtained on reaction of Cu with dilute HNO_3 is/are

(1) N_2O_4 (2) N_2O

(3) NO_2 (4) NO

81. Which of the following is coloured due to charge transfer?

(1) $[Zn(NH_3)_4]^{2+}$ (2) $[Ti(H_2O)_6]^{3+}$

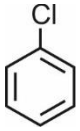
(3) $[Cu(H_2O)_4]^{2+}$ (4) $Cr_2O_7^{2-}$

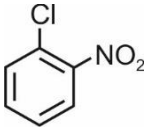
82. Which of the following is an ambidentate ligand?

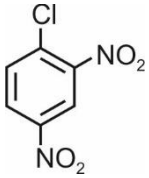
(1) en (2) Br^-

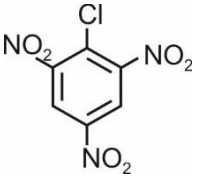
(3) NO_2^- (4) $C_2O_4^{2-}$

83. Which among the following is most reactive towards aromatic nucleophilic substitution?

(1) 

(2) 

(3) 

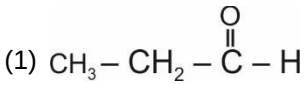
(4) 

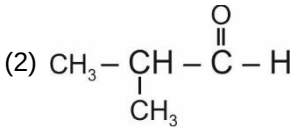
84. Butan-2-one on reaction with ethyl magnesium bromide followed by hydrolysis gives

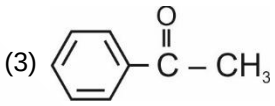
(1) Aldehyde (2) Secondary Alcohol

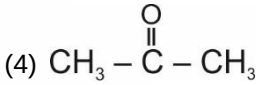
(3) Tertiary Alcohol (4) Carboxylic acid

85. The compound which will not give aldol condensation is

(1) 

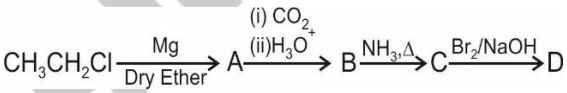
(2) 

(3) 

(4) 

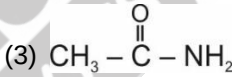
SECTION-B

86. Consider the following reaction

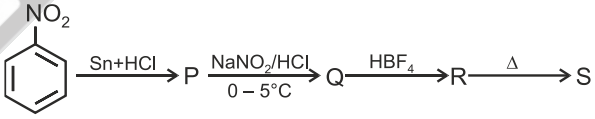


D is

(1) $CH_3CH_2 - NH - CH_3$ (2) $CH_3CH_2 - NH_2$

(3)  (4)

87. In the reaction,



Identify S

(1) (2) 

(3) (4) 

88. Lactose is composed of

(1) α-D-glucose and β- D-fructose

(2) α-D-glucose and α-D-glucose

(3) β-D-galactose and β-D-glucose

(4) α-D-glucose and β-D-galactose

89. Which of the following is a condensation polymer?

(1) Terylene (2) Buna-N

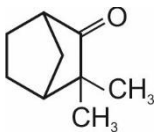
(3) Teflon (4) Polyacrylonitrile

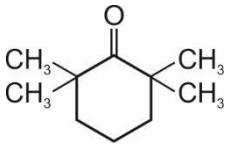
90. The artificial sweetener which is stable at cooking temperature is

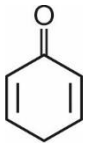
(1) Aspartame (2) Saccharin

(3) Sucralose (4) Alitame

91. Which among the following molecules can exhibit tautomerism?

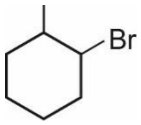
(1) 

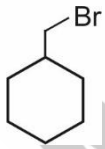
(2) 

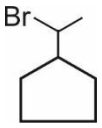
(3) 

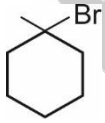
(4) 

92. The major product (P) obtained in the reaction is

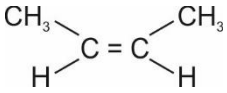
(1) 

