

NEET Like MOCK TEST-05

Time : 3.00Hrs

200 MCQs PATTERN

Max.Marks.720

INSTRUCTIONS

1. This test will be a 3 hours Test, Maximum Marks 720M.
2. This test consists of Physics, Chemistry, Botany and Zoology questions with equal weightage of 180 marks.
3. Each question is of 4 marks.
4. There are four parts in the question paper, consisting Part-I Physics (Q.no.1 to 50), Part-II Chemistry (Q.no.51 to 100), Part-III Botany (Q. no. 101 to 150) and Part-IV Zoology (Q. no.151 to 200). Each part is divided into two Sections, Section A consists of 35 multiple choice questions & Section-B consists of 15 Multiple choice questions, out of these 15 questions candidates can choose to attempt any 10 questions.
5. There will be only one correct choice in the given four choices for each question. For each question 4 marks will be awarded for correct choice, 1 mark will be deducted for incorrect choice and zero mark will be awarded for unattempted question.
6. Any textual, printed or written material, mobile phones, calculator etc. is not allowed for the students appearing for the test.
7. All calculations / written work should be done in the rough sheet provided.

Syllabus

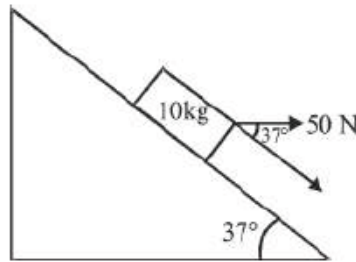
Physics : CLASS XI & XII

Chemistry : CLASS XI & XII

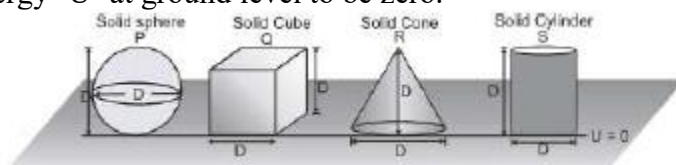
Biology : CLASS XI & XII

PART-1 : PHYSICS : SECTION-A

- If $v = (2t + 1)$ m/sec then average velocity from $t = 0$ to $t = 2$ sec is
 (1) 6 m/sec (2) 3 m/sec (3) 4 m/sec (4) 8 m/sec
- A spherical body of mass m and radius r is allowed to fall in a medium of viscosity η . The time in which the velocity of the body increases from zero to 0.63 times the terminal velocity (v) is called time constant (τ). Dimensionally τ can be represented by
 (1) $\frac{mr^2}{6\pi\eta}$ (2) $\sqrt{\left(\frac{6\pi m r \eta}{g^2}\right)}$ (3) $\frac{m}{6\pi\eta r v}$ (4) None of the above
- A particle is projected at an angle 60° with horizontal with speed 10 m/s. The time after which the speed of the particle remains $\frac{1}{\sqrt{3}}$ times of its initial speed is
 (1) $5\sqrt{3}$ s (2) $\frac{2}{\sqrt{3}}$ s (3) $\frac{1}{\sqrt{3}}$ s (4) $10\sqrt{3}$ s
- Find acceleration of block in given figure :-



- (1) 6 m/s^2 (2) 11 m/s^2 (3) 1 m/s^2 (4) 10 m/s^2
- A block of mass 5 kg is hanging over an ideal pulley through a string (ideal). The other end of the string is pulled by a constant force F such that the kinetic energy of the block increases by 5 J in 1s. If the block is pulled from rest then (take $g = 10 \text{ m/s}^2$)
 (1) Tension in the string is 50 N
 (2) Work done by F is 5 J in 1s
 (3) Work done by gravity on block in 1s is -5J
 (4) Tension in the string is 57.07 N
- Two billiard balls A and B, each of mass 50 g and moving in opposite directions with speed of 5 m s^{-1} each, collide and rebound with the same speed. The impulse imparted to each ball is :-
 (1) 0.25 kg m s^{-1} (2) 0.5 kg m s^{-1} (3) 0.1 kg m s^{-1} (4) $0.125 \text{ kg m s}^{-1}$
- Assuming potential energy 'U' at ground level to be zero.



All objects are made up of same material.

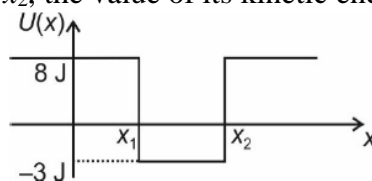
U_P = Potential energy of solid sphere

U_Q = Potential energy of solid cube

U_R = Potential energy of solid cone

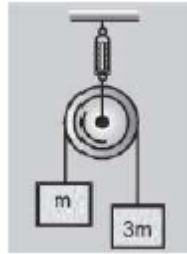
U_S = Potential energy of solid cylinder

- (1) $U_R > U_P$ (2) $U_Q > U_S$ (3) $U_P > U_Q$ (4) $U_P > U_S$
- The potential energy function in one dimension is given as shown in figure. If total energy of the particle is 5J. Then in the region from x_1 to x_2 , the value of its kinetic energy will be

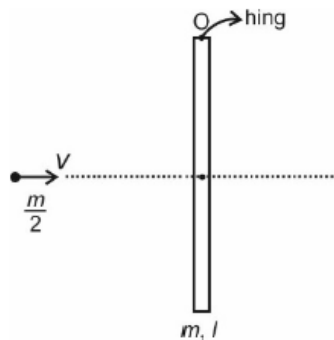


- (1) 8 J (2) 11 J (3) 5 J (4) 0 J

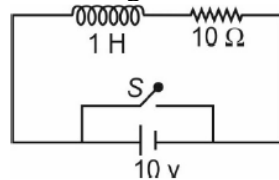
9. If the system is released, then the acceleration of the centre of mass of the system :-



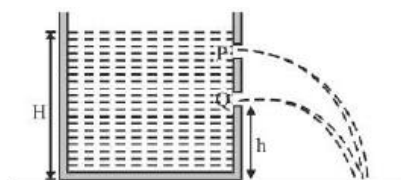
- (1) $\frac{g}{4}$ (2) $\frac{g}{2}$ (3) g (4) $2g$
10. If the rotational kinetic energy of a body is increased by 300% then the percentage increase in its angular momentum :-
 (1) 100% (2) 200% (3) 400% (4) 300%
11. A uniform rod of mass m and length l is hanging vertically at one end as shown in figure. A bullet of mass $\frac{m}{2}$ fired with velocity v strikes the rod in the middle and sticks to it then angular velocity of rod about hing just after being hit is



- (1) $\frac{2v}{3l}$ (2) $\frac{6v}{11l}$ (3) $\frac{3v}{7l}$ (4) $\frac{4v}{3l}$
12. Apparent dips in two planes normal to each other are 30° and 45° respectively. True dip at that place is
 (1) $\tan^{-1}(\sqrt{2})$ (2) $\tan^{-1}\left(\frac{1}{\sqrt{2}}\right)$ (3) $\tan^{-1}(2)$ (4) $\tan^{-1}\left(\frac{1}{2}\right)$
13. In a vertical spring mass system if stretching in spring at equilibrium near earth surface is x_0 then the extension in spring at a height 1600 km from earth surface is (radius of earth $R = 6400$ km)
 (1) $\frac{5}{16}x_0$ (2) $\frac{5x_0}{4}$ (3) $\frac{16x_0}{25}$ (4) $\frac{x_0}{4}$
14. Consider a series LR circuit with a switch as shown in figure. If the switch S is closed down at $t = 0$ then, the magnitude of change in flux through the ideal inductor in one time constant of the circuit is

