Time: 3 Hours | **NEET -1** | **Max. Marks: 720 M**

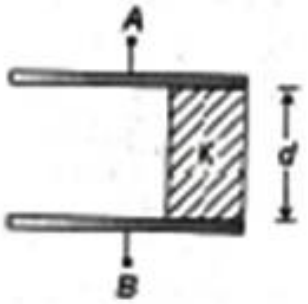
PHYSICS

1. A charged particle of mass m and charge q is released from rest in a uniform electric field E.

The kinetic energy of the particle after time t is

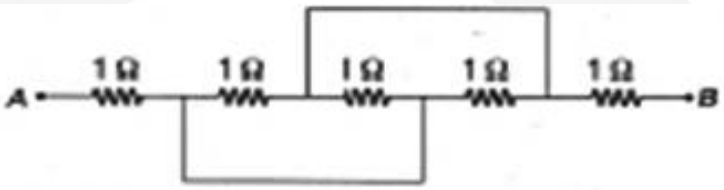
1) $\frac{2E^2t^2}{mq}$ 2) $\frac{E^2t^2m}{2t^2}$ 3) $\frac{E^2q^2t^2}{2m}$ 4) $\frac{Eqm}{2t}$

2. A Parallel plate capacitor with vaccum b/w its plates has capacitance C. A slab of dielectric constant K and having the same thickness as the separation b/w the plates is introduced. So as to fill 1/3 rd of the capacitor as shown in the figure. The new capacitance will be



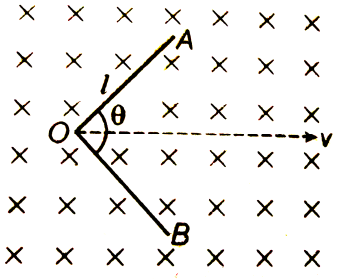
1) $(K+2)\frac{C}{4}$ 2) $(K+2)\frac{C}{3}$ 3) $(K+3)\frac{C}{4}$ 4) $(K+3)\frac{C}{3}$

3. Equivalent resistance b/w the points A and B $(in\,\Omega)$



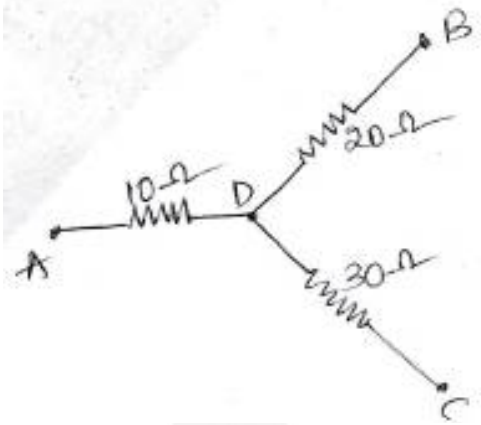
1) $1/5$ 2) $1\frac{1}{4}$ 3) $2\frac{1}{3}$ 4) $3\frac{1}{2}$

4. An $\angle AOB$ made of a conducting wire moves along its bisector through a magnetic field B as suggested by figure. Find the emf induced between the two free ends if the magnetic field is perpendicular to the plane of the paper.



1) $B\ell\sin(\theta/2)$ 2) $Bv\sin(\theta/2)$ 3) $2B\ell v\sin(\theta/2)$ 4) $B\ell v\sin(\theta/4)$

5. In the circuit given here, the points A, B and C are 70V, zero and 10V respectively. Then



1) The point D will be at a potential of 60V
2) The point D will be at a potential of 20V
3) Currents in the paths AD,DB and DC are in the ratio 1:2:3
4) Currents in the paths AD,DB and DC are in the ratio 3:2:1

6. In an ammeter 0.2 % of main current passes through the galvanometer. If resistance of galvanometer is G, the resistance of ammeter will be

1) $\frac{499}{500}G$ 2) $\frac{1}{500}G$ 3) $\frac{500}{499}G$ 4) $\frac{1}{499}G$

7. The pressure exerted by an electromagnetic wave of intensity I (watt m^{-2}) on a non-reflecting surface is [c is the velocity of light]

1) Ic 2) Ic^2 3) I / c 4) I / c^2

8. A beam of electrons is accelerated through a Potential difference V. It is then passed normally through a uniform magnetic field where it moves in a circle of radius r. It would have moved in a circle of radius 2r if it were initially accelerated through a Potential difference.

1) $\sqrt{2}$ V 2) 2V 3) $2\sqrt{2}$ V 4) 4V

9. A magnetic needle lying parallel to a magnetic field requires W units of work to turn it through 60^0. The torque required to maintain the needle in this position is

1) $\sqrt{3}$ W 2) $\frac{\sqrt{3}}{2}$ W 3) W 4) 2W

10. A thin rod of length 'L' and mass 'M' held vertically with one and fixed on the floor is allowed to fall. The velocity of the other end when it hits the floor is

1) $\sqrt{3gL}$ 2) $\sqrt{5gL}$ 3) $\sqrt{2gL}$ 4) $\sqrt{gL}$

11. In a step-up transformer, the turns ratio of primary and secondary is 1:2 A leclanche cell of emf 1.5 V is connected a cross the primary. The voltage developed across the secondary would be

1) zero 2) 3.0 V 3) 1.5V 4) 0.75V

12. Choose the correct option

1) The radiation in increasing order of frequency are radio waves, micro waves, infrared, visible, ultraviolet, x-rays, gamma rays, cosmic rays.
2) The wave length of colours in increasing order violet, indigo blue, green, yellow, orange and red
3) The speed of light is maximum in vacuum .
4) All options are correct.

13. A beam of light of wavelength λ is incident on a metal having work function ϕ and placed in a magnetic field B. The most energetic electrons emitted perpendicular to the field are bent in circular arcs of radius R. Then

1) $B=\frac{mv}{eR}, Where\ \frac{hc}{\lambda}=\phi+\frac{1}{2}mv^2$ 2) $B=\frac{mR}{ev}, Where\ \frac{hc}{\lambda}=\phi+\frac{1}{2}mv^2$

3) $B=\frac{mv}{eR}, Where\ \frac{hc}{\lambda}=\phi+\frac{1}{2}mv^2$ 4) None

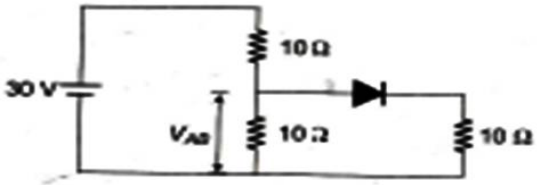
14. If the electron in a hydrogen atom jumps from the third orbit to the second orbit, the emitted radiation has wave length. ('R' is Rydberg's constant).