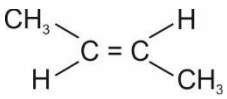
(2) 

(3) 

(4) 

93. The most stable alkene among the following is

(1) 

(2) 

(3) $CH_3 - CH_2 - CH = CH_2$

(4) $CH_3 - CH = CH_2$

94. Charge required to reduce 2.7 g of aluminium from its molten solution is

(1) 28950 C (2) 14475 C

(3) 21712 C (4) 9650 C

95. Given the standard electron potentials,

$Al^{3+}/Al = -1.66V$ $Cu^{2+}/Cu = 0.34\ V$

$K^+/K = -2.93\ V$ $Zn^{2+}/Zn = -0.76\ V$

$Mg^{2+}/Mg = -2.36\ V$

The correct order of these metals in their increasing order of reducing power is

(1) Zn < Cu < Mg < K < Al

(2) K < Mg < Al < Zn < Cu

(3) Cu < Zn < Mg < Al < K

(4) Cu < Zn < Al < Mg < K

96. Deacon's process among the following is

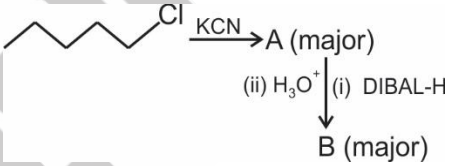
(1) $2KMnO_4 + 16HCl \rightarrow 2KCl + 2MnCl_2 + 8H_2O + 5Cl_2$

(2) $MnO_2 + 4HCl \rightarrow MnCl_2 + Cl_2 + H_2O$

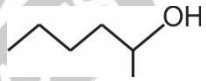
(3) $4NaCl + MnO_2 + 4H_2SO_4 \rightarrow MnCl_2 + 4NaHSO_4 + 2H_2O + Cl_2$

(4) $4HCl + O_2 \xrightarrow[723\,K]{CuCl_2} 2Cl_2 + 2H_2O$

97 Consider the following reaction sequence.

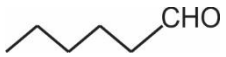


Major product B is

(1) 

(2) 

(3) 

(4) 

98. Radius of 3rd orbit of Li^{2+} ion is (a_0 = Radius of hydrogen first orbit)

(1) a_0 (2) $3a_0$

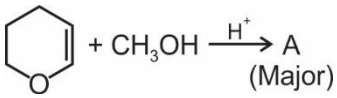
(3) $6a_0$ (4) $9a_0$

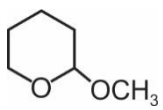
99. Which of the following is used as collector in froth floatation?

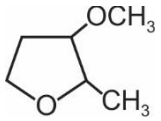
(1) Fatty acids (2) Cresol

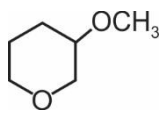
(3) NaCN (4) Aniline

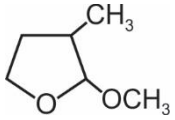
100. Product A in the given reaction is



(1) 

(2) 

(3) 

(4) 

BOTANY

SECTION-A

101. Select the **mismatched** pair.

(1)	Centrioles	'9 + 0' arrangement of microtubules
(2)	Ribosome	Membraneless
(3)	Chloroplast	Semi-autonomous organelle
(4)	Gas vacuoles	Surrounded by tonoplast

102. Which of the following cell organelles take part in aerobic respiration and synthesis of lipids respectively?
(1) SER and RER
(2) Mitochondria and SER
(3) RER and mitochondria
(4) Chloroplast and mitochondria

103. A bivalent formed in a cell of a diploid organism has
(1) Two chromatids and two centromeres
(2) Four chromosomes and two chromatids
(3) Four chromatids and two centromeres
(4) Four chromatids and four centromeres

104. Select the **incorrect** statement.
(1) Pulvinus is swollen leaf base
(2) Banana is a parthenocarpic fruit
(3) *Alstonia* shows whorled phyllotaxy
(4) In the axil of the every leaflet of compound leaves there is presence of axillary bud