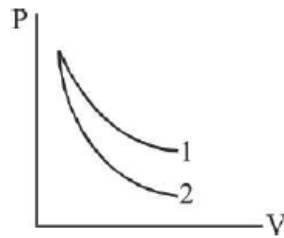


- (1) $10\left(\frac{e-1}{e}\right)$ (2) $\left(\frac{e-1}{e}\right)$ (3) $\left(\frac{e}{e-1}\right)$ (4) $\frac{1}{e}$
15. As shown in the adjoining figure, water squirts horizontally out of two small holes in the side of the cylinder and the two streams strike the ground at the same point. If the hole Q is at a height h above the ground and the level of water stands at height H above the ground, then the height of P above ground level is :-

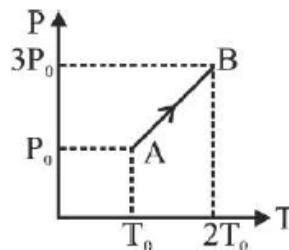


- (1) $2h$ (2) H/h (3) $H-h$ (4) $H/2$

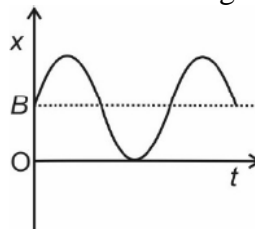
16. Which of the following statement(s) is/are correct :-
 I. Convection is a mode of heat transfer by actual motion of matter.
 II. Convection is possible only in gases.
 III. Convection can be natural or forced.
 (1) Only I (2) Both I and III (3) Only II (4) All of these
17. A gas is contained in a vessel of volume V_0 at a pressure P_0 . If the gas is to be pumped out by a suction pump of stroke volume V then number of moles of gas remained in the vessel after two strokes is (where, R is gas constant, T is constant temperature of gas)
 (1) $\frac{P_0 V_0^3}{RT(V_0 + V)^2}$ (2) $\frac{P_0 V_0^2}{RT(V_0 + V)^2}$ (3) $\frac{P_0 V_0^3}{RT(V_0 + V)^3}$ (4) $\frac{P_0 V_0^2}{RT(V_0 + V)^3}$
18. The temperature of Argon, kept in a vessel, is raised by 1°C at a constant volume. The total heat supplied to the gas is a combination of translational and rotational energies. Their respective shares are:-
 (1) 60% and 40% (2) 40% and 60% (3) 50% and 50% (4) 100% and 0%
19. P-V plots for two gases during adiabatic processes are shown in the figure. Plots 1 and 2 should correspond respectively to :-



- (1) He and O_2 (2) O_2 and He (3) He and Ar (4) O_2 and N_2
20. Pressure versus temperature graph of an ideal gas is as shown in figure. Density of the gas at point A is ρ_0 . Density at point B will be :-



- (1) $\frac{3}{4}\rho_0$ (2) $\frac{3}{2}\rho_0$ (3) $\frac{4}{3}\rho_0$ (4) $2\rho_0$
21. For a particle executing S.H.M with amplitude A , the position varies with time according to the following graph. The corresponding position equation with time is given by

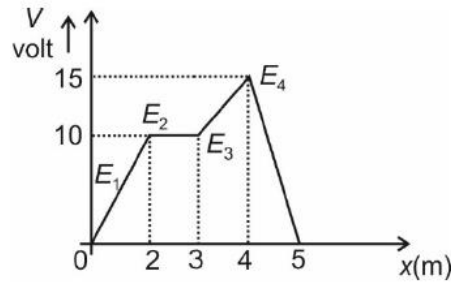


- (1) $x = A \sin \omega t$
 (2) $x = A + B \sin \omega t$
 (3) $x = B + A \cos \omega t$
 (4) $x = B + A \sin \omega t$
22. The equation of the standing wave in a string clamped at both ends, vibrating in its third harmonic is given by
 $y = 0.4 \sin (0.314x) \cos (600\pi t)$ where x and y are in cm and t is in sec-
 (1) The frequency of vibration is 300 Hz
 (2) The length of the string is 30 cm
 (3) The nodes are located at $x = 0, 10 \text{ cm}, 20 \text{ cm}, 30 \text{ cm}$
 (4) All of the above

23. Equal moles of nitrogen and helium are mixed. The ratio of speed of sound in the mixture to that in nitrogen is

- (1) $\frac{\sqrt{5}}{16}$ (2) $\sqrt{\frac{15}{8}}$ (3) $\frac{2}{\sqrt{5}}$ (4) $\frac{7}{5}$

24. Electric potential (V) in a region varies with x co-ordinate as shown in figure. If $E_1, E_2, E_3,$ and E_4 are magnitude of fields for the shown regions then

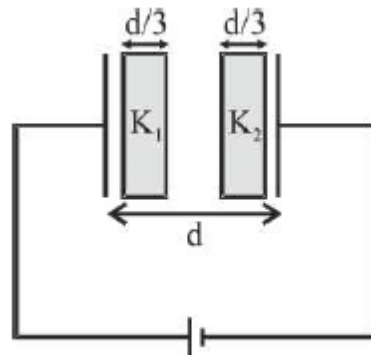


- (1) $E_1 > E_2 > E_3 > E_4$ (2) $E_4 > E_3 > E_2 > E_1$
 (3) $E_4 > E_3 = E_2 > E_1$ (4) $E_4 > E_3 = E_1 > E_2$

25. A charge Q is distributed over two concentric hollow spheres of radius r and $R (>r)$ such that the surface densities are equal. The potential at the common centre is :

- (1) $\frac{Q(R^2 + r^2)}{4\pi\epsilon_0(R+r)}$ (2) $\frac{Q}{R+r}$ (3) zero (4) $\frac{Q(R+r)}{4\pi\epsilon_0(R^2 + r^2)}$

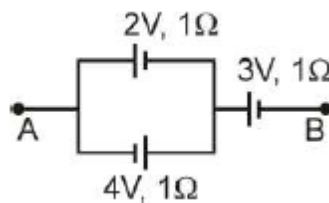
26.



Two dielectric slab of dielectric constant K_1 and K_2 and of same thickness is inserted in parallel plates capacitor and $K_1 = 2K_2$. Potential difference across slabs are V_1 and V_2 respectively then :-

- (1) $V_1 = V_2$ (2) $V_1 = 2V_2$ (3) $2V_1 = V_2$ (4) $4V_1 = V_2$

27. The potential difference between points A and B is-



- (1) 2 V (2) 6 V (3) 4 V (4) 3 V

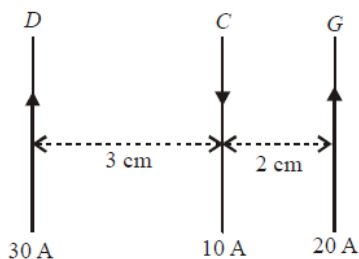
28. The area of cross-section, length and density of a piece of a metal of atomic weight 60gm are $10^{-6} \text{ m}^2, 1.0 \text{ m}$ and $5 \times 10^3 \text{ kg/m}^3$ respectively and every atom contributes one free electron. (Given Avogadro number $=6 \times 10^{23} / \text{mol}$). Find the drift velocity of electrons in the metal when the current of 16 A passes through it.

