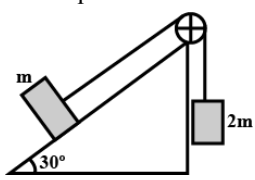# PHYSICS

(SECTION-A)

1. The dimensions of stress are equal to
(A) Force
(B) Pressure
(C) Work
(D) $\dfrac{1}{Pressure}$

2. A body starts from rest. What is the ratio of the distance travelled by the body during the 4th and 3rd second
(A) $\dfrac{7}{5}$
(B) $\dfrac{5}{7}$
(C) $\dfrac{7}{3}$
(D) $\dfrac{3}{7}$

3. A cricketer can throw a ball to a maximum horizontal distance of 100 m. With the same effort, he throws the ball vertically upwards. The maximum height attained by the ball is
(A) 100 m
(B) 80 m
(C) 60 m
(D) 50 m

4. Two blocks of masses m and 2m are connected by light string passing over a frictionless pulley. As shown in the figure the mass m is placed on a smooth inclined plane of inclination 30° and 2m hange vertically. If the system is released , the blocks move with an acceleration equal to

(A) g / 4
(B) g / 3
(C) g / 2
(D) g

5. A space craft of mass M and moving with velocity 'v' suddenly breaks in two pieces of same mass m. After the explosion one of the mass m, becomes stationary. What is the velocity of the other part craft
(A) $\dfrac{Mv}{M-m}$
(B) v
(C) $\dfrac{Mv}{m}$
(D) $\dfrac{M-m}{m}v$

6. A body of mass 4 kg moving with velocity 12 m/s collides with another body of mass 6 kg at rest. If two bodies stick together after collision, then the loss of kinetic energy of system is
(A) Zero
(B) 288 J
(C) 172.8 J
(D) 144 J

7. The center of mass of a system of two particles divides the distance between them
(A) In inverse ratio of square of masses of particles
(B) In direct ratio of square of masses of particles
(C) In invers ratio of masses of particles
(D) In direct ratio of square of masses of particles

8. One circular ring and one disc. Both are having the same mass and radius. The ratio of their moments of inertia about the axes passing through their centers and perpendicular to their planes, will be
(A) 1 : 1
(B) 2 : 1
(C) 1 : 2
(D) 4 : 1

9. The acceleration of a body due to the attraction of the earth (radius R) at a distance 2R from the surface of the earth is (g = acceleration due to gravity at the surface of the earth)
(A) g / 9
(B) g / 3
(C) g / 4
(D) g

10. For a satellite moving in an orbit around the earth, the ratio kinetic energy to potential energy is
(A) 2
(B) $\dfrac{1}{2}$
(C) $\dfrac{1}{\sqrt{2}}$
(D) $\sqrt{2}$

11. What is the minimum energy required to launch a satellite of mass m from the surface of the earth of mass M and radius R in a circular orbit at an altitude of 2R
(A) $\dfrac{5GmM}{6R}$
(B) $\dfrac{2GmM}{3R}$
(C) $\dfrac{GmM}{2R}$
(D) $\dfrac{GmM}{3R}$

12. The Young's modulus of the naterial of a wire is equal to the
(A) Stress required to increase the length four times
(B) Stress required to produce unit strain
(C) Strain produced in it
(D) Half the strain produced in it

13. Soap bubbles can be formed floating in air by blowing soap solution in air, with the help of a glass tube, but not water bubbles. It is because
(A) The excess pressure inside water bubble being more due to large surface tension
(B) The excess pressure inside water bubble being less due to large surface tension
(C) The excess pressure inside water bubble being more due to large viscosity
(D) The excess pressure inside water bubble being more due to less viscosity

14. When the temerature increases, the viscosity of
(A) Gases decreases and liquids increases
(B) Gases increases and liquids decreases
(C) Gases and liquids increases
(D) Gases and liquids decreases

15. Two uniform brass rods A and B of length l and 2l and radii 2r and r respectively are heated to the same temperature. The ratio of the increase in the volume of A to that of B is
(A) 1 : 1   (B) 1 : 2
(C) 2 : 1   (D) 1 : 4

16. The r.m.s. speed of gas molecules is given by
(A) $2.5\sqrt{\dfrac{RT}{M}}$ (B) $1.73\sqrt{\dfrac{RT}{M}}$
(C) $2.5\sqrt{\dfrac{M}{RT}}$ (D) $1.73\sqrt{\dfrac{M}{RT}}$

17. Volume-temperature graph at atmospheric pressure for a monoatomic gas (V in m^3 , T in °C) is

(A)

(B)

(C)

(D)
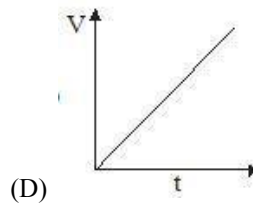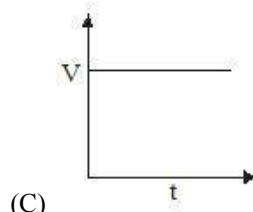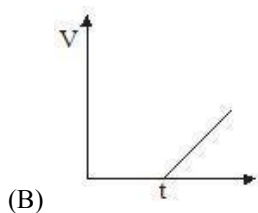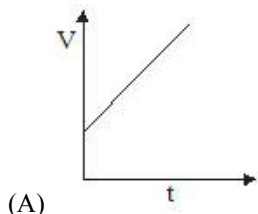
18. A monoatomic gas (γ =5/3) is suddenly compressed to of its original volume adiabatically , then the pressure of the gas will change to
(A) $\dfrac{24}{5}$
(B) 8
(C) $\dfrac{40}{3}$
(D) 32 times its initial pressure