105. Find the **incorrect** match

	Placentation		**Plant**
(1)	Marginal	–	Pea
(2)	Axile	–	Lemon
(3)	Parietal	–	China rose
(4)	Basal	–	Sunflower

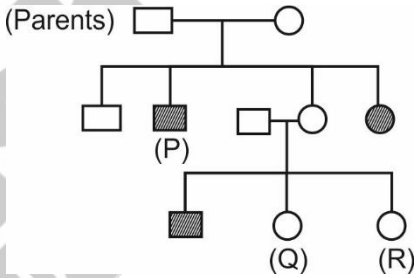
106. The living component of xylem is
(1) Xylem fiber (2) Vessel
(3) Xylem parenchyma (4) Tracheid

107. For a solution at atmospheric pressure
(1) $\psi_p = \psi_s$ (2) ψ_w = zero
(3) ψ_s = zero (4) $\psi_s = \psi_w$

108. Auxin and cytokinin work antagonistically as
(1) Auxin promotes cell division whereas cytokinin inhibits it
(2) Auxin promotes apical dominance whereas cytokinin counteracts it
(3) Cytokinin promotes senescence whereas auxin prevents it
(4) Auxin induces shoot formation whereas cytokinin inhibits it

109. Find the **incorrect** match
(1) Rhizome - Ginger
(2) Offset - Water hyacinth
(3) Tuber - Potato
(4) Bulb - *Agave*

110. Study the given pedigree chart and choose the **correct** option regarding it.



(1) The trait under the study can be haemophilia
(2) Both parents are heterozygous for the trait
(3) The genotype of (P) can be Aa and shows myotonic dystrophy
(4) Females (Q) and (R) are not affected because parents are not carrying the gene of the trait

111. During DNA replication, the discontinuously synthesized fragments are later joined by the enzyme
(1) DNA polymerase (2) Helicase
(3) RNA polymerase (4) DNA ligase

112. If lactose is absent in the medium in which *E. coli* is growing then
(1) There will be no synthesis of repressor protein
(2) There will be synthesis of *lac* mRNA at higher rate
(3) The protein synthesised by repressor mRNA will not become inactive
(4) Repressor will bind to the RNA polymerase

113. Which of the following diseases is caused by bacteria?
(1) Brown rust of wheat
(2) Turnip mosaic
(3) Black rot of crucifers
(4) Late blight of potato

114. Select the **incorrect** match.

	Name of interaction	Species A	Species B
(1)	Predation	+	+
(2)	Commensalism	+	0
(3)	Amensalism	–	0
(4)	Protocooperation	+	+

115. Select the **incorrect** statement
(1) In ecological pyramids, any calculation of energy content, biomass or numbers has to include all organisms at that trophic level
(2) The pyramid of biomass in sea is generally inverted
(3) In an ecosystem, all the pyramids are upright
(4) The base of each pyramid represents the producers.

116. Select the **odd** one w.r.t. Montreal protocol.
(1) Was signed in 1987
(2) Is meant to control the emission of ODS
(3) Is historic convention on biological diversity
(4) Became effective in 1989

117. Select the **incorrect** statement w.r.t TCA cycle in eukaryotes.
(1) The cycle starts with the condensation of acetyl group with OAA and water
(2) TCA cycle is confined to mitochondrial matrix
(3) This cycle serves as a pathway for oxidation of carbohydrates only
(4) Succinate dehydrogenase involved in this process is found attached to inner mitochondrial membrane

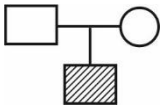
118. Select the substrate with least R.Q. value.
(1) Glucose (2) Malic acid
(3) Tripalmitin (4) Oxalic acid

119. A pair of plants which can prevent both autogamy as well as geitonogamy is
(1) Cucurbits and coconut
(2) Coconut and papaya
(3) Cucurbits and date palm
(4) Date palm and papaya