- (1) 2 mm/s (2) 2 cm/s (3) 20 cm/s (4) None of these

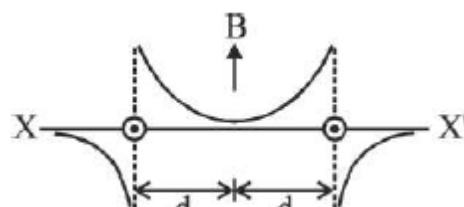
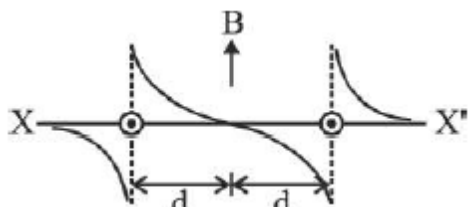
29. Two electrical bulbs marked 40 W, 220 V and 60 W, 220V when connected in series across same voltage supply of 220 V, the effective power is P_1 and when connected in parallel, the effective power is P_2 . Then (P_1 / P_2) is :-

- (1) 0.5 (2) 0.48 (3) 0.24 (4) 0.16

30. Three long straight parallel wires, carrying current, are arranged as shown in figure. The force experienced by 25 cm length of wire C is :-

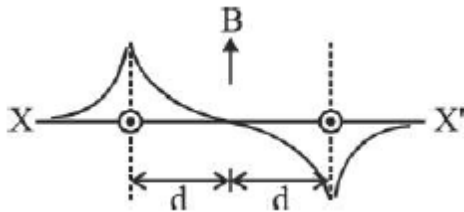
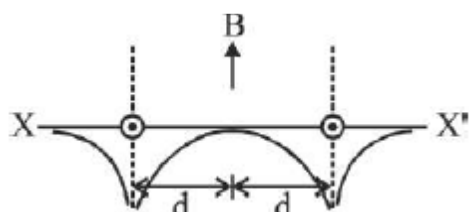


31. Two long parallel wires are at a distance $2d$ apart. They carry steady equal current flowing out of the plane of the paper as shown. The variation of the magnetic field along the line XX' is given by:-



(1)

(2)



(3)

(4)

32. The conduction current is the same as displacement current when source is :-

- (1) ac only (2) dc only (3) both ac and dc (4) neither dc nor ac

33. A magnet is brought towards a coil

(i) speedily

(ii) slowly then the induced e.m.f./induced charge will be respectively

- (1) More in first case / More in first case (2) More in first case/Equal in both case
 (3) Less in first case/More in second case (4) Less in first case/Equal in both case

34. The r.m.s. current in an ac circuit is 2 A. If the wattless current be $\sqrt{3}$ A, what is the power factor:-

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

35. Two identical thin plano convex lenses of refractive index n are silvered, one on the plane side and the other on the convex side. The ratio of their focal lengths is :

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

PART-1 : PHYSICS : SECTION-B

36. A plane mirror is approaching you with 10cm/s, you can see your image in it. At what speed will your image approach you?

- (1) 10 cm/s (2) 15 cm/s (3) 20 cm/s (4) 25 cm/s

37. In Young's double slit experiment, the ratio of path difference corresponding to third maxima obtained in air to the third minima obtained in water is (μ of water = $\frac{4}{3}$)

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

38. An unpolarised beam of light falls on a system of four polaroids, which are arranged consecutively in a line such that each polaroid is turned through the angle 45° with respect to the preceding one. The percentage of incident intensity stopped by the system is

- (1) 6.25 % (2) 93.75 % (3) 25 % (4) 73.25 %

39. The rate of disintegration of fixed quantity of a radioactive element can be increased by

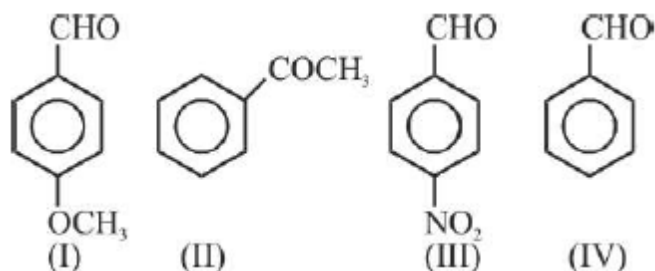
- (1) Increasing the temperature (2) Increasing the pressure
 (3) Chemical reaction (4) It is not possible

48. Longitudinal mechanical wave in gaseous medium travels in the form of compression and rarefaction. If the wavelength of the gas is λ then the minimum distance between two adjacent compressions is
 (1) $\frac{\lambda}{4}$ 2) $\frac{\lambda}{2}$ 3) λ 4) 2λ
49. A closed pipe 1.25 m long vibrates in its second overtone mode. It is in unison with the second harmonic mode of an open pipe. The length of the open pipe is approximately
 (1) 0.5 m (2) 1 m (3) 1.5 m (4) 2 m
50. Two conducting spheres of radii 10 cm and 20 cm contain 900 μC of charge on each sphere. Now they are joined by a conducting wire. The amount of charge flown through the wire is
 (1) 300 μC (2) 600 μC (3) 400 μC (4) 200 μC

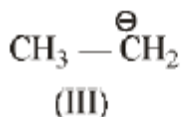
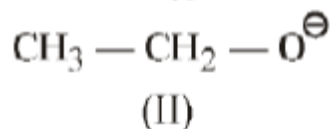
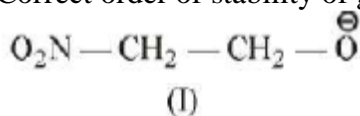
PART-2 : CHEMISTRY : SECTION-A

51. An element have three isotope and their atomic masses are 11, 12, 13 unit respectively and their percentage of occurrence in nature is 85, 10, 5 respectively, then average atomic mass is :-
 (1) 22.4 (2) 11.2 (3) 10 (4) 12
52. A 27 g sample of an unknown hydrocarbon was burned in excess O_2 to form 88 g of CO_2 and 27 g of H_2O . What is possible molecular formula of hydrocarbon :-
 (1) CH_4 (2) C_2H_2 (3) C_4H_3 (4) C_4H_6
53. One mole of an ideal gas at 25°C expands its volume from 1L to 4L at constant temperature. What work (in J) is done if gas expands against vacuum ($P_{\text{ext}} = 0$)?
 (1) -4×10^2 (2) -3×10^2 (3) -1×10^2 (4) Zero
54. In the following reaction the value of 'X' is –
 $\text{H}_2\text{O} + \text{SO}_3^{-2} \rightarrow \text{SO}_4^{-2} + 2\text{H}^+ + \text{X}$
 (1) 4e^- (2) 3e^- (3) 2e^- (4) 1e^-
55. The distance between an octahedral and tetrahedral void in fcc lattice would be :-
 (1) $\sqrt{3}a$ (2) $\frac{\sqrt{3}a}{2}$ (3) $\frac{\sqrt{3}a}{3}$ (4) $\frac{\sqrt{3}a}{4}$
56. Adsorption is/are accompanied by
 (1) decrease in entropy (2) decrease in enthalpy
 (3) $T\Delta S$ for the process is negative (4) (1), (2) and (3) are correct
57. For reaction $\text{A} + \text{B} \leftrightarrow \text{C} + 60 \text{ kJ}$ if forward activation energy is 40 kJ mol^{-1} then activation energy of backward reaction is :-
 (1) 100 kJ mol^{-1} (2) 20 kJ mol^{-1} (3) -100 kJ mol^{-1} (4) 80 kJ mol^{-1}
58. 36 gram of water and 828 gram of ethyl alcohol are mixed to each other, the mole fraction of water in it :-
 (1) 1.0 (2) 0.7 (3) 0.4 (4) 0.1
59. Which of the following will have minimum osmotic pressure :-
 (1) 0.1M NaCl (aq) (2) 1M NaCl (aq) (3) 2M NaCl (aq) (4) .001 M NaCl (aq)
60. At 25°C , the K_{sp} of AgCl is 2×10^{-10} . If 10^{-4} mole of Ag^+ are added to solution then K_{sp} will be :-
 (1) 2×10^{-10} (2) 2×10^{-6} (3) 2×10^{-4} (4) 2×10^{-5}
61. Which pair of species doesn't exist ?
 (1) He_2, Li_2 (2) $\text{H}_2^+, \text{He}_2^+$ (3) B_2, S_2 (4) Be_2, Ne_2
62. Dipole moment for triatomic molecule will be maximum when θ is ($\theta =$ bond angle) :-
 (1) $\theta = 90^\circ$ (2) $\theta = 120^\circ$ (3) $\theta = 150^\circ$ (4) $\theta = 180^\circ$
63. In $\text{Fe}(\text{CO})_5$, the Fe—C bond has :
 (1) Ionic character (2) σ -character only (3) π -character only (4) both σ & π character
64. Among $[\text{Ni}(\text{CO})_4]$, $[\text{Ni}(\text{CN})_4]^{2-}$ and $[\text{Ni}(\text{Cl})_4]^{2-}$:
 (1) $[\text{Ni}(\text{CO})_4]$ and $[\text{NiCl}_4]^{2-}$ are diamagnetic and $[\text{Ni}(\text{CN})_4]^{2-}$ is paramagnetic
 (2) $[\text{NiCl}_4]^{2-}$ and $[\text{Ni}(\text{CN})_4]^{2-}$ are diamagnetic and $[\text{Ni}(\text{CO})_4]$ is paramagnetic
 (3) $[\text{Ni}(\text{CO})_4]$ and $[\text{Ni}(\text{CN})_4]^{2-}$ are diamagnetic and $[\text{NiCl}_4]^{2-}$ is paramagnetic
 (4) $[\text{Ni}(\text{CO}_4)]$ is diamagnetic and $[\text{NiCl}_4]^{2-}$ and $[\text{Ni}(\text{CN})_4]^{2-}$ are paramagnetic
65. $[\text{Pt}(\text{NH}_3)(\text{NH}_2\text{OH})(\text{H}_2\text{O})(\text{Py})]^+$ will form how many geometrical isomers :-
 (1) 2 (2) 3 (3) 6 (4) 5
66. Which of the following can not be dissolved in liquid NH_3 :-
 (1) Ca (2) Na (3) Mg (4) K