19. A black body has maximum wavelength λ_m at temperature 2000 K. Its corresponding wavelength at temperature 3000 K will be
(A) $\dfrac{3}{2}\lambda_m$ (B) $\dfrac{2}{3}\lambda_m$
(C) $\dfrac{4}{9}\lambda_m$ (D) $\dfrac{9}{4}\lambda_m$

20. A black body radiates energy at the rate of E W/m2 at a high temperature TK. When the temperature is reduced to $\dfrac{T}{2}$ K , the radiant energy will be
(A) E/16   (B) E/4
(C) 4E   (D) 16E

21. The time period of the variation of potential energy of a particle executing SHM with period T is
(A) T/4   (B) T
(C) 2T   (D) T/2

22. Two masses m1 and m2 are suspended together by a massless spring of constant K. When the masses are in equilibrium, m1 is removed without disturbing the system. The amplitude of oscillations is

(A) $\dfrac{m_1 g}{K}$ (B) $\dfrac{m_2 g}{K}$

(C) $\dfrac{(m_1 + m_2)g}{K}$ (D) $\dfrac{(m_1 - m_2)g}{K}$

23. The loudness and pitch of a sound depends on
(A) Intensity and velocity
(B) Frequency and velocity
(C) Intensity and frequency
(D) Frequency and number of harmonics

24. The spatial distribution of the electric field due to charges (A, B) is shown in figure. Which one of the following statement is Correct
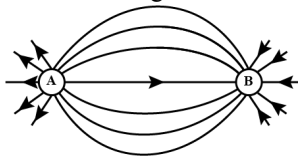

(A) A is $+ve$ and B - ve and $|A|>|B|$
(B) A is $-ve$ and B $+ve$; $|A|=|B|$
(C) Both are $+ve$ but $A > B$
(D) Both are $-ve$ but $A > B$

25. Three infinitely long charge sheets are placed as shown in figure. The electric field at point P is
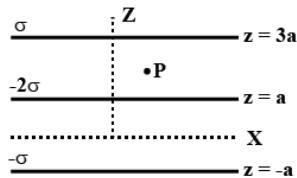
(A) $\dfrac{2\sigma}{\epsilon_0} \hat{K}$ (B) $-\dfrac{2\sigma}{\epsilon_0} \hat{K}$

(C) $\dfrac{4\sigma}{\epsilon_0} \hat{K}$ (D) $-\dfrac{4\sigma}{\epsilon_0} \hat{K}$

26. A parallel plate condenser is field with two dielectrics as shown. Area of each plate is A $metre^2$ and the separation is t. The dielectric constants are K_1 and K_2 respectively. Its capacitance in farad will be
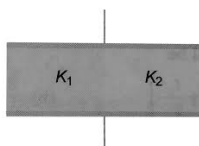

(A) $\dfrac{\epsilon_0 A}{t}(K_1 + K_2)$

(B) $\dfrac{\epsilon_0 A}{t} \cdot \dfrac{K_1 + K_2}{2}$

(C) $\dfrac{2\epsilon_0 A}{t} \cdot (K_1 + K_2)$

(D) $\dfrac{\epsilon_0 A}{t} \cdot \dfrac{K_1 + K_2}{2}$

27. Drift velocity v_d varies with the intensity of electric field as per the relation

(A) $v_d \propto E$ (B) $v_d \propto \dfrac{1}{E}$

(C) $v_d = $ constant (D) $v_d \propto E^2$

28. AB is a potentiometer wire of length 100 cm and its resistance is 10 ohm. It is connect in series with a resistance R = 40 ohm and a battery of e.m.f. 2 V and negligible internal resistance. If a source of unknown e.m.f. E is balanced by 40 cm length of the potentiometer wire, the value of E is
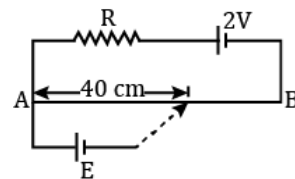
(A) 0.8 V (B) 1.6 V
(C) 0.08 V (D) 0.16 V

29. A magnetic needle suspended parallel to a magnetic field requires $\sqrt{3}J$ of work to turn it through 60° . The torque needed to maintain the needed in this position will be

(A) $2\sqrt{3}J$ (B) 3J

(C) $\sqrt{3}J$ (D) $\dfrac{3}{2}J$

30. There is no couple acting when two bar magnets are placed coaxially separated by a distance because
(A) There are no force on the poles
(B) The force are parallel and their lines of action do not coincide
(C) The force are perpendicular to each other
(D) The force act along the same line

31. A current i *ampere* flows along the inner conductor of a coaxial cable and returns along the outer conductor of the cable, then the magnetic induction at any point outside the conductor at a distance r *metre* from the axis is
(A) ∞ (B) Zero

(C) $\dfrac{\mu_0}{4\pi}\dfrac{2i}{r}$ (D) $\dfrac{\mu_0}{4\pi}\dfrac{2\pi i}{r}$

32. A coil having an area $2m^2$ is placed in a magnetic field which changes from $1Wb/m^2$ to $4Wb/m^2$ in a interval of 2 *second*. The e.m.f. induced in the coil will be
(A) $4\ V$ (B) $3\ V$
(C) $1.5\ V$ (D) $2\ V$