120. Parthenocarpic fruits
(1) Are also called false fruits
(2) Are developed without fertilisation
(3) Have a lot of tiny seeds
(4) Have embryo as edible part

121. Persistent nucellus in some seeds is called
(1) Endosperm (2) Pericarp
(3) Perisperm (4) Epiblast

122. If a colourblind woman marries a normal man then what is the probability of their son being colourblind?
(1) 0% (2) 25%
(3) 75% (4) 100%

123. Find the **incorrect** match w.r.t. pedigree symbols.
(1)  – Mating
(2)  – Unaffected female
(3)  – Affected male
(4)  – Parents with affected child

124. If parents have blood groups A and B and both are heterozygous for their respective blood groups then, which blood group(s) can be seen in offsprings?
a. AB b. O
c. A d. B
(1) Only a (2) Only b
(3) Only c and d (4) All a, b, c and d

125. Which of the following is a wheat variety that is resistant to leaf and stripe rust and hill bunt?
(1) Pusa komal (2) Himgiri
(3) Pusa sadabahar (4) Sonalika

126. The cattle egrets and grazing cattle in close association, is an example of
(1) Competition (2) Commensalism
(3) Predation (4) Amensalism

127. All of the following are functional aspects of ecosystem, **except**
(1) Productivity (2) Energy flow
(3) Decomposition (4) Stratification

128. Select the **wrong** statement w.r.t. biomagnification.
(1) It refers to increase in concentration of the toxicant at successive trophic levels
(2) This phenomenon is well known for mercury and DDT
(3) It is natural ageing of a lake by nutrient enrichment
(4) It is also called biological magnification

129. Select the **incorrect** statement regarding tapetum.
(1) Its cells show increase in their DNA content
(2) It is the innermost layer of anther wall which surrounds the sporogenous tissue
(3) Its cells form haploid microspores by meiotic division
(4) Their cells nourishes the developing pollen grains

130. State **true (T)** or **false (F)** and select the **correct** option regarding transcription.
A. There is single DNA dependent RNA polymerase that catalyses transcription of all types of RNA in *E. coli* and Yeast.
B. The RNA polymerase II transcribes precursor of mRNA.
C. Transcription and translation can be coupled in *E. coli*.

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

131. Which of the following varieties is developed by induced mutation to make it resistant against yellow mosaic virus and powdery mildew?
(1) Pusa sem-2 (2) Himgiri of wheat
(3) Parbhani Kranti (4) Mung bean variety

132. Band-like structures present in the walls of endodermal cells are called A which are formed by the material B .

Select the correct option to fill in up the blanks A and B.

	A	B
(1)	Starch sheath	Cutin
(2)	Casparian strips	Suberin
(3)	Stele	Lignin
(4)	Pericycle	Pectin

133. Widely accepted fluid mosaic model of cell membrane was proposed by
(1) Schleiden and Schwann
(2) Robert Hooke
(3) Singer and Nicolson
(4) Robert Brown

134. Both prokaryotic and eukaryotic flagella are similar in
(1) Internal structures
(2) The protein they are composed of
(3) Origin
(4) Function

135. In meiotic cell division, centromere of chromosome splits during
(1) Anaphase I
(2) Anaphase II
(3) Metaphase I
(4) Metaphase II

SECTION-B

136. Nucleolus, Golgi complex and ER reappear during
(1) Prophase (2) Metaphase
(3) Telophase (4) Anaphase

137. Most of the water flow in the roots occurs via the apoplast pathway because
(1) It is aided by cytoplasmic streaming
(2) It involves crossing of cell membrane
(3) It offers no resistance to water movement
(4) Both (1) and (3) are correct

138. Match the enzymes given in Column-I with their activator elements in Column-II and mark the **correct** option.

Column-I	Column-II
a. RuBisCO	(i) Zn^{2+}
b. Alcohol dehydrogenase	(ii) Fe
c. Catalase	(iii) Mo
d. Nitrogenase	(iv) Mg^{2+}