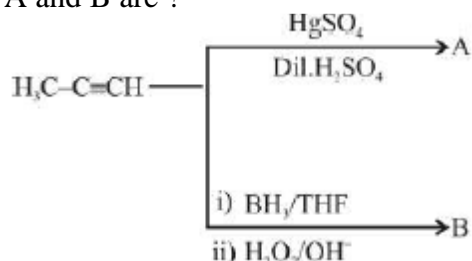
67. 'O-O' peroxy bond is present in:-
 (1) H_2SO_5 (2) HNO_4 (3) $\text{H}_2\text{S}_2\text{O}_8$ (4) All
68. In the electrolytic refining of copper, Ag and Au are found:-
 (1) On cathode (2) On anode (3) In the anodic mud (4) In the cathodic mud
69. When temporary hard water containing $\text{Mg}(\text{HCO}_3)_2$ is boiled the ppt. formed is of :
 (1) MgCO_3 (2) MgO (3) $\text{Mg}(\text{OH})_2$ (4) None of these
70. Arrange the following in increasing reactivity order for nucleophilic addition reaction :-



- (1) $\text{IV} < \text{I} < \text{III} < \text{II}$ (2) $\text{I} < \text{III} < \text{II} < \text{IV}$ (3) $\text{II} < \text{I} < \text{III} < \text{IV}$ (4) $\text{II} < \text{I} < \text{IV} < \text{III}$
71. Correct order of stability of given anions is :

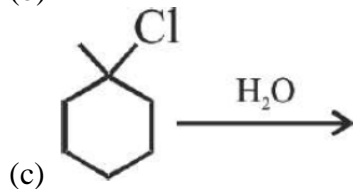
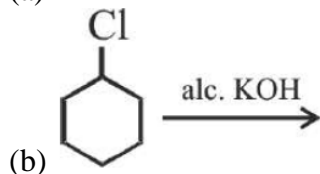
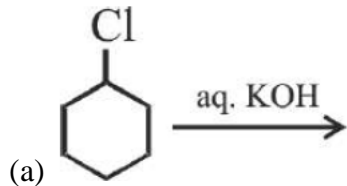


- (1) $\text{II} > \text{I} > \text{III}$ (2) $\text{I} > \text{II} > \text{III}$ (3) $\text{I} > \text{III} > \text{II}$ (4) $\text{III} > \text{II} > \text{I}$
72. A and B are ?



- (1) Chain Isomers (2) Position Isomers (3) Functional group isomers (4) Identical
73. Match the column-I and column-II and select the correct answer :

Column-I

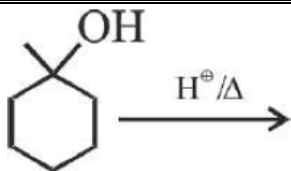


Column-II

(p) E_1

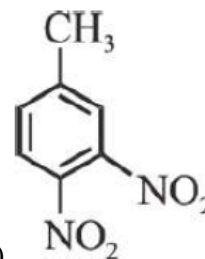
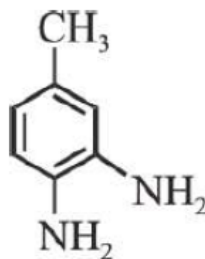
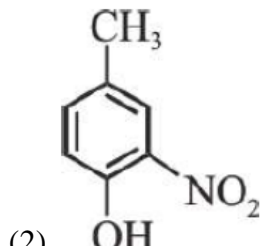
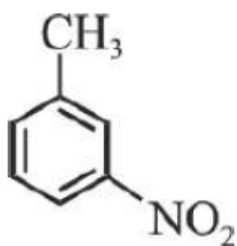
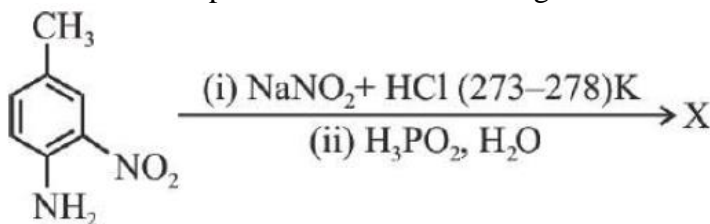
(q) SN^1

(r) SN^2



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

74. The structure of product X in the following reaction is :-



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

75. Which of the following cannot exhibit hyper conjugation :-

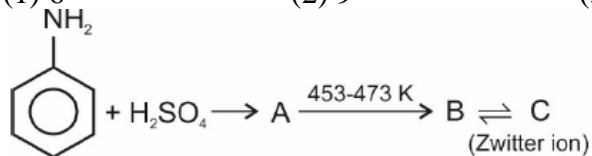
- (1) $CH_3 - \overset{\cdot}{C}H_2$ (2) $(CH_3)_2\overset{\oplus}{C}H$ (3) $CH_3-CH=CH_2$ (4) $(CH_3)_3C - \overset{\oplus}{C}H_2$

76. Maximum number of atoms is present in

- (1) 0.1 mol NaOH (2) 0.2 mol $C_6H_{12}O_6$
 (3) 0.3 mol $Na_2C_2O_4$ (4) 0.1 mol H_2O