33. A metal plate gets heated when cathode rays strike against it due to
(A) Kinetic energy of cathode rays
(B) Potential energy of cathode rays
(C) Linear velocity of cathode rays
(D) Angular velocity of cathode rays

34. For moving ball of cricket, the correct statement about de-Broglie Wavelength is
(A) it is not application for such big particle
(B) $\dfrac{h}{\sqrt{2mE}}$
(C) $\sqrt{\dfrac{h}{2mE}}$
(D) $\dfrac{h}{2mE}$

35. If the voltage of X-ray tube is doubled, the intensity of X-ray will become
(A) Half (B) Unchanged
(C) Double (D) Four times

(SECTION-B)

36. The number of electrons, neutrons and protons in a species are equal to 10, 8 and 8 respectively. The proper symbol of the species is
(A) $^{16}O_8$ (B) $^{18}O_8$
(C) $^{18}Ne_{10}$ (D) $^{16}O_8^{2-}$

37. The ionisation energy of 10 times ionised sodium atom is
(A) $13.6\ eV$ (B) $13.6\times 11\ eV$
(C) $\dfrac{13.6}{11}eV$ (D) $13.6\times(11)^2\ eV$

38. The energy equivalent of 1 *kilogram* of matter is about
(A) $10^{-15}\ J$ (B) $1\ J$
(C) $10^{-12}\ J$ (D) $10^{17}\ J$

39. Consider the junction diode as ideal. The value of Current flowing through AB is
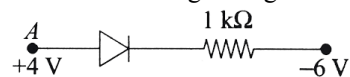
(A) 0A (B) 10^{-2} A
(C) 10^{-1} A (D) 10^{-3} A

40. For transistor action
(1) Base, emitter and collector regions should have similar size and doping concentrations.
(2) The base region must be very thin and lightly doped
(3) The emitter-base junction is forward biased and base-collector junction is reverse biased
(4) Both the emitter–base junction as well as the base collector junction are forward biased
Which one of the following pairs of statement is correct
(A) (4), (1) (B) (1), (2)
(C) (2), (3) (D) (3),(4)

41. Energy of an electron in n^{th} orbit of hydrogen atom is $\left(k=\dfrac{1}{4\pi\varepsilon_0}\right)$
(A) $-\dfrac{2\pi^2 k^2 me^4}{n^2 h^2}$ (B) $-\dfrac{4\pi^2 mke^2}{n^2 h^2}$
(C) $-\dfrac{n^2 h^2}{2\pi\, k\, me^4}$ (D) $-\dfrac{n^2 h^2}{4\pi^2\, k\, me^2}$

42. A conducting rod of length l is falling with a velocity a perpendicular to a uniform horizontal magnetic field B. The potential difference between its two ends will be
(A) 2B/v (B) B/v
(C) $\dfrac{1}{2}$ B/v (D) $B^2 l^2 v^2$

43. The phase difference between the ac and emf is $\pi/2$. Which of the following cannot be the constituent of the Circuit
(A) LC (B) L alone
(C) C alone (D) R, L

44. In the given reaction $_ZX^A \rightarrow\ _{Z+1}Y^A \rightarrow\ _{Z-1}K^{A-4} \rightarrow\ _{Z-1}K^{A-4}$. radioactive radiations are emitted in the sequence
(A) α, β, γ (B) β, α, γ
(C) γ, α, β (D) β, γ, α

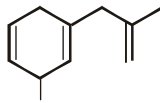**45.** A force F is given by F = at + bt2, where t is time. What are the dimensions of a and b
(A) MLT^{-3} and ML^2T^{-4}
(B) MLT^{-3} and MLT^{-4}
(C) MLT^{-1} and MLT^0
(D) MLT^{-4} and MLT^1

46. What determines the nature of the path followed by the particle
(A) Speed
(B) Velocity
(C) Acceleration
(D) Both (B) and (C)

47. A ray of light is incident normally on one of the face of a prism of angle 30° and refractive index $\sqrt{2}$. The ngle of deviation will be
(A) 26° (B) 0° (C) 23° (D) 15°

48. Two slits are separated by a distance of 0.5 mm and illuminated with light of $\lambda = 6000$ Å. If the screen is placed 2.5 m from the slits. The distance of the thired right fringe from the centre will be
(A) 1.5 mm (B) 3 mm
(C) 6 mm (D) 9 mm

49. Light is incident on a glass surface at polarising angle of 57.5°. Then the angle between the incident ray and the refracted ray is
(A) 57.5° (B) 115°
(C) 65° (D) 205°

50. Energy associated with a moving charge is due to a
(A) Electric field
(B) Magnetic field
(C) Both electric field and magnetic field
(D) None of these

51. Which is not a basic postulate of Dalton's atomic theory ?
(A) Atoms are neither created nor destroyed in a chemical reaction.
(B) Different elements have different types of atoms.
(C) Atoms of an element may be different due to presence of isotopes.
(D) Each element is composed of extermely small particles called atoms.