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

139. Cyclic photophosphorylation differs from non-cyclic photophosphorylation as the former
(1) Synthesises both ATP and NADPH
(2) Does not require external source of electrons
(3) Is associated with the photolysis of water
(4) Has chlorophyll *a* in its reaction center

140. How many ATP molecules are used during synthesis of one hexose sugar molecule in maize?
(1) 12 (2) 26
(3) 30 (4) 18

141. Photolysis of water releases protons and oxygen. These protons get accumulated in
(1) Stroma of the chloroplast
(2) Plasma membrane of the cell
(3) Lumen of the thylakoids
(4) Space between outer and inner membranes of chloroplast

142. During aerobic respiration, which of the following conversions shows substrate level phosphorylation?
(1) Oxalosuccinic acid $\rightarrow$ α-ketoglutaric acid
(2) Fumaric acid $\rightarrow$ Malic acid
(3) Succinyl CoA $\rightarrow$ Succinic acid
(4) Citric acid $\rightarrow$ Cis-aconitic acid

143. In all of the below given fungi asexual spores are conidia, **except**
(1) *Rhizopus* (2) *Neurospora*
(3) *Alternaria* (4) *Trichoderma*

144. The most important climatic factor(s) that regulate decomposition through the effects on the activities of soil microbes is/are
(1) Temperature (2) Soil moisture
(3) Light (4) Both (1) and (2)

145. A very time consuming and tedious process in plant breeding is
(1) Germplasm screening for desired traits
(2) Cross hybridisation among the selected parents
(3) Testing of superior recombinants
(4) Evaluation and selection of parents

146. Find the **odd** one w.r.t. succession of plants.
(1) The rate of secondary succession is much slower but climax is reached more quickly
(2) Both hydrarch and xerarch succession lead to mesic conditions
(3) Number and types of animals and decomposers changes as succession proceeds
(4) Nutrient conservation is high in climax stage

147. What percentage of offsprings would have genotype AabbCcDd if parents are with genotypes AaBbccDd and AAbbCcDD?
(1) 25% (2) 6.25%
(3) 12.5% (4) 0.625%

148. Calculate the number of base pairs if length of DNA is 1.7 meter
(1) 5×10^3 bp (2) 5×10^7 bp
(3) 5×10^9 bp (4) 5×10^6 bp

149. Considering 20 chromosomes in meiocyte of maize plant, find out the number of chromosomes present in tube nucleus, PEN, nucellar cell and synergid respectively.
(1) 20, 30, 20, 10
(2) 10, 30, 20, 20
(3) 10, 30, 20, 10
(4) 20, 20, 10, 10

150. Consider the following
a. 44 + XXY chromosome complement.
b. Sterile males with gynaecomastia.
c. Furrowed tongue.
d. Sterile females with rudimentary ovary.
e. Overall masculine development.

Which of the given statements are related to Klinefelter's syndrome?
(1) a, b and e (2) c, d and e
(3) b, c and d (4) a, d and e

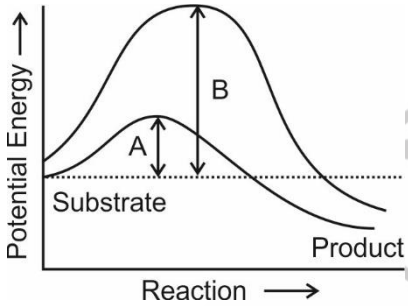
ZOOLOGY

SECTION-A

151. Cardiac muscle fibres are
(1) Unbranched, involuntary and multinucleated
(2) Fusiform, non-striated and uninucleated
(3) Involuntary, striated and uninucleated
(4) Voluntary, cylindrical and uninucleated

152. The type of cell junction found in epithelium which helps primarily to stop substances from leaking across the tissue is
(1) Tight junction (2) Gap junction
(3) Adhering junction (4) Desmosome