77. Number of electrons in copper atom for which azimuthal quantum number (l) is 2, is

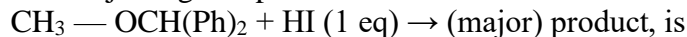
- (1) 6 (2) 9 (3) 10 (4) 7



78. Choose the incorrect option based on above reaction

- (1) A is anilinium hydrogensulphate
 (2) B is sulphanilic acid
 (3) A has electron withdrawing group attached with ring
 (4) C has $-NO_2$ group attached with ring

79. The major organic product in the reaction



- (1) CH_3I and $(C_6H_5)_2CHI$
 (2) CH_3I and $(C_6H_5)_2CH(OH)$
 (3) CH_3OH and $(C_6H_5)_2CHI$
 (4) CH_3OH and $(C_6H_5)_2CH(OH)$

80. de-Broglie wavelength of a particle of mass of 6.62×10^{-22} kg moving with 1 m/s speed is (Planck's constant is 6.62×10^{-34} Js)

- (1) 0.1 Å (2) 0.01 Å (3) 0.2 Å (4) 0.02 Å

81. Element of highest first negative electron gain enthalpy is

- (1) N (2) O (3) F (4) Cl

82. Glucose on reaction with HNO_3 forms

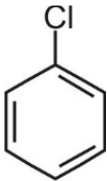
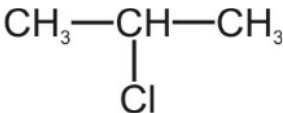
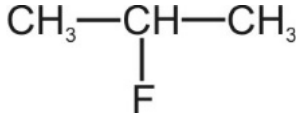
- (1) Gluconic acid (2) Saccharic acid
 (3) n-hexane (4) Gluconaldehyde

83. Pair of compounds, which cannot be distinguished by iodoform test is

- (1) CH_3OH and CH_3CH_2OH
 (2) CH_3CH_2OH and $CH_3CH_2CH_2OH$
 (3) CH_3CH_2OH and CH_3COCH_3

- (4) CH_3COCH_3 and $\text{PhCOCH}_2\text{CH}_3$
84. Incorrect statement about AlCl_3 is
 (1) It is an electron deficient molecule.
 (2) It achieves stability by forming a dimer
 (3) It exists as $[\text{Al}(\text{H}_2\text{O})_6]^{3+}$ ion in its acidified aqueous solution.
 (4) The chloride bridge is a three-centre two electron bond.
85. Species having sp^3d^2 hybridization around central atom is
 (1) I_3^- (2) XeF_2 (3) SF_6 (4) XeO_3

PART-2 : CHEMISTRY : SECTION-B

86. Incorrect match of polymers among the following is
 (1) Polyamides \rightarrow Nylon 6, 6
 (2) Phenol formaldehyde \rightarrow Bakelite
 (3) Synthetic rubber \rightarrow Buna-N
 (4) Biodegradable \rightarrow Dacron
87. In which of the following pair of molecules London forces are the dominating intermolecular forces of attraction?
 (1) HCl and HCl (2) HCl and H_2O (3) N_2 and N_2 (4) NH_3 and HCl
88. pH of aqueous solution 0.1N of NaOH is
 (1) 1 (2) 10 (3) 11 (4) 13
89. Standard electrode potential of following reaction is
 $6\text{Fe}^{2+}(\text{aq}) + \text{Cr}_2\text{O}_7^{2-}(\text{aq}) + 14\text{H}^+(\text{aq}) \rightarrow 6\text{Fe}^{3+} + 2\text{Cr}^{3+} + 7\text{H}_2\text{O}$
 ($E^0_{\text{Fe}^{3+}/\text{Fe}^{2+}} = 0.77\text{V}$ and $E^0_{\text{Cr}_2\text{O}_7^{2-}/\text{Cr}^{3+}} = 1.33\text{V}$)
 (1) 0.26 V (2) 0.56 V (3) 1.22 V (4) 1.12 V
90. Alkali metal of highest density among the following is
 (1) Na (2) Li (3) K (4) Cs
91. Which of the following is an example of antiseptic?
 (1) Tincture of iodine (2) Norethindrone
 (3) Chloramphenicol (4) Salvarsan
92. Which of the following solvents is a carcinogen and was earlier used as solvent for dry cleaning?
 (1) H_2O (2) $\text{Cl}_2\text{C} = \text{CCl}_2$ (3) Liquid CO_2 (4) H_2O_2
93. The incorrect statement from the following is
 (1) O_2 , Cu^{2+} , Fe^{3+} and Cr^{3+} are paramagnetic in nature.
 (2) NaCl , KCl and CsCl show schottky defect
 (3) Packing efficiency of FCC unit cell is 68%
 (4) Diamond and ZnS have similar lattices
94. The charge required to reduce 0.2 mol nitrobenzene into aniline is
 (1) 0.6 F (2) 0.2 F (3) 1.2 F (4) 1.6 F
95. Time required (in hr) to decompose a reactant upto 93.75% in first order reaction is ($t_{1/2} = 3$ hr)
 (1) 9 (2) 6 (3) 12 (4) 15
96. Which of the following will not show elimination reaction with alc. KOH ?
- (1) $\text{CH}_3\text{CH}_2\text{CH}_2\text{Cl}$ (2)  (3)  (4) 
97. Which of the following is part of classical smog?
 (1) NO_2 (2) CO_2 (3) SO_2 (4) N_2O
98. Packing fraction of hexagonal close packing in 2-D is about
 (1) 91% (2) 74% (3) 68% (4) 80%
99. Example of negatively charged sol is
 (1) Gold sol (2) Ferric hydroxide (3) TiO_2 (4) Haemoglobin
100. Which among the following has positive $E^0_{M^{2+}/M}$?

(1) Co

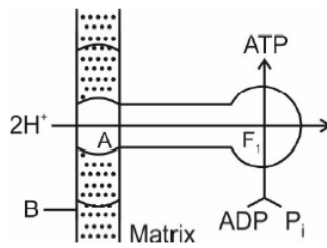
(2) Ni

(3) Cu

(4) Zn

PART-3 : BOTANY : SECTION-A

101. Plasma membrane is an absolute requirement for living organisms, because it is/has
 (1) Responsible for the relationship of a cell with the outside world.
 (2) Composed of lipids that are arranged in a bilayer.
 (3) Composed of protein.
 (4) Variable ratio of protein and lipid in different cell types.
102. Select the **incorrect** statement w.r.t plant cells.
 (1) Are generally smaller than animal cell
 (2) Have a rigid cell wall made up of cellulose
 (3) Generally lack centrioles and centrosome
 (4) Contain plastid
103. Match **Column I** with **Column II** w.r.t stages of prophase – I.
- | | Column I | Column II |
|-----|-----------------|---|
| (A) | Leptotene | (i) Synapsis |
| (B) | Zygotene | (ii) Crossing over |
| (C) | Pachytene | (iii) Desynapsis |
| (D) | Diplotene | (iv) Condensation and coiling of chromatin fibres |
- | | A | B | C | D |
|-----|-------|-------|-------|-------|
| (1) | (ii) | (iv) | (iii) | (i) |
| (2) | (iii) | (ii) | (i) | (iv) |
| (3) | (i) | (iii) | (iv) | (ii) |
| (4) | (iv) | (i) | (ii) | (iii) |
104. A protozoan which is endoparasite and does **not** have locomotory structure is
 (1) *Trypanosoma* (2) *Paramecium*
 (3) *Plasmodium* (4) *Amoeba*
105. Select the **incorrect** statement w.r.t Endodermis.
 (1) It is the innermost layer of cortex
 (2) In transverse section, the cells of endosperm appear barrel - shaped or oval – shaped.
 (3) The cells constituting endodermis are living and may contain starch grains.
 (4) Are present in monocot stem
106. Select the **correct** statement w.r.t monocot leaf.
 (1) Is dorsiventral
 (2) Stomata is equal in number on lower and upper epidermis
 (3) Mesophyll is differentiated into palisade and spongy parenchyma
 (4) Bulliform cells can not be present
107. Which of the given structure represent juvenile phase in life cycle of moss?
 (1) Leafy gametophyte (2) Oospore (3) Protonema (4) Capsule
108. The water potential of pure water at standard temperatures, which is not under any pressure is always
 (1) Negative (2) Equal to ψ_s (3) One (4) Zero
109. Select the **most appropriate** reason for curling of root hairs during nodule formation.
 (1) Attachment of bacterium to epidermal root hair cell
 (2) Release of *Nod* factors by Rhizobia
 (3) Multiplication of bacteria
 (4) Production of infection thread
110. Select the **correct** pairs of micro organisms w.r.t free-living nitrogen fixing cyanobacteria?
 (1) *Anabaena* and *Nostoc*
 (2) *Anabaena* and *Azotobacter*
 (3) *Nostoc* and *Rhizobium*
 (4) *Azotobacter* and *Rhizobium*
111. Consider the given diagram and identify the parts labelled as 'A' and 'B'.