1) $\frac{36}{5R}$ 2) $\frac{5R}{36}$ 3) $\frac{6}{5R}$ 4) $\frac{5R}{6}$

15. Three-fourths of the active nuclei present in a radioactive sample decay in $\frac{3}{4}s$. The half-life of the sample is

1) 1 sec 2) ½ sec 3) ¾ sec 4) 3/8 sec

16. Find V_{AB}

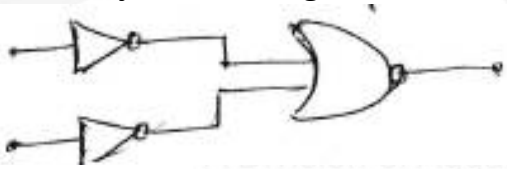


1) 10V 2) 20V 3) 30V 4) None of these

17. A particle of mass m is projected with a velocity v making an angle of 45° with horizontal. The magnitude of the angular momentum of the projectile about the point of projection when the particle is at its maximum height h is

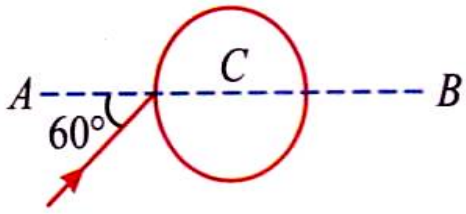
1) $m\sqrt{2gh^2}$ 2) $\frac{mv^3}{\sqrt{2}g}$ 3) $\frac{mv^3}{4\sqrt{2}g}$ 4) zero

18. Which logic gate is represented by the following combination of logic gates



1) OR 2) NAND 3) AND 4) OR

19. A ray of light falls on a transparent sphere with centre at C as shown in figure. The ray emerges from the sphere parallel to line AB. The refractive index of the sphere is



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

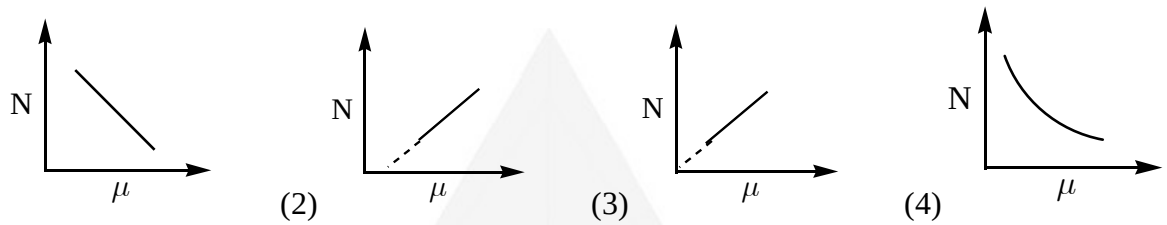
20. The focal length of a biconvex lens is 20 cm and its refractive index is 1.5. If the radii of curvatures of two surfaces of lens are in the ratio 1:2, then the larger radius of curvature is (in cm)

1) 10 2) 15 3) 20 4) 30

21. **In a CE transistor amplifier, the audio signal voltage across the collector resistance of $2k\Omega$ is $2V$. If the base resistance is $1k\Omega$ and the current amplification of the transistor is 100, the input signal voltage is.**

1) 0.1V 2) 1.0V 3) 1 mV 4) 10mV

22. **YDSE is completely submerged in a transparent liquid. Which of the following graphs best represent the variation of the total number of fringes N observed on the screen with the index of refraction of the liquid μ**

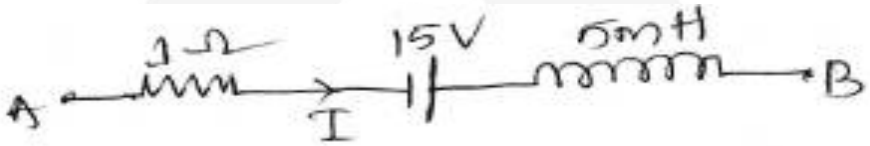


(1) (2) (3) (4)

23. **When the angle of incidence on a material is $60°$, the reflected light is completely polarized. The velocity of the refracted ray inside the material is $\left(in\ ms^{-1}\right)$**

1) 3×10^8 2) $\left(\frac{3}{\sqrt{2}}\right)\times10^8$ 3) $\sqrt{3}\times10^8$ 4) 0.5×10^8

24. **If $I=5A$ and decreasing at a rate of $10^3\left(A/\sec\right)$ then V_B-V_A**



1) 5V 2) 10V 3) 15V 4) 20V

25. **Match the Columns**

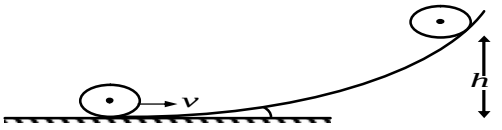
I	**II**
A) Work, torque, energy, heat	**i)** $ML^{-1}T^{-2}$
B) Young's modulus, bulk modulus, Shear modulus, pressure, stress	**ii)** ML^2T^{-2}
C) Angular momentum, Plank's constant	**iii)** MLT^{-1}
D) Momentum, impulse	**iv)** ML^2T^{-1}

	A	**B**	**C**	**D**
1)	i	ii	iii	iv
2)	ii	i	iv	iii
3)	iv	iii	ii	i
4)	iii	iv	ii	i

26. **A particle moves a long a straight line such that its displacement s at any time t is given by $s=t^3-6t^2+3t+4$ metres, t being in second. The velocity when the acceleration is zero is**

1) 3m/s 2) -12m/s 3) 42m/s 4) -9m/s

27. **A disc of mass *M* and radius *R* rolls on a horizontal surface and then rolls up and inclined plane as shown in the figure. If the velocity of the disc is *v*, then height to which the disc will rise will be**



1) $\frac{3v^2}{2g}$ 2) $\frac{3v^2}{4g}$ 3) $\frac{v^2}{4g}$ 4) $\frac{v^2}{2g}$

28. An object is projected with a velocity of 10m/s at an angle 45^0 with horizontal. The equation of trajectory followed by the projectile is $y = \alpha x - \beta x^2$, the ratio α / β is

1) 5 2) 10 3) 15 4) 20

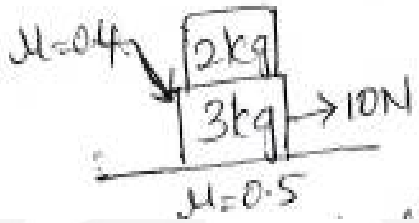
29. A ship is travelling due east at a speed of 15km/h. Find the speed of a boat heading 30^0 east of north if it appears always due north from the ship.

1) $30 km/h$ 2) $\frac{15\sqrt{3}}{2} km/h$ 3) $10\sqrt{3} km/h$ 4) $20 km/h$

30. Four identical blocks each of mass m are linked by threads as shown. If the system moves with constant acceleration under the influence of force F, the tension T_2 is

1) F 2) $F/2$ 3) 2F 4) $F/4$

31. The friction acting on the upper block is



1) 8N 2) 2N 3) 25N 4) zero

32. A mass m moves with a velocity V and collides in elastically will another identical mass. After collision, the 1st mass moves with velocity $\frac{V}{\sqrt{3}}$ in a direction perpendicular to the initial direction of motion. Find the speed of the 2nd mass after collision.