52. A mixture of 2.3 g formic acid and 4.5 g oxalic acid is treated with conc. H_2SO_4. The evolved gaseous mixture is passed through KOH pellets. Weight (in g) of the remaining product at STP will be
(A) 1.4　　(B) 4.4　　(C) 2.8　　(D) 3.0

53. The angular momentum of an electron in a given orbit is J, Its kinetic energy will be :
(A) $\dfrac{1}{2}\dfrac{J^2}{mr^2}$
(B) $\dfrac{Jv}{r}$
(C) $\dfrac{J^2}{2m}$
(D) $\dfrac{J^2}{2\pi}$

54. The orbital angular momentum for an electron revolving in an orbit is given by $\sqrt{\ell\ (\ell+1)}$ $\dfrac{h}{2\pi}$. This momentum for an s-electron will be given by
(A) $+\dfrac{1}{2}\cdot\dfrac{h}{2\pi}$
(B) Zero
(C) $\dfrac{h}{2\pi}$
(D) $\sqrt{2}\cdot\dfrac{h}{2\pi}$

55. Which one of the following ions has the highest value of ionic radius ?
(A) Li^+　　(B) B^{3+}　　(C) O^{2-}　　(D) F^-

56. The lanthanide contraction is responsible for the fact that :
(A) Zr and Y have about the same radius
(B) Zr and Nb have similar oxidation state
(C) Zr and Hf have about the same radius
(D) Zr and Zn have same oxidation state.

57. The set representing the correct order of ionic radius is :

(A) $Na^+ > Li^+ > Mg^{2+} > Be^{2+}$
(B) $Li^+ > Na^+ > Mg^{2+} > Be^{2+}$
(C) $Mg^{2+} > Be^{2+} > Li^+ > Na^+$
(D) $Li^+ > Be^{2+} > Na^+ > Mg^{2+}$

58. In which of the following pairs of molecules/ions, both the species are not likely to exist ?
(A) H_2^+, He_2^{2-}
(B) H_2^-, He_2^{2-}
(C) H_2^{2+}, He_2
(D) H_2^-, He_2^{2+}

59. Which one of the following statements about water is **FALSE** ?
(A) Water can act both as an acid and as a base.
(B) There is extensive intramolecular hydrogen bonding in the condensed phase.
(C) Ice formed by heavy water sinks in normal water.
(D) Water is oxidized to oxygen during photosynthesis.

60. Which of the following are Lewis acids ?
(A) PH_3 and $SiCl_4$
(B) BCl_3 and $AlCl_3$
(C) PH_3 and BCl_3
(D) None of these

61. Correct order of bond angle is :
(A) $SO_2 < H_2S$
(B) $SO_2 < H_2O$
(C) $NH_3 < H_2O$
(D) $NH_3 < SO_2$

62. The correct order of C–O bond length among CO, CO_3^{2-} and CO_2 is :
(A) $CO_2 < CO_3^{2-} < CO$
(B) $CO < CO_3^{2-} < CO_2$
(C) $CO_3^{2-} < CO_2 < CO$
(D) $CO < CO_2 < CO_3^{2-}$

63. Which of the following is electron-deficient ?
(A) $(SiH_3)_2$
(B) $(BH_3)_2$
(C) PH_3
(D) $(CH_3)_2$

64. The general electronic configuration of Zn, Cd and Hg is represented by :
(A) $(n-1)d^{10}\ ns^2$
(B) $(n-1)\ d^9\ 4s^2$
(C) $(n-1)\ d^{10}4s^1$
(D) $(n-1)\ d^{10}\ 4s^0$

65. Most common oxidation state fo Ce (Cerium) are :
(A) +3, +4
(B) +2, +3
(C) +2, +4
(D) +3, +5

66. **Assertion:** Transition metals show variable valence.
Reason : Due to a large energy difference between the ns^2 and $(n-1)d$ electrons.
(A) If both assertion and reason are true and the reason is the correct explanation of the assertion.

67. Which one has largest number of isomers ?

(A) $[Co(en)_2Cl_2]^+$ (B) $[Co(NH_3)_5Cl]^{2+}$

(C) $[Ir(PhR_3)_2H(CO)]^{2+}$ (D) $[Ru(NH_3)_4Cl_2]^+$

68. The value of 'spin only' magnetic moment for one of the following configurations is 2.84 BM. The correct one is:

(A) d^4 (in strong field ligand)

(B) d^4 (in weak field ligand)

(C) d^3 (in weak as well as strong field ligand)

(D) d^5 (in strong field ligand)

69. How many EDTA (ethylenediaminetetraacetic acid) molecules are required to make an octahedral complex with a Ca^{2+} ion ?

(A) Six   (B) Three

(C) One   (D) Two

70. In which of the following octahedral complexes of Co (at no. 27), will the magnitude of Δ_0 be the highest?

(A) $[Co(C_2O_4)_3]^{3-}$ (B) $[Co(H_2O)_6]^{3+}$

(C) $[Co(NH_3)_6]^{3+}$ (D) $[Co(CN)_6]^{3-}$

71. Which amongst the following is the strongest acid ?

(A) $CHBr_3$ (B) $CHCl_3$

(C) CHI_3 (D) $CH(CN)_3$

72. The increasing basicity order of the following compounds is :

(A) $CH_3CH_2NH_2$

(B)
$$CH_3CH_2\overset{\overset{\displaystyle CH_2CH_3}{|}}{N}H$$

(C)
$$H_3C-\overset{\overset{\displaystyle CH_3}{|}}{N}-CH_3$$

(D)
$$Ph-\overset{\overset{\displaystyle CH_3}{|}}{N}-H$$

(A) (A) < (B) < (C) < (D)
(B) (D) < (C) < (B) < (A)
(C) (A) < (B) < (D) < (C)
(D) (D) < (C) < (A) < (B)

73. Which of the following organic compounds has same hybridization as its combustion product $-(CO_2)$?

(A) Ethane   (B) Ethyne

(C) Ethene   (D) Ethanol

74.