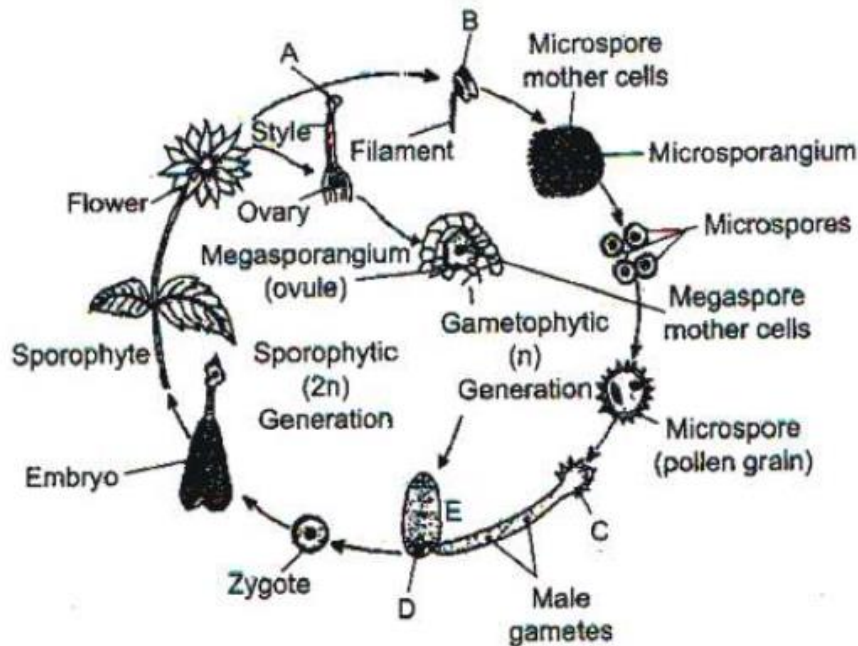


- (1) 'A' is a peripheral membrane protein complex.
 (2) 'A' is the site for synthesis of ATP from ADP and inorganic phosphate.
 (3) 'B' contains the enzyme which catalyses conversion of succinic acid to form fumaric acid during aerobic respiration.
 (4) 'B' contains all enzymes required in citric acid cycle.
112. Which of the given intermediates of amphibolic pathway is raw material for amino acid synthesis?
 (1) α - ketoglutaric acid (2) Oxaloacetic acid
 (3) Succinyl CoA (4) Acetyl CoA
113. Select the **incorrect** statement w.r.t physiological effects of ethylene.
 (1) Increases the number of female flowers in cucumber
 (2) Accelerates abscission
 (3) Increases sensitivity of roots to gravity
 (4) Breaks dormancy
114. Syngamy occurs outside the body in
 (1) Bryophytes (2) Pteridophytes
 (3) Gymnosperm (4) Most of the algae
115. Which of the given layer of anther is ephemeral and degenerates at maturity?
 (1) Endothecium (2) Middle layer
 (3) Exothecium (4) (1) and (3)
116. In the process of transcription in eukaryotes, the RNA polymerase III transcribes.
 (1) hn RNA
 (2) r RNAs – 28S, 18S, 5.8S
 (3) t RNA, ScRNA, SnRNA and 5 SrRNA
 (4) m - RNA
117. How many amino acid sequences will be present in a polypeptide chain when genetic information flows from the following stretch of DNA?
 3' ATGCATGC ATGCATC 5' Template strand
 5' TACGTACG TACGTAG 3' coding strand
 (1) 5 (2) 4 (3) 8 (4) 10
118. Select the **incorrect** statement w.r.t 'bacterial transcription'.
 (1) mRNA does not require any processing to become active.
 (2) Transcription and translation takes place in same compartment as there is no separation of cytosol and nucleus
 (3) Translation begins only after the m-RNA is fully transcribed
 (4) Transcription and translation can be coupled in bacteria
119. Which of the given enzymes is genetically engineered and used as 'clot buster'?
 (1) Statin (2) Cyclosporin - A
 (3) Streptokinase (4) Amylase
120. Which of the given population interaction is **incorrect** w.r.t mutualism?
 (1) Lichens (2) Mycorrhizae (3) Orchids and bees (4) *Cuscuta* on hedge plants
121. Manuals are useful in providing information for:-
 (1) Identification of name of species found in an area
 (2) Only one taxon
 (3) Index of plant species in a particular area
 (4) Both (2) and (3)
122. Which of the following institute is not situated in Lucknow:-
 (1) Central Drug Research Institute (2) Indian Botanical Garden
 (3) Central Arid Zone Research Institute (4) Both 2 & '3'
123. "Type of reproduction without multiplication" is consider as ?
 (1) Zoospore formation (2) Conidia formation (3) Binary fission (4) Endospore formation

124. In pteridophyte gametophyte (prothallus) prefers to grow in moist shady places because :

- (1) In these conditions they produce spore very well
- (2) It represents the ancestry of bryophyte
- (3) It need water for fertilization
- (4) It is a aquatic structure

125. In the life cycle of angiosperms A, B, C, D and E are, respectively :



- (1) Stigma, anther, male gametophyte, ovule and female gametophyte
- (2) Stigma, anther, female gametophyte, egg and male gametophyte
- (3) Stigma, anther, male gametophyte, egg and female gametophyte
- (4) Stigma, anther, embryo sac, egg and female gametophyte

126. Fill in the blanks :-

- (I) In racemose type of inflorescence the flowers are borne laterally in a (a) succession.
 (II) In cymose type of inflorescence the main axis terminates in a flower, hence is limited in growth. The flowers are borne in a (b) order.

- (1) (a) - acropetal, (b) – basipetal
- (2) (a) - basipetal, (b) – acropetal
- (3) (a) - acropetal, (b) – acropetal
- (4) (a) - basipetal, (b) – basipetal

127. A fruit dehiscence from apex to base and derived from monocarpellary ovary with marginal placentation is :-

- (1) Follicle
- (2) Siliqua
- (3) Legume
- (4) Berry

128. Which among the following is not a real difference between a dicot stem and monocot stem regarding their vascular bundles?