1) $\frac{2V}{\sqrt{3}}$ 2) $\frac{V}{\sqrt{3}}$ 3) V 4) $\sqrt{3}V$

33. A uniform cube of side 'a' and mass 'M' rests on a rough horizontal table. A horizontal force 'F' is applied normal to one of the faces at a point that is directly above the centre of the face at a height $\frac{3a}{4}$ above the base. The minimum value of 'F' for which the cube begins to topple about an edge is

1) Mg 2) $\frac{3}{2}$Mg 3) $\frac{2}{3}$Mg 4) $\frac{1}{2}$Mg

34. A point P lies on the axis of a ring of mass M and radius a, at a distance a from its centre c. A small particle starts from P and reaches c under gravitational attraction only. Its speed at c will be

1) $\sqrt{\frac{2GM}{a}}$ 2) $\sqrt{\frac{2GM}{a}\left(1-\frac{1}{\sqrt{2}}\right)}$ 3) $\sqrt{\frac{2GM}{a}\left(\sqrt{2}-1\right)}$ 4) $zero$

35. Two blocks of mass m_1 and m_2 are attached to the lower end of a light vertical spring of force constant k. The upper end of the spring is fixed. When the system is in equilibrium the lower block (m_2) is removed. The other block (m_1) will

1) remain undisturbed

2) move through a distance $\frac{m_2 g}{k}$ and come to rest.

3) undergo vertical SHM with a time period of $2\pi\sqrt{\frac{m_1}{k}}$

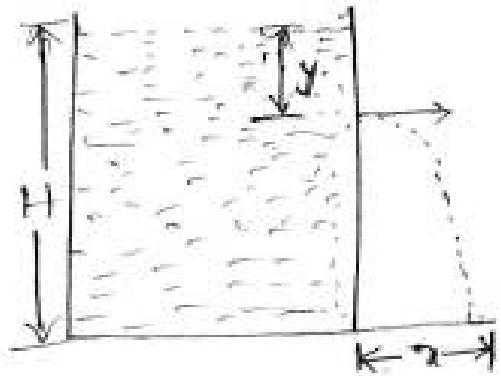
4) undergo vertical SHM with a time period of $2\pi\frac{\sqrt{m_1+m_2}}{k}$

36. The minimum phase difference b/w the two simple harmonic oscillations

$y_1 = \frac{1}{2}\sin\omega t + \left[\frac{\sqrt{3}}{2}\right]\cos\omega t$ **and** $y_2 = \sin\omega t + \cos\omega t$ **is**

1) $\frac{\pi}{6}$ 2) $-\frac{\pi}{6}$ 3) $\frac{\pi}{12}$ 4) $\frac{7\pi}{12}$

37. A tank, which is open at the top, contains a liquid up to a height H. A small hole is made in the side of the tank at a distance y below the liquid surface. The liquid emerging from the hole lands at a distance x from the tank. Choose incorrect option.



1) If y is increased from zero to H, x will first increase and then decrease.

2) x is maximum for $y = \frac{H}{2}$

3) The maximum value of x is H.

4) The maximum value of x will depend on the density of liquid

38. If a metal wire is stretched a little beyond its elastic limit (or yield point), and release it will.

1) lose its elastic property completely 2) not contract

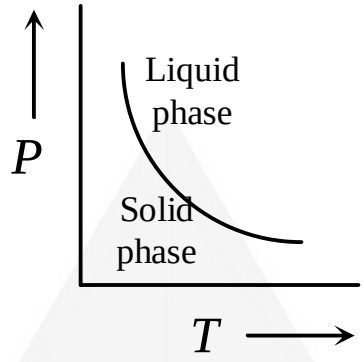
3) contract, but its final length will be greater than its initial length

4) contract only up to its length at the elastic limit

39. The ends of stretched wire of length L are fixed at $x=0$ and $x=L$, In one experiment the displacement of the wire is $y_1 = A\sin\left(\frac{\pi x}{L}\right)\sin\omega t$ and energy is v is $y_2 = A\sin\left(\frac{2\pi x}{L}\right)\sin 2\omega t$ and energy is E_2. Then

1) $E_2 - E_1$ 2) $E_2 = 2E_1$ 3) $E_2 = 4E_1$ 4) $E_2 = 16E_1$

40. The pressure-temperature (*P*-*T*) phase diagram shown below corresponds to the



1) curve of fusion of solids that expand on solidification.
2) curve of sublimation of solids that directly go over to the vapour phase
3) curve of fusion of solids that contract on solidification
4) curve of fusion of solids that do not change in volume upon solidification.

41. A whistle revolves in a circle with an angular speed of $20 rad/s$ using a string of length $50 cm$. If the frequency of sound from the whistle is $385 Hz$. Then what is the minimum frequency heard by an observer, which is far away from the centre in the same plane? $(V = 340 m/s)$

1) $333 Hz$ 2) $374 Hz$ 3) $385 Hz$ 4) $394 Hz$

42. Which of the following gases has maximum *rms* speed at a given temperature

1) hydrogen 2) nitrogen 3) oxygen 4) carbon dioxide

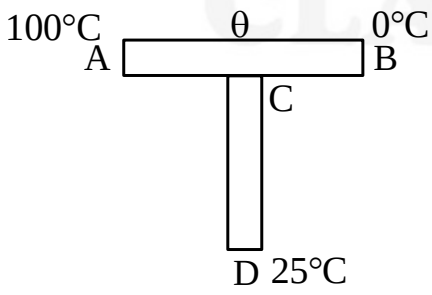
43. A 5g piece of ice at $-20^0 C$ is put into 10g of water at $30^0 C$. Assuming that heat is exchanged only b/w the ice and water. The final temperature of the mixture.

1) $10^0 C$ 2) $20^0 C$ 3) $0^0 C$ 4) $15^0 C$

44. A carnot cycle has the reversible process in the following order.

1) Isothermal expansion, adiabatic expansion, isothermal compression and adiabatic compression.
2) Isothermal compression, adiabatic expansion, isothermal expansion and adiabatic compression.
3) Isothermal expansion, adiabatic compression, isothermal compression and adiabatic expansion.
4) Adiabatic expansion, isothermal expansion, adiabatic compression and isothermal compression.

45. A rod of thermal resistance $5 K/W$ is joined at the middle of a n identical rod AB as shown. The temperature of C and heat current in CD will be



1) $35^0 C, 4W$ 2) $45^0 C, 4W$ 3) $35^0 C, 3W$ 4) $45^0 C, 3W$

CHEMISTRY

46. The number of electrons present on the oil drop which has the static electric charge of -3.02044×10^{-19} C is

1) 2 2) 5 3) 7 4) 8

47. Electrons are emitted with zero velocity from a metal surface when it is exposed to radiation of wavelength 4000 A^0. The threshold frequency is

1) 5×10^{34} sec^{-1} 2) 7.5×10^{14} sec^{-1} 3) 9.2×10^{14} sec^{-1} 4) 7.5×10^{34} sec^{-1}

48. An element Z=120 has not yet been discovered. In which group would you place this element

1) IV A 2) VII A 3) II A 4) V A

49. The correct matching is

1) IE_1 : $Rb > K > Na$ 2) $Radius$: $I^+ < I > I^-$

3) $E.N$: $F < Cl < Br$ 4) EA : $S > Se > O$

50. In a molecule of type (AB_2L_3), the central atom (A) contains two bond pairs (B) and three lone pairs(L). Then the shape of that molecule is