153. Select the **correct** statement w.r.t. the given graph.



(1) Exothermic reaction with energy A in absence of enzyme.
(2) Endothermic reaction with energy B in presence of enzyme.
(3) Endothermic reaction with energy A in absence of enzyme.
(4) Exothermic reaction with energy A in presence of enzyme

154. Partial pressures of oxygen in alveoli is
(1) Less than that in deoxygenated blood
(2) More than that in oxygenated blood
(3) Equal to that in atmospheric air
(4) Less than that in tissues

155. In a typical ECG, contraction of both the atria is represented by
(1) P-wave (2) T-wave
(3) ST segment (4) QRS complex

156 Even in the absence of vasopressin hormone, maximum reabsorption in nephron of human kidney occurs in
(1) PCT (2) DCT
(3) CD (4) Loop of Henle

157. Choose the **odd** one w.r.t paired bones.
(1) Parietal (2) Temporal
(3) Palatine (4) Mandible

158. Electrogenic Na^+–K^+ ATPase transmembrane pumps in the axonal membrane transport
(1) 3 Na^+ outwards for 2K^+ into axoplasm
(2) 2 Na^+ inwards for 3K^+ to ECF
(3) 3 Na^+ to axoplasm for 2K^+ outwards
(4) 1 Na^+ to axoplasm for 2K^+ outwards

159. Which of the following hormones interacts with membrane–bound receptors and generates second messengers?
(1) Cortisol (2) Estradiol
(3) Progesterone (4) Glucagon

160. Choose the **incorrect** statement.
(1) Non-nutrient chemicals produced by the body in trace amounts that act as intercellular messengers are known as hormones.
(2) Fight-or-flight reactions cause activation of the adrenal medulla, leading to increased secretion of epinephrine and norepinephrine.
(3) Melanin produced from pineal gland, regulates the normal rhythm of sleep wake cycle.
(4) Stored oxytocin is released from posterior pituitary and is known as milk let down hormone.

161. Select the option that includes correct match of the animal (column I), with characteristics (column II) and the taxon (column III) to which it belongs.

	Column I	**Column II**	**Column III**
(1)	*Petromyzon*	Placoid scales	Chondrichthyes
(2)	*Chameleon*	Poikilotherm with metanephric kidney	Reptilia
(3)	*Apteryx*	Cornified skin with epidermal scale	Amphibia
(4)	*Macaca*	10 pairs cranial nerves	Mammalia

162. **Incorrect** statement w.r.t human reproduction is
(1) Capacitation occurs in female reproductive tract.
(2) Fertilization is feasible if both sperm and ovum are transported simultaneously to the ampullary region of fallopian tube.
(3) Circulating levels of estrogen and progesterone in females regulates the changes in GnRH pulse frequency.
(4) In females, meiosis-I completes at the time of birth.

163. In test-tube baby programme, the zygote or early embryo with upto 8 blastomeres is transferred into
(1) Fallopian tube (2) Uterus
(3) Cervix (4) Fimbriae

164. In a population of 1000 individuals, 490 are of dominant homozygous genotype AA. Based on this data, the frequency of allele 'a' in the population and number of heterozygotes respectively are
(1) 0.3, 420 (2) 0.7, 490
(3) 0.21, 420 (4) 0.3, 90

165. Choose the set of bacterial diseases.
(1) Ascariasis, dysentery
(2) Diphtheria, filariasis
(3) Plague, dysentery
(4) Common cold, amoebiasis

166. **Correct** match among the following is
(1) HIV – Attacks B-lymphocytes
(2) Benign tumor – Show metastasis
(3) Leghorn – Sheep
(4) Jersey – Cattle

167. Choose the **odd** one w.r.t sticky ends.
(1) *Bam*HI (2) *Sal*I
(3) *Pst*I (4) *Eco*RV

168. When pBR322 is digested with *Pvu*I and ligated with alien piece of DNA at its site, the recombinants will be
(1) Ampicillin resistant
(2) Tetracycline susceptible
(3) Both ampicillin and tetracycline resistant
(4) Ampicillin susceptible