Structures	Vascular bundle of a dicot stem	Vascular bundle of a monocot stem
(1) Cambium	present	absent
(2) Phloem parenchyma	present	absent
(3) Xylem	centripetal	centrifugal
(4) Water cavity	Absent	present

129. Name the passages through which movement of RNA and protein molecules takes place in both direction between the nucleus and the cytoplasm :-

- (1) Porins
- (2) Perinuclear space
- (3) Plasmodesmata
- (4) Nuclear pore

130. Reformation of nucleolus, golgi complex and ER occurs in :-

- (1) Telophase
- (2) Metaphase
- (3) Prophase
- (4) Anaphase

131. Anaphase promoting complex (APC) is a protein degradation machinery necessary for proper mitosis of human cells. If APC is defective in a human cell then which of the following is expected to occur?

- (1) Recombination will not occur
- (2) Chromosome will not condense
- (3) Separation of sister chromatids will not occur
- (4) Duplication of centriole will not take place

132. Which of the following is secondary metabolite ?
 (1) Antibiotics (2) Scents (3) Rubber (4) All of the above
133. Fehling solution is used for the detection of :-
 (1) Glucose (2) Starch (3) Fat (4) All of these
134. (A) Metal ions are co-factor which form co-ordination bonds with side chains at the active site and at the same time form one or more coordination bonds with the substrate.
 (B) Co-enzymes are organic compounds and always their association with the apoenzyme is permanent.
 (1) Both (A) and (B) are correct (2) Both (A) and (B) are incorrect
 (3) Only (A) is correct (4) Only (B) is correct
135. Which biomolecules creates anaerobic condition for symbiotic nitrogen fixation ?
 (1) Glucose (2) Cytochrome (3) Leg haemoglobin (4) Infection thread

PART-3 : BOTANY : SECTION-B

136. Which intermediate of citric acid cycle is involve in reductive Amination :-
 (1) Succinate (2) α -Ketoglutarate (3) Pyruvate (4) cis-Aconitate
137. Gibberellic acid is known to carry out all these functions except :-
 (1) Increase in yield in grapes and apple (2) Speed up malting process
 (3) Activation of α – amylase (4) Thinning of cotton
138. Match the column-I with column-II and select the correct option from options given below :
Column-I (Plant name) Column-II (Mode of vegetative propagation)
- | | |
|----------------|-------------|
| (A) Ginger | (P) Runner |
| (B) Potato | (Q) Rhizome |
| (C) Agave | (R) Tuber |
| (D) Eichhornia | (S) Bulbils |
| | (T) Offset |
- (1) A-P ; B-Q, C-R, D-S (2) A-Q, B-R, C-S, D-P
 (3) A-Q, B-R, C-S, D-T (4) A-P, B-R, C-Q, D-S
139. If testa is removed from water soaked gram seed, the remaining structure is –
 (1) Full mature embryo (2) Cotyledons with endosperm and pericarp
 (3) Only Cotyledons filled with starch (4) Only endosperm
140. DNA replication is :-
 (1) Continuous and conservative (2) Discontinuous and semi conservative
 (3) Semi discontinuous and semiconservative (4) Conservative and semi discontinuous
141. Find out the **correct** statements from the followings:-
 (a) In lac-operon structural genes is regulated by a common promoter and regulatory gene.
 (b) In lac-operon one regulatory gene (the i gene) is present, here the term i refers to the inducer.
 (c) Lactose is the substrate for the enzyme beta galactosidase and it regulates switching on and off the operon.
 (d) The y-gene of lac-operon codes for permease
 (e) The z-gene codes for beta – galactosidase
 (1) a and c only (2) a, b and e only (3) a, c and e only (4) a, c, d and e only
142. Which one of the following pairs is not correctly matched?
 (1) Plasmid -Small piece of extrachromosomal DNA in bacteria
 (2) Interferon - An enzyme that interferes with DNA replication
 (3) Cosmid -A vector for carrying large DNA fragments into host cells
 (4) Myeloma - tumour cells
143. Dominant phenotype/trait is produced by :-
 (1) Unmodified allele only (2) Modified alleles only
 (3) Both unmodified and equivalent modified alleles (4) Every modified and unmodified allele.
144. Find out correct match:
 (1) Clot buster – Streptokinase
 (2) Cyclosporin-A – Blood cholesterol lowering agent
 (3) Statins – Immunosuppressive agent
 (4) Citric acid – Yeast
145. In Bt cotton, the Bt toxin present in plant tissue as pro-toxin is converted into active toxin due to:-
 (1) Acidic pH of the insect gut
 (2) Action of gut micro-organisms

158. Which phylum has cell-aggregate type of body plan ?
 (1) Platyhelminthes (2) Aschelminthes (3) Porifera (4) Protozoa
159. Planaria, liver fluke and Taenia are :-
 (1) Segmented worm (2) All found in gut as parasite
 (3) All have coelom (4) All are flatworms
160. Identify the correct statement about the diagram given below



- (1) Notochord is found in trunk
 (2) Marine water animal with organ system level of organisation having short trunk.
 (3) Bilaterally symmetrical, triploblastic, acoelomate animal
 (4) Circulatory system is open type
161. Central canal of spinal cord is lined by:-
 (1) Ependymal epithelium (2) Ciliated epithelium (3) Endothelium (4) 1 and 2 both
162. What is x and y in the given reaction?

$$\text{Starch} \xrightarrow[\text{pH=x}]{\text{Salivary Amylase}} \text{y}$$

 (1) x = 6.8, y = sucrose (2) x = 8.0, y = maltose (3) x = 8.0, y = Lactose (4) x = 6.8, y = maltose
163. Which substance in saliva helps in lubricating and adhering the masticated food particles in to a bolus?
 (1) Amylase (2) Mucous (3) Isothiocyanate (4) Lysozyme
164. Match the items given in Column I with those in Column II and select the correct option:
- | Column I | | | | Column II | | | | | |
|-------------------------------|----------|----------|----------|------------------|----------|----------|----------|----------|----|
| a. Tidal volume | | | | i. 2500-3000 mL | | | | | |
| b. Inspiratory Reserve volume | | | | ii. 1100-1200 mL | | | | | |
| c. Expiratory Reserve volume | | | | iii. 500-550 mL | | | | | |
| d. Residual volume | | | | iv. 1000-1100 mL | | | | | |
| | a | b | c | d | a | b | c | d | |
| (1) | iii | ii | i | iv | (2) | iii | i | iv | ii |
| (3) | i | iv | ii | iii | (4) | iv | iii | ii | i |
165. Blood colloidal osmotic pressure mainly maintained by which plasma protein :-
 (1) Globulin (2) Albumin (3) Fibrinogen (4) Prothombin
166. Which of the following is the correct pathway for passage of urine in humans ?
 (1) Collecting tubule → Ureter → Bladder → Urethra
 (2) Renal vein → Renal ureter → Bladder → Urethra
 (3) Pelvis Medulla → Bladder → Urethra
 (4) Cortex → Medulla → Bladder → Ureter
167. The disease which is due to increased uric acid in blood ?
 (1) Rhumatoid arthritis (2) Sprain (3) Gout (4) Osteoporosis
168. When viewing an object near to your eyes the following are required for proper image formation of the retina ?
 (A) Contraction of the ciliary muscles (B) Increase in thickness of lens
 (C) Constriction of the pupil (D) Increased focal length of the lens
 (1) A and C (2) A and D (3) B and D (4) A and B
169. During implantation, the blastocyst becomes embedded in the which layer of uterus :-
 (1) Perimetrium (2) Myometrium (3) Endometrium (4) Serosa