1) T-shape 2) See saw 3) V-shape 4) Linear

51. At a given temperature, the ratio of Kinetic energy of 3 gram of hydrogen and 4 gram of oxygen is

1) 1:12 2) 12:1 3) 5:6 4) 3:4

52. The prefix "pico" represents the multiple of

1) 10^{-9} 2) 10^{-12} 3) 10^{-18} 4) 10^{-21}

53. The specific gravity of 84% $\left(\frac{w}{w}\right)$ H_2SO_4 is 1.752. The normality of solution is

1) 30.03 N 2) 2.05N 3) 39.5N 4) 4.5N

54. The Oxidation State of Fe in $\left[Fe(H_2O)_5\,NO\right]^{+2}$ (Brown ring) is

1) +1 2) +2 3) +3 4) +6

55. In which of the following $\Delta H > \Delta E$

1) $\underset{(g)}{H_2} + \underset{(g)}{I_2} \rightleftharpoons 2\,\underset{(g)}{HI}$ 2) $\underset{(g)}{N_2} + 3\underset{(g)}{H_2} \rightleftharpoons 2\,\underset{(g)}{NH_3}$

3) $\underset{(g)}{PCl_5} \rightleftharpoons \underset{(g)}{PCl_3} + \underset{(g)}{Cl_2}$ 4) $2\,\underset{(g)}{SO_2} + \underset{(g)_2}{O} \rightleftharpoons 2\,\underset{(g)}{SO_3}$

56. Identify the salt whose aqueous solution is basic

1) NH_4Cl 2) $CuSO_4$ 3) $Al_2(SO_4)_3$ 4) KCN

57. The P^H of the water that comes out from cation exchange resin in synthetic resin method is

1) <7 2) >7 3) 7 4) 10

58. The cation which shows high conductivity in aqueous solution is

1) $\underset{(aq)}{Li^+}$ 2) $\underset{(aq)}{K^+}$ 3) $\underset{(aq)}{Rb^+}$ 4) $\underset{(aq)}{Cs^+}$

59. For a good quality cement, the ratio of silica to Alumina should be between

1) 1 to 2 2) 2.5 to 4 3) 5 to 7 4) 4.5 to 7.5

60. $B_2H_6 + 2NH_3 \xrightarrow{120^0C} A$ where 'A' is formulated as

1) $\left[BH_4\right]^+\left[BH_2(NH_3)_2\right]^-$ 2) $\left[BH_2(NH_3)_2\right]^+\left[BH_4\right]^-$

3) $\left[BH_3(NH_3)\right]^+\left[BH_4(NH_3)\right]^-$ 4) $\left[BH_4(NH_3)_2\right]^+\left[BH_2\right]^-$

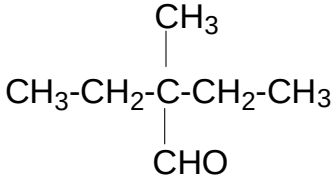
61. The basic unit of pyrosilicate is

1) SiO_4^{-4} 2) $(SiO_3)_n^{-2n}$ 3) $Si_2O_7^{-6}$ 4) $(Si_2O_5)_n^{-2n}$

62. **The pollutant that causes methemoglobinemia (blue baby syndrome) is**

1) Pb^{+2} 2) SO_4^{-2} 3) NO_3^- 4) AsO_3^{-3}

63. **The IUPAC name of**



1) 3 – Formyl – 3 – methyl Pentane 2) 2 – ethyl 2 – methyl butanal
3) 2 – ethyl – 2 formylbutane 4) 2,2 – Diethyl propanal

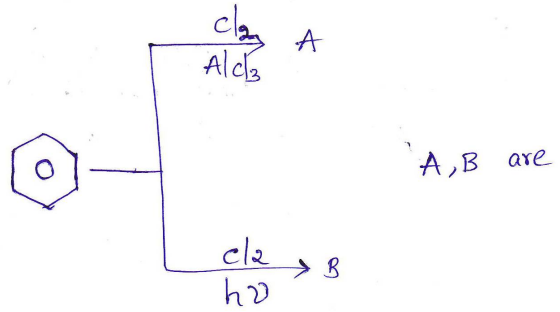
64. $CH_2 = CH - CH_2OH$ **and** $CH_2 = CH - O - CH_3$ **are**

1) Chain isomers 2) Position isomers 3) functional group isomers 4) metamers

65. $A \xleftarrow[Pd/BaSO_4]{H_2} R - C \equiv C - R \xrightarrow[200^0 C]{\substack{H_2 \\ Na/NH_3}} B$ **. Where A and B are respectively**

1) Trans alkene, cis alkene 2) cis alkene, Trans alkene
3) cis alkene, cis alkene 4) Trans alkene, Trans alkene

66.



1) A=chlorobenzene B=Chlorobenzene 2) A=Lindane B=Chlorobenzene
3) A=BHC B=BHC 4) A=Chlorobenzene B=Lindane

67. **Glycerol is purified by**

1) Crystallisation 2) Fractional distillation
3) Vacuum distillation 4) sublimation

68. **The charge heated in the blast furnace contains ore, coke and limestone in the ratio by weight of**

1) 1:2:3 2) 1:4:8 3) 8:4:1 4) 2:2:2

69. **The outer electronic configuration of the element with Z=42 is**

1) $5s^2\ 4d^4$ 2) $5s^1\ 4d^5$ 3) $5s^2\ 5p^4$ 4) $4s^2\ 3d^4$

70. **The catalyst used in the preparation of High density polythene (HDP) is**

1) $R_3Al + TiCl_4$ 2) $SnCl_4$ 3) Ni 4) Pt

71. **The complex** $Fe(CO)_x$ **follows the EAN rule. Then the value of** $'x'$ **is**

1) 3 2) 4 3) 5 4) 6

72. **The sum of coordination number and oxidation number of the metal 'M' in the complex** $\left[M(en)_2(C_2O_4)\right]Cl$ **is**

1) 6 2) 7 3) 8 4) 9

73. **The IUPAC name of the wilkinsons catalyst** $\left[RhCl(PPh_3)_3\right]$ **is**

1) Chlorotris (triphenyl phosphine) rhodium (I)
2) Chlorotris (triphenyl phosphine) rhodium (IV)
3) Chlorotris (triphenyl phosphine) rhodium (O)
4) Chlorotris (triphenyl phosphine) rhodium (VI)

74. **Which of the following is 100 times sweeter than sugar**

1) sucralose 2) saccharin 3) Aspartame 4) Alitame

75. Which of the following does not exhibit the phenomenon of mutarotation

1) (+) sucrose 2) (+) Lactose 3) (+) Maltose 4) (-) Fructose

76. Which of the following varies from species to species

1) A=T 2) C=G 3) A+G=C+T 4) $\frac{AT}{GC}$ ratio

77. Which of the following is fully fluorinated polymer

1) PVC 2) Thiokol 3) Teflon 4) Neoprene

78. Which of the following can undergo both aldol condensation and haloform reaction?

1) CH_3-CH_2-CHO 2) CH_3-CO-CH_3 3) Cl_3C-CHO 4) C_6H_5CHO

79. Primary, secondary and tertiary alcohols are distinguished by which of the following methods?

1) Oxidation method 2) Lucas test

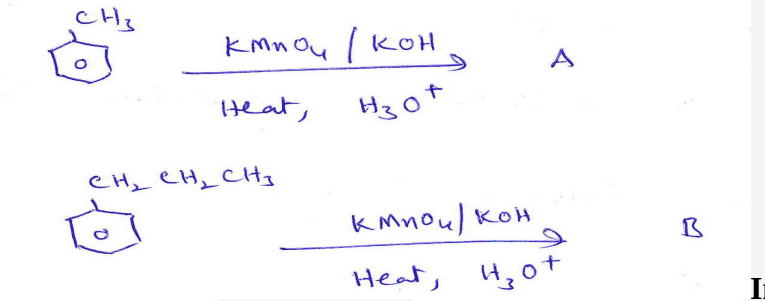
3) Victor meyer's method 4) All of the above

80. $(CH_3)_3C-O-CH_3$ **reacts with** $dil.HI$ **gives**

1) $(CH_3)_3I+CH_3OH$ 2) $(CH_3)_3COH+CH_3I$

3) $(CH_3)_2CHOH+CH_3I$ 4) $(CH_3)_3I+CH_3I$

81.