169. A stirrer in stirred-tank reactor primarily facilitates
(1) Uniform oxygen availability throughout the bioreactor
(2) Death of microbes
(3) Temperature control
(4) Optimum pH conditions

170. *B. thuringiensis* forms protein crystals during a particular growth phase. These crystals contain a toxic protein which is
(1) Herbicidal (2) Insecticidal
(3) Bactericidal (4) Fungicidal

171. In RNAi, there is silencing of a specific A due to a complementary B molecule that binds to and prevents protein synthesis.
Choose the option that represents A and B **correctly**.
(1) A – tRNA, B - ssRNA
(2) A - rRNA, B - ssRNA
(3) A - mRNA, B - dsRNA
(4) A - ssDNA, B - dsDNA

172. The first clinical gene therapy was given to a 4-year old girl with deficiency of enzyme
(1) Glucose-6-phosphate dehydrogenase
(2) Adenosine deaminase
(3) Alcohol dehydrogenase
(4) Myosin ATPase

173. The function of ciliated epithelium is/are
(1) Secretion and absorption
(2) To move particles/mucus in specific direction
(3) To facilitate diffusion
(4) To provide protection against chemical stresses

174. Read the following statements.
Statement A : In primary structure of a protein, the left end is represented by the first amino acid and the right end by the last amino acid.
Statement B : In a polysaccharide chain, the right end is called the reducing end and the left end is called the non-reducing end.
Choose the **correct** option.
(1) Both the statements are correct
(2) Both the statements are incorrect
(3) Statement A is correct but statement B is incorrect
(4) Statement A is incorrect but statement B is correct

175. The pitch of ds B-DNA would be
(1) 3.4 Å (2) 0.34 Å
(3) 34 Å (4) 34 nm

176. The opening of stomach into the duodenum is guarded by the
(1) Sphincter of Oddi
(2) Gastro-oesophageal sphincter
(3) Ileo-caecal valve
(4) Pyloric sphincter

177. The outermost layer of wall of alimentary canal made up of a thin mesothelium with some connective tissue is called
(1) Mucosa (2) Submucosa
(3) Muscularis (4) Serosa

178. Select the **incorrect** match.
(1) FRC = ERV + RV (2) TV = EC – ERV
(3) TV = VC – IRV (4) TV = IC – IRV

179. The first heart sound is associated with
(1) Closure of semilunar valves
(2) Opening of mitral valves
(3) Opening of tricuspid valves
(4) Closure of atrioventricular valves

180. Match the column I and column II.

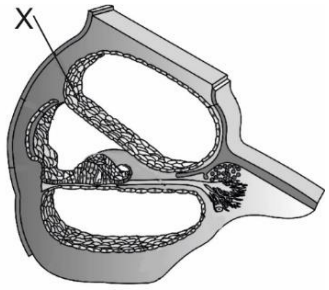
	Column I		**Column II**
a.	Protonephridia	(i)	Prawn
b.	Nephridia	(ii)	*Planaria*
c.	Malpighian tubules	(iii)	Cockroach
d.	Antennal glands	(iv)	Earthworm

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

181. Which of the following part of nephron is **not** situated in the cortical region of the kidney?
(1) Malpighian corpuscle (2) PCT
(3) DCT (4) Loop of Henle

182. Which of the following is **not** observed during contraction of a muscle fibre?
(1) A band retain the length
(2) Shortening of sarcomere
(3) I band gets reduced
(4) H zone retains the length

183 Identify the structure marked as 'X' in the figure given below.



(1) Basilar membrane
(2) Tectorial membrane
(3) Tympanic membrane
(4) Reissner's membrane

184. Select the **incorrect** match w.r.t. hormones and their chemical nature.

(1)	Pancreatic hormones	:	Polypeptides
(2)	Thyroid hormones	:	Steroidal
(3)	Hormones of adrenal medulla	:	Amino acid derivatives
(4)	Pituitary hormones	:	Proteinaceous