(P) $\xrightarrow{\text{H}_2/\text{Ni}}$ Q

Which of the following is the correct statement about P & Q.

(A) Product will be 1-Methyl-3-(2-methylpropyl)cyclohexane.

(B) Product will be 3-Methyl-1-(2-methylpropyl)cyclohexane.

(C) DU of reactant P is 3.

(D) DU of product Q is zero.

75. When Cl_2 gas reacts with hot and concentrated sodium hydroxide solution, the oxidation number of chlorine changes from :

(A) Zero to +1 and zero to −5

(B) Zero to −1 and zero to +5

(C) Zero to −1 and zero to +3

(D) Zero to +1 and zero to −3

76. **Assertion :** Vision is not a photochemical reaction.

Reason : Halogenation of alkenes is a photochemical reaction.

(A) If both assertion and reason are true and the reason is the correct explanation of the assertion.

(B) If both assertion and reason are true but reason is not the correct explanation of the assertion.

(C) If assertion is true but reason is false.

(D) If assertion is false but reason is true.

77. The enthalpy of fusion of water is 1.435 kcal/mol. The molar entropy change for the melting of ice at 0°C is :

(A) 10.52 cal / (mol K)

(B) 21.04 cal / (mol K)

(C) 5.260 cal / (mol K)

(D) 0.526 cal / (mol K)

78. For the reaction :

$X_2O_4(l) \rightarrow 2XO_2(g)$

$\Delta U = 2.1$ k cal, $\Delta s = 20$ cal K^{-1} at 300 K

300 K $\Delta U = 2.1$ k cal, $\Delta s = 20$ cal K^{-1}

Hence, ΔG is

(A) 2.7 k cal   (B) –2.7 k cal
(C) 9.3 k cal   (D) –9.3 k cal

79. A gas is allowed to expand in a well insulated container against a constant external pressure of 2.5 atm from an initial volume of 2.50 L to a final volume of 4.50 L. The change in internal energy ΔU of the gas in joules will be:

(A) 1136.25 J   (B) –500 J
(C) –505 J   (D) +505 J

80. Reversible expansion of an ideal gas under isothermal and adiabatic conditions are as shown in the figure :
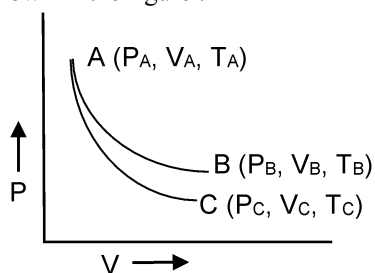
AB $\longrightarrow$ Isothermal expansion

AC $\longrightarrow$ Adiabatic expansion

Which of the following options is not correct?

(A) $\Delta S_{isothermal} > \Delta S_{adiabatic}$
(B) $T_A = T_B$
(C) $W_{isothermal} > W_{adiabatic}$
(D) $T_C > T_A$

81. Select the correct combination :
(A) The aqueous solution of each Na_3BO_3 and Na_3PO_4 – Acidic nature
(B) The aqueous solution of each Na_3BO_3 and CH_3COONa – basic nature
(C) The aqueous solutions of each CH_3COONa and $NaCN$ – acidic nature
(D) The aqueous solutions of each Na_3PO_4 and NH_4Cl – acidic nature

82. Addition of sodium acetate solution to acetic acid cause the following change
(A) pH increases
(B) pH decreases
(C) pH remains unchanged
(D) pH becomes 7

83. Solubility of MX_2 type electrolytes is 0.5×10^{-4} mol/L, then find out K_{sp} of electrolytes.
(A) 5×10^{-12} (B) 25×10^{-10}
(C) 1×10^{-13} (D) 5×10^{-13}

84. **Assertion :** A ionic product is used fro any types of electrolytes whereas solubility product is applicable only to sparingly soluble salts.

Reason : Ionic product is defined at any stage of the raction whereas solubility product is only appicable to the saturation stage.
(A) If both assertion and reason are true and the reason is the correct explanation of the assertion.
(B) If both assertion and reason are true but reason is not the correct explanation of the assertion.
(C) If assertion is true but reason is false.
(D) If the assertion and reason both are false.

85. Benzene and toluene form nearly ideal solutions. At 20ºC, the vapour pressure of benzene is 75 torr and that of toluene is 22 torr. The partial vapour pressure of benzene at 20 ºC for a solution containing 78 g of benzene and 46 g of toluene in torr is :
(A) 50   (B) 25
(C) 37.5   (D) 53.5

(SECTION-B)

86. A 5.25% solution of a substance is isotonic with a 1.5% solution of urea (molar mass = 60g mol⁻¹) in the same solvent. If the densities of both the solutions are assumed to be equal to 1.0 g cm⁻³, molar mass of the substance will be
(A) 105.0 g mol⁻¹   (B) 210.0 g mol⁻¹
(C) 90.0 g mol⁻¹   (D) 15.0 g mol⁻¹

87. If sodium sulphate is considered to be completely dissociated into cations and anions in aqueous solution, the change in freezing point of water (ΔT_f), when 0.01 mole of sodium sulphate is dissolved in 1 kg of water, is (K_f = 1.86 K kg mol⁻¹)
(A) 0.0372 K   (B) 0.0558 K
(C) 0.0744 K   (D) 0.0186 K