In these reactions A and B are

1) C_6H_5COOH and C_6H_5COOH 2) C_6H_5COOH and C_6H_5OH

3) C_6H_5COOH and $C_6H_5CH_2CHO$ 4) C_6H_5COOH and $C_6H_5CH_2CH_2CHO$

82. Which of the following would not react with benzene sulphonyl chloride in $aq.NaOH$ **?**

1) Aniline 2) Methylamine

3) N,N-Dimethylaniline 4) N-Methyl ethanamine

83. Atoms of element 'B' form hcp lattice and those of the element 'A' occupy $\frac{2}{3}$ **rd of tetrahedral voids. What is the formula of the compound formed by the elements A and B.**

1) AB 2) A_2B 3) A_2B_3 4) A_4B_3

84. The molar conductivity of $0.025 mol.lit^{-1}$ **methanoic acid is** $46.1\ s.cm^2.mole^{-1}$**. The degree of dissociation is?** $\left(\lambda^0_{(H^+)}=349.6\ s.cm^2.mole^{-1}\ and\ \lambda^0_{(HCOO^-)}=54.6\ s.cm^2.mile^{-1}\right)$

1) 0.114 2) 21.3 3) 3.66 4) 0.35

85. A first order reaction is 50% complete in 23min. The time required to complete 90% of the reaction is

1) 23min 2) 56min 3) 76.5min 4) 92min

86. Among $\left[Fe(CN)_6\right]^{-4}, PO_4^{-3}, SO_4^{-2}\ and\ Cl^-$**, which coagulates positive sol readily**

1) $\left[Fe(CN)_6\right]^{-4}$ 2) PO_4^{-3} 3) SO_4^{-2} 4) Cl^-

87. Identify the correct matching

1) Thermal Stability - $NH_3 < PH_3 < AsH_3 < SbH_3$

2) Reducing Power - $NH_3 > PH_3 > AsH_3 > SbH_3$

3) Basic Character - $NH_3 < PH_3 > AsH_3 < SbH_3$

4) Volatile nature - $PH_3 > AsH_3 > NH_3 > SbH_3$

88. Identify acidic oxide

1) Cl_2O_7 2) CO_2 3) N_2O_5 4) All the above

89. Among the following which one has the highest oxidizing power

1) $HOCl$ 2) $HClO_2$ 3) $HClO_3$ 4) $HClO_4$

90. The hybridization and number of lone pairs present around $'Xe'$ atom in XeF_4 is

1) $sp^3d, 3$ 2) $sp^3d^2, 2$ 3) $sp^3d^3, 1$ 4) $sp^3, 1$

BIOLOGY

91. Which of the following taxonomic categories includes all the other categories?

1) order 2) kingdom 3) species 4) family

92. Muscles which regulate the diameter of pupil are

1) Ectodermal striated 2) Mesodermal striated
3) Ectodermal unstriated 4) Mesodermal unstriated

93. Which of the following is not related to Rock weed

1) It is a Rhodophyceae member 2) It contains chl.a and chl.c
3) Diplontic life cycle is present 4) Two unequal lateral flagella are present

94. The following are associated with nerve fibres in Peripheral Nervous System

A) Axolemma B) Neurilemma C) Endoneurium D) Myelin sheath E) Axoplasm

The correct sequence of the above from inside to outside w.r.to the nerve fibre is

1) E,A,B,D,C 2) E,A,D,C,B 3) E,A,C,B,D 4) E,A,D,B,C

95. How many sentences are correct related to Terror of Bengal

i) Vegetative propagation takes place through offset
ii) It is free floating hydrophyte
iii) Pulvinus petiole is present
iv) It drains CO_2 from the water

1) All are correct 2) Three are correct 3) Two are correct 4) one is correct

96. Identify the correct statements

A) Thyroxine can decrease rate of heart beat and cardiac output
B) Neural signals through the sympathetic nerves can increase rate of heart beat and cardiac output
C) Epinephrine and norepinephrine can increase rate of heart beat and cardiac output
D) Parasympathetic neural signals can increase rate of heart beat and cardiac output

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

97. Mismatch is

1) Lycopsida – *Selaginella* 2) Sphenopsida – *Lycopodium*
3) Pteropsida – *Adiantum* 4) Psilopsida– *(psilotum)*

98. Choose the incorrect combinations from the following

A) R.C.Dagar – Polyblend
B) Kyoto protocol – Depletion of O_3
C) Amrita Devi – Conservation of wildlife in urban areas
D) Burning of plastics – Polychlorinated biphenyls

1) all the above 2) A,B 3) C,D 4) A,B,C

99. Ascospores and Basidiospores produced in the following manner

1) Endogenously, Endogenously 2) Exogenously, Endogenously
3) Endogenously, Exogenously 4) Exogenously, Exogenously

100. Defects in ADH receptors or inability to secrete ADH cause

1) Diabetes mellitus 2) Diabetes insipidus 3) Uremia 4) Renal Calculi

101. Pneumatophores are present in

1) *Rhizopus* 2) *Rhizobium* 3) *Vanda* 4) *Rhizophora*

102. Match the following:

Column I	**Column II**
A) J.G. Cells	**i) Vasodilator**
B) Hypothalamus	**ii) Vasoconstrictor**
C) Angiotensin II	**iii) Vasopressin**
D) Atrial Natriuretic Factor	**iv) Renin**

	A	**B**	**C**	**D**
1)	iv	iii	ii	i
2)	ii	i	iv	iii
3)	iii	ii	i	iv
4)	ii	i	iii	iv

103. Correct match is

1) Pinnately compound leaf – Silk cotton
2) Alternate phyllotaxy – Mustard
3) Opposite phyllotaxy – China rose
4) Whorled phyllotaxy – *Calotropis*

104. Identify the correct sequence of "Systemic Circulation" Pathway

1) Left atrium → left ventricle → pulmonary aorta → tissues → right atrium
2) Left ventricle → aorta → arteries → tissues → veins → right atrium
3) Right ventricle → pulmonaryaorta → tissues → pulmonary veins → left atrium
4) Right atrium → left ventricle → aorta → tissues → veins → left atrium

105. In mitochondria cytochrome c attached to

1) Outer surface of the inner membrane
2) Outer surface of the outer membrane
3) Inner surface of the inner membrane
4) Inner surface of the outer membrane

106. Study the following:

S_1 : **Vaccines may not guarantee total protection from a disease**

S_2 : **Adjuvant is an agent to enhance immune response**

Which statement(s) is/are correct?