170. Inability of male partner to inseminate the female or due to very low sperms count in the ejaculate, could be corrected by using :-
 (1) Gamete intra fallopian transfer (GIFT) (2) Artificial insemination (AI)
 (3) I.C.S.I. (Intra cytoplasmic sperm injection) (4) ZIFT (Zygote intra fallopian transfer)
171. How many statements are correct about evolution of darwins finches :-
 (a) They evolve through adaptive radiation
 (b) All varieties of finches, which evolved from common ancestor show homology
 (c) Adaptive radiation is also shown by Australian marsupials
 (d) When more then one adaptive radiation appeared to have occurred in isolated geographical area is known as convergent evolution
 (1) 4 (2) 3 (3) 2 (4) 1
172. A trisomic aneuploidy patient having double barr body having problem in menstrual cycle this genetic disorder may be :-
 (1) Multi-x female (2) Turner's syndrome (3) Klinefelter's syndrome (4) Down syndrome
173. How many of the below statements are not correct about AIDS :-
 (a) It is not a congenital disease (b) Spreads due to conscious behaviour pattern
 (c) Loss of contact inhibition (d) "Don't die of ignorance"
 (e) Metastasis
 (1) One (2) Two (3) Three (4) Four
174. Appearance of dry, scaly lesions on various parts of the body such as skin, nails and scalp is seen in which disease :-
 (1) Ascariasis (2) Filariasis (3) Amoebiasis (4) Ringworms
175. Match the column :-
Column I (Method of reproduction) **Column II (Importance)**
 A. Inbreeding i. Increase herd size in short time
 B. Outcrossing ii. Increases homozygosity
 C. Cross breeding iii. To overcome inbreeding depression
 D. MOET iv. To combine desirable characters of two different breeds
 (1) A – i, B – ii, C – iii, D – iv (2) A – ii, B – iii, C – iv, D – i
 (3) A – iv, B – iii, C – ii, D – I (4) A – ii, B – iii, C – i, D – iv
176. Select the **incorrect** statement.
 (1) Blood is a fluid connective tissue
 (2) Most of the cartilages in vertebrate embryos are replaced by bones in adults
 (3) The smooth muscle fibres taper at both ends and show striations
 (4) Tight junctions help to stop substances from leaking across a tissue
177. Choose the **correct** match
 (1) Compound epithelium – Single layer of cells
 (2) Adhering junctions – Cement neighbouring cells together
 (3) Adipocytes – Secrete fibres
 (4) Areolar tissue – Specialised connective tissue
178. When bile pigments like bilirubin increase in blood it causes _A_. In this disorder _B_ is affected. AB Choose the **correct** option for filling the blanks A and B
- | A | B |
|------------------|--------------|
| (1) Indigestion | Kidney |
| (2) Diarrhoea | Liver |
| (3) Constipation | Gall bladder |
| (4) Jaundice | Liver |
179. The **incorrect** statement w.r.t. emphysema is
 (1) One of the major causes is excessive cigarette smoking
 (2) Walls of alveoli are damaged
 (3) Lungs remain inflated
 (4) Exchange of gases increases across alveoli due to decrease in surface area

180. Which of the given statements are **correct**?
- In humans, the cardiac output is about 5040 ml.
 - Semilunar valves close when ventricular pressure rises during systole.
 - Deoxygenated blood is carried by pulmonary vein.
 - First heart sound is produced due to opening of AV valves.
 - Veins have valves to prevent backflow of blood
- (1) a, b and e (2) b, c and d (3) a and e (4) c, d and e
181. All of the following will favour increase in blood pressure **except**
- Vasopressin (2) Angiotensin-II
 - Renin (4) ANF
182. Choose the option which **correctly** states the type of joint present between the following
- Atlas and axis
 - Femur and acetabulum
 - Cranial bones
 - Phalanges

	a	b	c	d
(1)	Hinge	Pivot	Sutures	Saddle
(2)	Pivot	Ball and socket	Sutures	Hinge
(3)	Pivot	Gliding	Fibrous	Saddle
(4)	Hinge	Ball and socket	Saddle	Hinge

183. Select an autoimmune disorder of muscular and skeletal system
- Myasthenia Gravis
 - Tetany
 - Osteoporosis
 - Muscular dystrophy
184. Corpora quadrigemina which consists mainly of four round swellings is located in dorsal portion of the
- Thalamus (2) Midbrain (3) Pons (4) Medulla
185. Select the **incorrect** match w.r.t. chemical nature of hormones
- Peptide – Insulin
 - Steroids – Estradiol
 - Iodothyronine – Thyroid
 - Amino-acid derivative – Cortisol

PART-4 : ZOOLOGY : SECTION-B

186. Select the **incorrect** statement w.r.t. human reproduction
- Capacitation occurs in female reproductive tract
 - In human females, meiosis-II is not completed until fertilisation
 - The interstitial cells of tests are secretory source of androgens
 - GnRH acts on posterior pituitary and stimulates secretion of oxytocin and FSH
187. A sexually transmitted infection which is completely curable is detected early and treated properly is
- Chlamydia (2) Hepatitis-B
 - Genital herpes (4) HIV infection
188. Arrange the below given ancestors of man in decreasing order of their cranial capacities.
- Homo habilis*
 - Homo erectus*
 - Neanderthal man
 - Cro-magnon man*
- Choose the **correct** option
- $d > c > b > a$ (2) $c > d > b > a$
 - $a > b > d > c$ (4) $b > a > d > c$
189. All of the following are secondary lymphoid organs **except**
- Peyer's patches of small intestine (2) Spleen
 - Bone marrow (4) Tonsils
190. Chemotherapy, radiotherapy and immunotherapy are treatment modalities for
- Hepatitis-B (2) AIDS (3) Malignant tumor (4) Dengue fever

191. Agent responsible for causing most serious form of malaria which could be even fatal is
 (1) *Plasmodium vivax* (2) *Plasmodium falciparum*
 (3) *Plasmodium ovale* (4) *Plasmodium malariae*
192. **Odd** one w.r.t marine edible fishes is
 (1) Hilsa (2) Sardines (3) Rohu (4) Mackerel
193. Select the **incorrect** statement
 (1) Maximum number of existing transgenic animals are mice
 (2) BAC and YAC are commonly used for human genome sequencing
 (3) Golden rice is a transgenic food crop meant for biosynthesis of vitamin 'A'
 (4) Acidic pH of stomach triggers activation of protoxin to active Bt toxin of *Bacillus thuringiensis* in boll worm
194. Maturation of pro-insulin into insulin involves removal of
 (1) A peptide (2) B peptide
 (3) Disulphide bridges (4) C peptide
195. The first clinical gene therapy was given in 1990 to a 4-year-old girl with deficiency of
 (1) Insulin (2) Adenosine deaminase (3) Alkaline phosphatase (4) Polymerase
196. Which of the following lymphoid organs provide the sites for interaction of lymphocytes with the antigen, which then proliferate to become effector cells?
 1) Bone marrow 2) Thymus 3) Tonsils 4) Primary lymphoid organs
197. 'The Evil Quartet' has all of the given except
 1) Habitat loss and fragmentation 2) Over-exploitation
 3) Alien species invasions 4) Ex-situ conservation
198. The first transgenic cow Rosie, produced milk which was rich in
 1) α -1 antitrypsin 2) Human α -lactalbumin 3) Polygalacturonase 4) Vitamin-A
199. What induces the completion of the meiotic division of the secondary oocyte?
 1) Contact of the sperm with the zona pellucida layer of ovum
 2) Entry of the sperm into the cytoplasm of the ovum through the zona pellucida and the plasma membrane
 3) Fast block to polyspermy
 4) Release of sperms by the penis into the vagina of female
200. The maximum volume of air a person can breathe in after a forced expiration is
 1) TV + IRV 2) TV + ERV 3) ERV + TV + IRV 4) ERV + RV