88. Which of the following is/are function(s) of salt - bridge ?
(A) It completes the electrical circuit
(B) It maintains electrical neutrality by flow of ions between the two compartments through salt - bridge
(C) It minimises the liquid - liquid junction potential
(D) All of these

89. For Zn^{2+} / Zn, E° = –0.76 V, for Ag^+/Ag E° = 0.799 V. The correct statement is -

(A) the reaction Zn getting reduced Ag getting oxidized is spontaneous
(B) Zn undergoes reduction and Ag is oxidized
(C) Zn undergoes oxidation Ag⁺ gets reduced
(D) No suitable answer

90.
$$Pt \left| \begin{array}{c} H_2 \\ (p_1) \end{array} \right| \begin{array}{c} H^+ \\ (1M) \end{array} \left|\left| \begin{array}{c} H^+ \\ (1M) \end{array} \right| \begin{array}{c} H_2 \\ (p_2) \end{array} \right| Pt$$
(where p_1 and p_2 are pressures) cell reaction will be spontaneous if :
(A) $p_1 = p_2$ (B) $p_1 > p_2$
(C) $p_2 > p_1$ (D) $p_1 = 1$ atm

91. When initial concentration of a reactant is doubled in a reaction, its half-life period is not effected. The order of the reaction is :
(A) First
(B) Second
(C) More than zero but less than first
(D) Zero

92. In a S_N2 substitution reaction which one of the following has the highest relative rate ?

$$R — Br + Cl^- \xrightarrow{\text{DMF}} R — Cl + Br^-$$
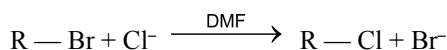
(A) $(CH_3)_3 C — CH_2Br$
(B) CH_3CH_2Br
(C) $CH_3CH_2CH_2Br$
(D) $(CH_3)_2 CH — CH_2Br$

93. The correct difference between first and second-order reactions is that
(A) The rate of a first-order reaction does not depend on reactant concentrations ; the rate of a second order reaction does depend on reactant concentrations
(B) The rate of a first-order reaction does depend on reactant concentrations ; the rate of a second-order reaction does not depend on reactant concentrations
(C) A first-order reaction can be catalyzed ; a second –order reaction cannot be catalyzed
(D) The half-life of a first-order reaction does not depend on $[A]_0$; the half-life of a second-order reaction does depend on $[A]_0$

94. **Assertion :** In electrolysis, the quantity of electricity needed for depositing 1 mole of silver is different from that required for 1 mole of copper.
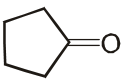**Reason :** The molecular weights of silver and copper are different

(A) If both assertion and reason are true and the reason is the correct explanation of the assertion.
(B) If both assertion and reason are true but reason is not the correct explanation of the assertion.
(C) If assertion is true but reason is false.
(D) If the assertion and reason both are false.

95. Treatment of cyclopentanone with methyl lithium gives which of the following species ?
(A) Cyclopentanonyl cation
(B) Cyclopentanonyl radical
(C) Cyclopentanonyl biradical
(D) Cyclopentanonyl anion

96. Reactivity order of halides for dehydrohalogenation is
(A) $R – F > R – Cl > R – Br > R – I$
(B) $R – I > R – Br > R – Cl > R – F$
(C) $R – I > R – Cl > R – Br > R – F$
(D) $R – F > R – I > R – Br > R – Cl$

97. Which of the following reagents would distinguish cis-cyclopenta-1,2- diol from the trans-isomer ?
(A) Aluminium isopropoxide
(B) Acetone
(C) Ozone
(D) MnO_2

98. Given
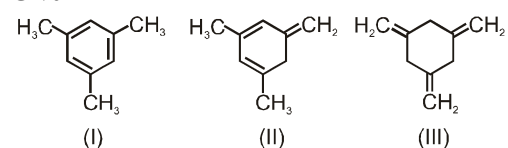
The enthalpy of hydrogenation of these compounds will be in the order as :
(A) III > II > I   (B) II > III > I
(C) II > I > III   (D) I > II > III

99. $$RCH = CH_2 \xrightarrow[C_2H_5OH]{Na/NH_3(\ell)} RCH_2CH_3$$
This reaction is called as :
(A) Fischer-Siper reaction
(B) Clemmensen reduction
(C) Birch reduction
(D) Arndt-Eistert synthesis

100. Which of the following carbohydrates is a monosaccharide ?

(A) Sucrose   (B) Maltose

(C) Fructose   (D) Starch

101. Two organisms of same division but different order will be kept under the same
(A) Family　　　　　(B) Genus
(C) Species　　　　(D) Class

102. Which of the following organisms are not placed in kingdom plantae of two kingdom classification system proposed by Linnaeus?
(A) Bacteria　　　　(B) Algae
(C) Protozoans　　(D) Fungi

104. _____ used by taxonomists these days
(A) Cytotaxonomy
(B) Numerical taxonomy
(C) Chemotaxonomy
(D) Classical taxonomy

105. How many of the below features are common for green algae, brown algae and red algae?

Chlorophyll a, Pyrenoids, Aquatic habitat, Thalloid body organization, Cellulosic cell wall, Phycocolloids , Flagellated gametes