1) Both S_1 & S_2 2) Only S_1 3) Only S_2 4) None

107. The abundant enzyme which is present in the universe is having

a) Dual nature **b) Useful for CO_2 fixation**

c) Can also react with O_2 in excess O_2 concentration in C_3 plants

1) Only a correct
2) Only a & b correct
3) Only a & c are correct
4) All are correct

108. During recovery from vigorous physical exercise, deeper breathing continues as extra O_2 is required for

A) regeneration of oxyhemoglobin
B) oxidation of accumulated lactic acid
C) restoration of creatine phosphate
Choose the correct statements from the above

1) A,B 2) A,C 3) B,C 4) all the above

109. How many of the plants having axile placentation

a) *Pisum* b) *Brassica* c) *Solanum* d) *Allium*
e) *Ruscus* f) *Butea monosperma*

1 4 2) 5 3) 6 4) 3

110. Identify the mismatch:

1) Insulin Shock – lack of insulin
2) Tetany – hyposecretion of Parathormones
3) Cretinism – congenital hypothyroidism
4) Pituitary dwarf – Sexually & intellectually normal

111. Which of the following is wrongly matched in the given table

1) *Trichoderma polysporum*	Bacteria	Immunosuppersive agent
2) *Streptococcus*	Bacteria	Clot buster streptokinase
3) *Monoascus purpureus*	Fungi	Blood cholesterol lowering agent
4) Yeast	Fungi	Ethanol Production

112. Choose the incorrect combination w.r.to 'homology'

Male Reproductive System		Female Reproductive System
1. Cowper's glands	----------	Bartholin's glands
2. Prostate gland	----------	Skene's gland
3. Scrotum	----------	Labia majora
4. Glans Penis	----------	Clitoris

113. The experiment Semiconservative replication of DNA was discovered plant by Taylor and colleagues is not having following character.

1) Nodular roots 2) Descendingly imbricate aestivation
3) Parietal placentation 3) Non-endoseprmic seeds

114. Identify the incorrect Statement about Intra-uterine Devices (IUDs)

1) They inhibit menstruation & Ovulation
2) Promote phagocytosis of sperms in the uterus
3) Suppress the motility of spermatozoa
4) make the uterus unsuitable for implantation

115. Correct match is

A	**B**
i) $^{15}NH_4Cl$	**a)** Ruben
ii) Ribosomes	**b**) Calvin
iii) H_2O^{18}	**c**) Meselson & stahl
iv) $^{14}CO_2$	**d**) George Palade

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

116. Match the following

A) World Ozone Day	**i) September 16**
B) World Population Day	**ii) March 21**
C) World Biodiversity Day	**iii) May 22**
D) World Forestry Day	**iv) July 11**
	v) June 5

	A	**B**	**C**	**D**
1)	ii	i	v	iii
2)	i	iii	iv	ii
3)	iii	ii	i	v
4)	i	iv	iii	ii

117. The first animal for which a linkage map was constructed was

1) Drosophila 2) Rat 3) Neurospora 4) Pisum stativum

118. Study the following:

a) lactiferous duct b) mammary tubules c) mammary ducts d) ampulla
e) alveoli f) nipple

Select the correct sequence form the above w.r. to milk ejection in mammary glands in human females

1) e a b c d f 2) d c a b e f 3) e b c d a f 4) e c b a d f

119. Study the following table

Crop	Variety	Resistant
1.*Brassica*	Pusa swarnim	White rust
II. Okra	Pusa sawani	Shoot and stem borer
III. Chilli	Pusa Komal	Tobacco Mosaic Virus
IV. Flat bean	Pusa Gaurav	Bacterial blight

Identify correct pair

1) I &III 2) III & IV 3) II & III 4) I & II

120. Study the following statements

S_1: Capacitation of sperms occur in the male reproductive system

S_2: Capacitation prepare the sperms for acrosomal reaction

Choose the correct statement(s) from the above

1) both S_1 & S_2 2) Only S_1 3) Only S_2 4) None

121. Identify the mismatch

1) Zn^{+2} - Activates Carboxylases 2) Mo- Participate Nitrogen metabolism

3) K^+ - Structural element 4) Mn - Splitting of water molecule

122. select the mismatch from the following:

A) Hormone releasing IUD – Multiload 375

B) Copper releasing IUD – LNG-20

C) Steroidal oral contraceptive pill – Saheli

D) Semen isn't produced – Vasectomy

1) A,B,C 2) B,D 3) A,D 4) all the above

123. The year 1900 AD is highly significant for geneticists due to

1)Discovery of genes 2)Principles of linkage

3)Chromosome theory of heredity 4)Rediscovery of mendelism

124. Study the following periods of geological time scale, and arrange them in correct sequence

A) Carboniferous B) Cambrian C) Silurian D) Devonian

E) Permian F) Ordovician

1) c d e a f b 2) e b d a f c 3) b f c d a e 4) b c f a d e

125.

List I	List II
A. Trypsin	**i. Hormone**
B. Insulin	**ii. Ricin**
C. Toxin	**iii. Enzyme**
D. Alkaloids	**iv. Codeine**

Correct match is

1) A-III B-I C-II D-IV 2) A-IV B-I C-III D-I

3) A-II B-III C-I D-IV 4) A-I B-III C-II D-IV

126. Fossils discovered in Java in 1891 revealed which stage of human evolution?

1) *Homo habilis* 2) *Homo erectus*

3) *Homo neanderthalensis* 4) *Ramapithecus*

127. Common Nucleotides (nitrogen bases) which are present in both DNA and RNA

1) A C U 2) A G C 3) A T C 4) G C U

128. Which of the following exhibit adaptive radiation?

1) Placental mammals in Australia 2) Darwin Finches

3) Australian Marsupials 4) all the above

129. Some aminoacids are coded by more than one codon. This properity of genetic code is called

1) Unambiguous 2) Universal 3) Degenerate 4) Specific

130. Study the following statements

S_1 : Insulin isn't taken orally, for it is a protein and is broken down before it is absorbed

S_2 : Genetically engineered E.coli is used to produce humulin

Select the correct statement(s) from the above

1) both S_1 & S_2 2) Only S_1 3) Only S_2 4) None

131. Casparian bands containing layer is absent in

1) Monocot stem 2) dicot root 3) Monocot root 4) Dicot stem

132. Polymerase Chain Reaction:

1) Can detect HIV
2) Can detect very low amounts of DNA
3) Can detect mutations in gene in suspected cancer patients
4) All the above

133. Hydrophily is absent in

1) *Vallisnera* 2) *Hydrilla* 3) Water lily 4) *Zostera*

134. 'Hisardale' is an example of:

1) Out – Crossing 2) Cross – Breeding
3) Out – Breeding 4) Inter – Specific hybridization

135. The most abundant prokaryotes helpful to humans in making curd from milk and in production of antibiotics are the ones categorized as

1) Cyanobacteria 2) Mycoplasmas 3) Chemoautotroph 4) Heterotrophic bacteria

136. In Multiple Ovulation Embryo Transfer method, fertilized eggs at which stage are transferred to surrogate mothers?

1) 4 -16 cells 2) 8 – 32 cells 3) 6 – 8 cells 4) 18 – 32 cells

137. Which statement is wrong for viruses

1) They contain either RNA or DNA 2) All are obligate parasites
3) They can synthesize nucleic acid and proteins 4) All of them have helical symmetry