185. Select a triploblastic schizocoelomate animal with closed type of circulatory system which lacks metamerism.
(1) *Chaetopleura* (2) *Pila*
(3) *Echinus* (4) *Octopus*

SECTION-B

186. Read the following statements and choose the **correct** option.
Statement-A : The most primitive of all craniates are jawless vertebrates.
Statement-B : Cyclostomes have paired appendages and sucking circular mouth.
(1) Both statements are correct
(2) Both statements are incorrect
(3) Statement A is correct but statement B is incorrect
(4) Statement A is incorrect but statement B is correct

187. Select the option that **correctly** represents the set of animals and their respective taxon.

(1)	*Pterophyllum, Betta, Carcharodon*	–	Osteichthyes
(2)	*Ichthyophis, Hyla, Salamandra*	–	Amphibia
(3)	*Calotes, Chelone, Columba*	–	Reptilia
(4)	*Delphinus, Aptenodytes, Pteropus*	–	Mammalia

188. Which of the following does **not** exhibit parthenogenesis?
(1) Honeybees (2) Turkey
(3) Rotifers (4) Crow

189. Select the **incorrect** match w.r.t. humans.

	Cell		Chromosome number per cell
(1)	Secondary spermatocyte	–	23
(2)	Spermatozoa	–	23
(3)	Ootid	–	46
(4)	Primary oocyte	–	46

190. Select the **correct** match w.r.t. cockroach.
(1) Malpighian tubules : 6-8
(2) Spiracles : 20
(3) Hepatic caecae : 100-150
(4) Alary muscles : 12

191. A foetal sex determination test based on the chromosomal pattern in the foetal cells present in the amniotic fluid surrounding the developing embryo, called amniocentesis, **cannot** determine
(1) Cleft palate (2) Down's syndrome
(3) Haemophilia (4) Sickle-cell anaemia

192. Choose the **incorrect** pair of placental mammal and Australian marsupial w.r.t. convergent evolution.

	Placental mammals		Australian marsupials
(1)	Anteater	:	Marsupial mouse
(2)	Bobcat	:	Tasmanian tiger cat
(3)	Lemur	:	Spotted cuscus
(4)	Flying squirrel	:	Flying phalanger

193. Select the **correct** statement.
(1) Morphine is extracted from the leaves of *Cannabis sativa.*
(2) Chikungunya and amoebic dysentery are both transmitted through mosquito as a vector
(3) Anti-histamine, adrenaline and steroids quickly reduce the symptoms of allergy
(4) T-lymphocytes act like an HIV factory

194. If alien DNA is inserted within the *lacZ* gene of pUC8, the recombinants will be
(1) Ampicillin susceptible
(2) Tetracycline resistant
(3) Blue coloured
(4) Ampicillin resistant and white coloured

195. Select the **incorrect** match.
(1) Tracy – First transgenic sheep
(2) ANDi – First transgenic monkey
(3) Polly – First cloned sheep
(4) Rosie – First transgenic cow

196. Male sex accessory ducts include all of the following structures, **except**
(1) Seminiferous tubules
(2) Rete testis
(3) Vasa efferentia
(4) Vas deferens

197. Choose the **correct** option to complete the analogy.
Amoeba : Simple binary fission ::
Paramecium:_____
Choose the **correct** option.
(1) Longitudinal binary fission
(2) Simple binary fission
(3) Oblique binary fission
(4) Transverse binary fission

198. Leucocytes responsible for humoral immune response are
(1) T-lymphocytes (2) B-lymphocytes
(3) Macrophages (4) Neutrophils

199. Fresh water fishes do **not** include
(1) Pomfret (2) *Catla*
(3) Rohu (4) Common carp

200. Read the following statements A and B and choose the **correct** option.
Statement-A : Evolution is not a directed process in the sense of determinism.
Statement-B : Any population has built in variation in characteristics.
(1) Both the statements A and B are correct
(2) Both the statements A and B are incorrect
(3) Only statement A is incorrect
(4) Only statement B is incorrect

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