(A) Four　　　　　(B) Five
(C) Two　　　　　(D) Three

106. Coralloid roots of Cycas possess symbiotic:
(A) Rhizobium　　　(B) Prokaryote
(C) Pteridophyte　(D) Green algae

107. Mannitol is the stored food in:-
(A) Gracillaria　　(B) Chara
(C) Porphyra　　　(D) Fucus

108. When gynoecium is present in the topmost position of thalamus, the ovary is known as:
(A) Inferior　　　　(B) Half inferior
(C) Half superior　(D) Superior

109. Match **Column - I** with **Column - II.**

Column - I　　　　　　　Column – II

(a) $\%\,\male\female\,K_{(5)}C_{1+2+(2)}A_{(9)+1}\underline{G}_1$　(i) Brassicacease

(b) $\oplus\,\male\female\,K_{(5)}\overparen{C_{(5)}}A_5\underline{G}_2$　(ii) Liliaceae

(c) $\oplus\,\male\female\,\overparen{P_{(3+3)}}A_{3+3}\underline{G}_{(3)}$　(iii) Fabaceae

(d) $\oplus\,\male\female\,K_{2+2}C_4A_{2-4}\underline{G}_{(2)}$　(iv) Solanaceae

Select the **correct** answer from the options given below.

	(a)	(b)	(c)	(d)
(A)	(iii)	(iv)	(ii)	(i)
(B)	(i)	(ii)	(iii)	(iv)
(C)	(ii)	(iii)	(iv)	(i)
(D)	(iv)	(ii)	(i)	(iii)

110. Monocot root is differ from dicot root in having:
(A) Open vascular bundle
(B) Scattered vascular bundle
(C) Large pith
(D) Radial vascular bundle

111. In leaves, ground tissue consists of
(A) Mesophyll.
(B) Palisade tissue only.
(C) Spongy parenchyma only.
(D) Epidermis and bindle sheath.

112. The vascular cambium normally gives rise to:
(A) Primary phloem
(B) Secondary xylem
(C) Periderm
(D) Phelloderm

113. Chromatin is chemical made of:
(A) Nucleic acid, histone and non-histone proteins
(B) Nucleic acid and histone proteins
(C) Nucleic acid and non-histone proteins
(D) Nucleic acid

114. Mitochondria are semi-autonomous as they possess:
(A) DNA
(B) DNA + RNA
(C) DNA + RNA + Ribosomes
(D) Proteins

115. The cromosome showing L-shaped structure by the presence of centromere is termed as:-
(A) Acentric　　　　(B) Metacentric
(C) Sub-metacentric　(D) Telocentric

116. What will be the gametic chromosome number of a cell, if somatic cell have 40 chromosomes
(A) 10　　(B) 20　　(C) 30　　(D) 40

16. During mitosis number of chromosomes gets:-
(A) Change
(B) No change
(C) May be change if cell is mature
(D) May be change if cell is immature

117. In plant cells, cytokinesis occurs by:
(A) Furrowing
(B) Cell plate formation
(C) Invagination

(D) Anticlinal division

118. If the number of chromosomes in G_1 phase of a cell is 18, then the number of chromosomes after S phase of that cell would be
(A) 9   (B) 27   (C) 36   (D) 18

119. The most dramatic period of the cell cycle is
(A) Interphase   (B) M-phase
(C) S-phase   (D) G_0-phase

120. Mitosis in higher group of plants is
(A) Anastral and centric
(B) Astral and acentric
(C) Anastral and acentric
(D) Amphiastral and centric

121. C_4 plants are more efficient in photosynthesis than C_3 plants due to:
(A) Higher leaf area
(B) Presence of larger number of choloplasts in the leaf cells
(C) Presence of thin cuticle
(D) Lower rate of photorespiration

122. CAM helps the plants in:-
(A) Conserving water
(B) Secondary growth
(C) Disease resistance
(D) Reproduction

123. Who received the Nobel Prize for working out the early carbon pathway of photosynthesis?
(A) Calvin   (B) Krebs
(C) Von Niel(D) Kamen

124. Which fraction of the visible spectrum of solar radiations is primarily absorbed by carotenoids of higher plants?
(A) Violet and blue
(B) Blue and green
(C) Green and red
(D) Yellow and orange

125. Which of the following comparative account is incorrect w.r.t. respiratory process?
Fermentation
(A) Partial oxidation
(B) Low amount of energy is released
(C) No loss as heat
(D) No ETC
Aerobic respiration
(A) Complete oxidation
(B) High amount of energy is released
(C) Heat loss occurs

(D) ETC present

126. Vernalisation stimulates flowering in:
(A) Carrot   (B) Ginger
(C) Zamikand   (D) Turmeric

127. Phytochrome is responsible for:
(A) Photosynthesis   (B) Flowering
(C) Fruit formation   (D) Respiration

128. Auxanometer is used to detect
(A) Respiration rate
(B) Plant growth
(C) Transpiration rate
(D) Size of stomatal aperture

129. Parthenogenesis occurs when:-
(A) When embryo is formed without the fusion of egg and the sperm
(B) When embryo is formed by the fusion of egg and sperm
(C) When embryo is formed from another cell
(D) When sperm produces the embryo directly

130. Nucellus is found in:-
(A) Cell   (B) Pollen
(C) Ovule   (D) Leaf

131. Endosperm is generally
(A) Triploid   (B) Haploid
(C) Tetraploid   (D) Without nuclei

132. Which one of the following cannot be explained on the basis of Mendel's Law of Dominance?
(A) Alleles do not show any belending and both the characters recover as such in F_2 generation
(B) Factors occur in pairs
(C) The discrete unit controlling a particular character is called a factor
(D) Out of one pair of factors one is dominant and the other recessive

133. Read the following statements and state true (T) and false (F):
A. The genotypic ratio of flower colour in snapdragon is exactly similar to genotypic ratio of Mendelian monohybrid cross.
B. In a diploid organism, there are four copies of each gene.
C. If we want to determine the genotype of violet flowered pea plant, then it is crossed with recessive parent.