138. Match the following:

Column I	**Column II**
A. Ig G	**i) Present in milk**
B. Ig A	**ii) Present on surface of B-Cells**
C. Ig D	**iii) Acts as a mediator in allergic reactions**
D. Ig E	**iv) Crosses placenta & provides natural passive immunity**

	A	**B**	**C**	**D**
1)	ii	i	iv	iii
2)	iv	i	ii	iii
3)	iv	ii	i	iii
4)	ii	iii	i	iv

139. Which of the biological function is not yet known

1) Protein synthesis 2) Photorespiration 3) Photosynthesis 4) Respiration

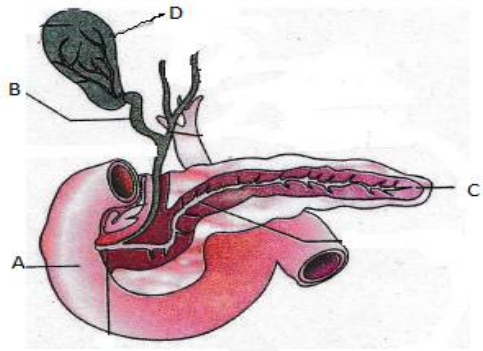
140. Trachea contains -------- epithelium

1) Ciliated Columnar 2) Non-Ciliated Columnar
3) Ciliated pseudo – stratified 4) Non- ciliated pseudo – stratified

141. Upward flow of water through the Xylem in plants can acheive fairly high rates upto

1) 15cms/hour 2) 15mm/hour 3) 15 meters/hour 4) 25 meters /hour

142.



From the diagram given above A,B,C,D are respectively, occupied by

1) Duodenum, Duct from gall bladder, Pancreas, Gall bladder.
2) Duodenum, Gall bladder, Pancreas, Duct from gall bladder.
3) Pancreas, Duct from gall bladder, Duodenum, Gall bladder.
4) Pancreas, Hepato – Pancreatic duct, Duodenum, Gall bladder.

143. The chromosomes in which centromere is situated close to its end

1) Acrocentric 2) Telocentric 3) Metacentric 4) Submetacentric

144. A chronic disorder in which alveolar walls are damaged due to which respiratory surface is decreased. Identify it

1) Bronchitis 2) Asthma 3) Emphysema 4) None of the above

145. Which of the following hormone shows respiratory climatic

1) ABA 2) GA 3) Ethylene 4) cytokinins

146. Identify the wrong statement(s)

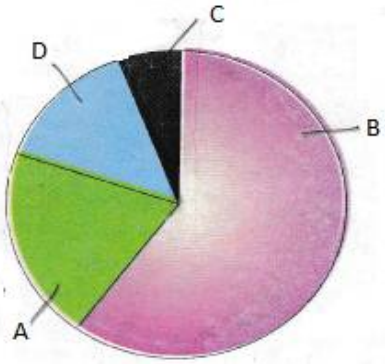
A) Since the origin of life on earth, there were six episodes of mass extinction of species
B) The current species extinction rates are many time faster than in the pre-human times
C) Ecologists warn that if the present trends of extinction were to be continued, about half of all the species on earth might be wiped out within the next 100 years.
D) Biodiversity hotspots could reduce the ongoing mass extinctions by about 30 percent

1) A,B 2) C,D 3) Only A 4) Only D

147. Cell A with π = -15 bars P =9bars, Cell B with π = -10 bars P =8. bars The movement of water is from

1) Both direction 2) $A \rightarrow B$ 3) $B \rightarrow A$ 4) Nomovement

148. Fallowing diagram refers to the relative contribution of Greenhouse gases to global warming. Study the diagram and answer.



A, B, C, D in the diagram are respectively, occupied by

1) $CH_4, CO_2, CFCs, N_2O$ 2) $CO_2, CH_4, CFCs, N_2O$
3) $CH_4, CO_2, N_2O, CFCs$ 4) $CFCs, CO_2, N_2O, CH_4$

149. Suppressed cotyledon present in maize is called

1) Scutellum 2) Epiblast 3) Plumule 4) Coleoptile

150. Volume of air that remains in the lungs after a normal expiration includes:

1) Inspiratory Reserve volume + Residual volume
2) Expiratory Reserve volume + Residual volume
3) Vital capacity + Residual volume
4) Expiratory Reserve volume + Tidal volume

151. Which of the would appear as the pioneer organisms on bare rocks

1) Mosses 2) Lichens 3) Liver worts 4) Green algal

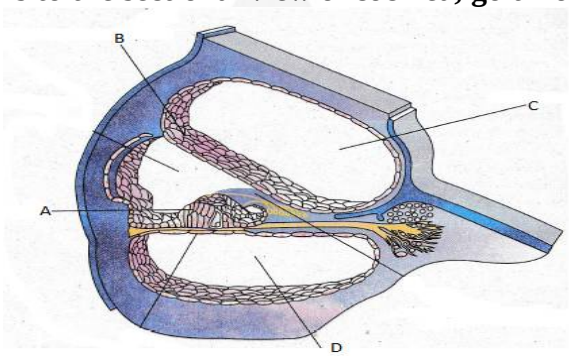
152. The disorder caused by decreased levels of Oestrogen in post-menopause women is

1) Osteoarthritis 2) Tetany 3) Osteoporosis 4) Myaesthenia gravis

153. Dual Function containing codon identifies the following aminoacid

1) Methionine 2) Glycine 3) serine 4) proline

154. Following diagram refers to the sectional view of cochlea, go through it carefully.



From the diagram A, B, C, D are, respectively, occupied by

1) Organ of corti, Basilar membrane, Scala vestibuli, Scala tympani.
2) Organ of corti, Reissner's membrane, Scala vestibuli, Scala tympani.
3) Reissner's membrane, Tectorial membrane, Scala vestibuli, Scala tympani.
4) Organ of corti, tectorial membrane, Scala vestibuli, Scala tympani.

155. Which of the following is correct match

1) Sonalika – Rice 2) Jaya – Wheat 3) Himgiri – Wheat 4) Atlas66 – maize

156. Read the following statements

S_1 :Fovea is a thinned out – portion of retina where only rods are densely packed

S_2 :Fovea is a point of greatest visual acuity

Select the correct statement(s)

1) both S_1 & S_2 2) Only S_1 3) Only S_2 4) None

157. Maize leads to presistance to maize stem borers due to

1) Low aspartic, acid, Low nitrogen and sugar content
2) High aspartic, high nitrogen and sugar
3) High aspartic low nitrogen and sugar
4) High aspartic, low nitrogen and high sugar

158. Match the items given in Column I with those in Column II, and select correct option given below

Column I	**Column II**
a. Ophrys	**i. Cardiac glycoside**
b. Calotropis	**ii. Poisonous weed**
c. Monarch butterfly	**iii. Sexual deceit**
d. Warblers	**iv. Resource Partitioning**

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

159. Number of characters related to xerophyte adaptations containing *Opuntia*

a. Stomata opened during day time **b. CAM Pathway**

c. Leaves are absent – modified in to spines **d. flattened stems**

1) abc correct 2) all are correct 3) acd correct 4) bcd are correct

160. Read the following statements carefully

A) Heroin commonly called crack is chemically diacetylmorphine

B) Heroin is obtained form latex of poppy plant

C) The drug which is obtained from Erythroxylem *coca* interferes with neuro – transmitter dopamine

D) Cannabinoids effect cardio – vascular system of the human body

Select the correct combinations from the above

1) All the above 2) A,B,C 3) B,D 4) B,C,D

161. The Avena curvature is used for bioassay of

1) ABA 2) 1AA 3) Cytotoknin 4) GA_3

162. Vector control Research Centre

1) New Delhi 2) Lucknow

3) Puducherry 4) Mumbai

163. S phase of its cell cycle, as compared to gamete of the same species has

1) same number of chromosomes but twice the amount of DNA

2) Twice the number of chromosomes and four times the amount DNA

3) Twice the number of chromosomes and Twice the amount of DNA

4) Four times the number of chromosomes and Twice the amount of DNA

164. Match Column I with Column II

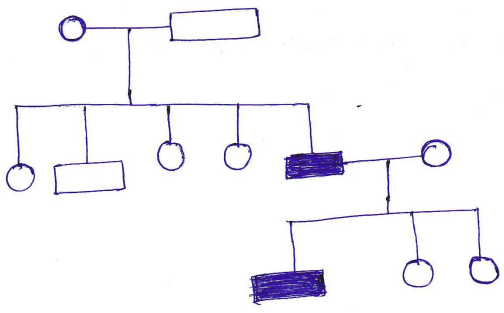
Column I	**Column II**
A) ZW – ZZ type	**i) Grass hoppers**
B) ZO – ZZ type	**ii) Drosophila**
C) XX – XY type	**iii) Fumea Moths**
D) XX – XO type	**iv) Birds**

	A	**B**	**C**	**D**
1)	iv	iii	ii	i
2)	iii	iv	ii	i
3)	ii	iii	iv	i
4)	i	iv	iii	ii

165. The term ecosystem was coined by

1) E. Warming 2) Odum 3) Misra 4) A.G & Tansley

166. In the Chart, mutant trait is shaded black.



The Gene responsible for the trait is:

1) dominant, sex linked 2) recessive, autosomal

3) dominant, autosomal 4) recessive, sex limited

167. Which of the following is not included in periderm.

1) Phellem 2) Late wood

3) phelloderm 4) cork cambium

168. What is the basis of DNA fingerprinting?

1) Relative proportions of purines & pyrimidines in DNA
2) Satellite DNA occurring as highly repeated short DNA segments
3) Relative amount of DNA in the ridges & grooves of fingerprints
4) All the above

169. Endosperm is n and 3n respectively in

1) Dicots, Monocots
2) Bryophyta, Pteridophyta
3) Gymnosperms, Dicots
4) Pteridophytes, Gymonosperms

170. The region of biosphere reserve where limited human activity is allowed for research, education and resource use strategies

1) Core Zone
2) Transition Zone
3) Buffer Zone
4) Restoration Zone

171. Which of the following RNA's should be most abundant in animal cell

1) SnRNA
2) mRNA
3) collagen
4) Rrna

172. Identify the animal which isn't a homeotherm:

1) *Ornithorhyncus*
2) *Aptenodytes*
3) *Ichthyophis*
4) *Neophron*

173. If there are 999 bases in an RNA that codes for a protein with 333 Amino acids and the base at position 901 is deleted such that the length of the RNA becomes 998 bases, how many codons will be altered

1) 333
2) 666
3) 11
4) 33

174. Which of the following animal possess file-like rasping organ in its mouth?

1) *Pleurobranchia*
2) *Alplysia*
3) *Pentaceros*
4) *Lepisma*

175. What is the criteria for DNA fragments movement on agarose gel during gel eletrophorosis

1) The smaller the fragment size, the farther it moves
2) Negatively charged fragments do not move
3) The larger the fragment the farther it moves
4) Positively charged fragments move to farther end

176. Study the following statements, carefully

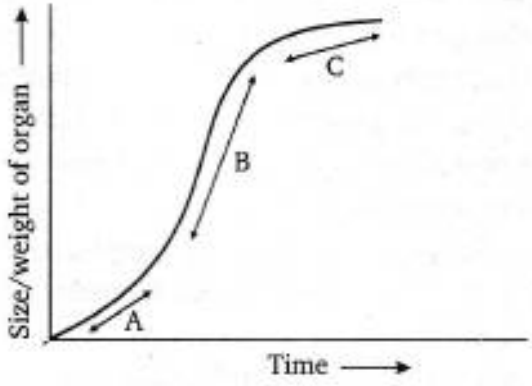
S_1: Thermoregulation is energetically expensive for many organisms, especially the large animals

S_2: Small animals have a smaller surface area of body relative to their body volume

Select the correct statement(s) from the above

1) both S_1 & S_2
2) Only S_1
3) Only S_2
4) None

177. Observe the sigmoid curve given below and identify the phases A,B and C:



1) A= Initial slow growth, B= Rapid growth, C=Phase of growth during limited nutrient supply
2) A= Rapid growth, B= Initial slow growth, C=Phase of growth during limited nutrient supply
3) A=Lag Phase, B=Stationary phase, C= Exponential phase
4) A= Exponential phase, B=Stationary phase, C=Lag phase

178. Select the correct statements about Nutrient Cycles

A) The amount of nutrients, present in the soil at any given time is called 'Standing Crop'

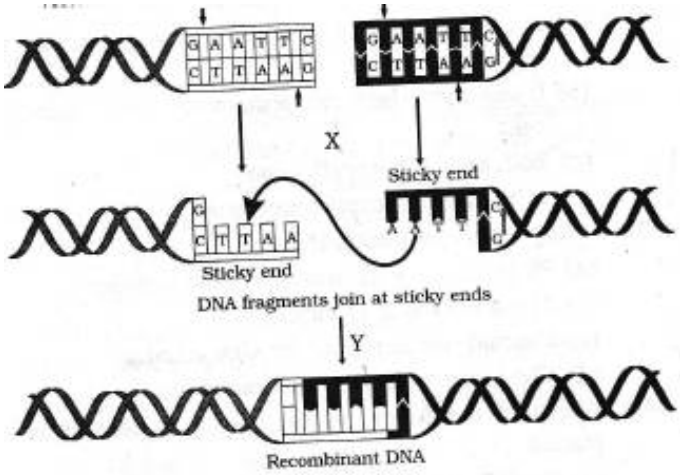
B) The function of the 'reservoir' (of different nutrient cycles) is to meet with the deficit which occurs due to imbalance in the rate of influx and efflux.

c) Atmospheric inputs of phosphorus through rainfall are equal to carbon inputs

D) Gaseous exchanges of phosphorus between organism and environment are negligible

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

179. Identify the enzyme X and Y?



1) X= RNA – ligase,Y= DNA ligase 2) X= *Bam* HI, Y=RNA-ligase

3) X= *Eco* RI,Y=DNA-ligase 4) *X = Hind III* , Y= RNA – ligase

180. Study the following statements about Medical Termination of Pregnancy (Amendment) Act, and identify the correct statement(s) .

1) It was amended by the Government of India in 2017

2) According to this Act, a pregnancy may be terminated on certain grounds within the first 12 Weeks of pregnancy on the opinion of one registered medical practitioner.

3) According to this Act, if the pregnancy has lasted between 12 weeks to 24 weeks, the opinion of two registered medical practitioners must be sought for the termination of pregnancy on certain grounds.

4) All the above.