	A	B	C
(A)	T	F	T
(B)	T	T	T

(C)   F   F   T
(D)   F   T   T

134. DNA replication, each new strand begins at its
(A) 5' end
(B) 3' end
(C) Both 5' and 3' ends
(D) end opposite to template strand

135. The process of copying genetic information from one strand of DNA into RNA is termed as
(A) Translation
(B) Transformation
(C) Transcription
(D) Reverse transcriptio

(SECTION-B)

136. Sequence of nucleotides in mRNA is similar to which strand of DNA, except uracil in place of thymine?
(A). Coding strand
(B) Template strand
(C) Antisense strand
(D) Both (B)and (C)

137. Which one is incorrect statement?
(A) The basic unit of DNA is nucleotide.
(B) A nitrogenous base is linked to pentose sugar by N-glycosidic linkage.
(C) Adenosine, guanosine, and cytidines are nucleotides.
(D) DNA is the largest macromolecule of the cell.

138. The enzyme responsible for transcription is :-
(A) D.N.A polymerase-I
(B) R.N.A. polymerase
(C) Reverse transcriptase
(D) D.NA. polymerase-III

139. Which of the following is a stop codon :-
(A) AUG, GUG, UUU
(B) UGA, UAG, UAA
(C) UUU, UAC, CUC
(D) CUC, UAC, UAA

140. Match the column I with column II for genes of lac operon, and select the correct option.

Column I	Column II
A. Z gene	(i) Transacetylase
B. Y gene	(ii) Repressor
C. A gene	(iii) B-Galactosidase
D. i gene	(iv) Permease

(A) A-iv; B-iii; C-i; Dii

(B) A-iii; B-i; C-iv; D-ii
(C) A-iii; B-iv; C-i; D-ii
(D) A-iii; B-ii; C-iv; Di

141. Which of the following molecules characteristically contains unusual bases?
(A) 16s rRNA   (B) 28s rRNA
(C) Structural RNA   (D) tRNA

142. The figure given below shows a typical biogas plant. Which of the following four option products labeled as A, B, and C are correctly identified
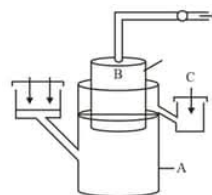
(A) A — Sludge; B — $CH_4 + CO_2$; C — Dung + water
(B) A — Digester; B — $CH_4 + CO_2$; C — Sludge + water
(C) A — Sludge; B — $CH_4 + NO_2$; C — Sewage
(D) A — Digester; B — CH_4; CO_2; C — Dung + water

143. Evolutionary biologists believe that the success of mammals is largely due to their ability of
(A) Migration
(B) Thermoregulation and osmoregulation
(C) Hibernation
(D) Confirmation

144. Which of the following is not an attribute of a population?
(A) Species interaction   (B) Sex ratio
(C) Natality   (D) Mortality

145. Predation is important for :
(A) Transfer of energy
(B) Keeping prey population under control
(C) Maintaining species diversity
(D) All of these

146. Identity the correct sequence of steps in the process of decomposition.
(a) Mineralisation
(b) Fragmentation of detritus
(c) Catabolism
(d) Leaching
(e) Humification

(A) b → d → e → d → a

(B) b → d → c → e → a

(C) c → b → e → a → d

(D) c → d → b → a → e

147. The phenomenon of incorporation of nutrients in living microbes is called
(A) Mineralisation.
(B) Decomposition.
(C) Scarification.
(D) Nutrient immobilisation.

148. The abiotic factor promoting the process of decomposition of detritus is
(a) Increase in temperature above 25°C.
(b) Moist environment.
(c) Poor aeration.
(d) Water logging condition.
(A) Only (a) and (d)   (B) Only (a) and (b)
(C) (a), (b), and (c)   (D) (b) and (c) only

149. Read the following statements carefully w.r.t. conservation of biodiversity:
A. Conservation of biodiversity for philosophical or spiritual need to realize that every species has intrinsic value and moral duty to pass over biological legacy for future generation.
B. Conservation of biodiversity for direct economical benefits like food, medicine, industrial product, etc.
Select the correct option for above given statements:
A
(A) Ethical argument
(B) Ethical argument
(C) Narrowly utilitarian argument
(D) Broadly utilitarian argument
B
(A) Narrowly utilitarian argument
(B) Broadly utilitarian argument
(C) Utilitarian argument
(D) Narrowly utilitarian argument

150. Sacred groves are useful in :
(A) Conserving rare and threatened species
(B) Generating environmental awareness
(C) Year round flow of water in rivers
(D) Preventing soil erosion

ZOOLOGY (SECTION-A)

151. Vetrebrates have
(A) Dorsal tubular nerve cord
(B) Ventrally situated heart
(C) Body cavity with alimentary canal
(D) All the above

152. Which of the following animal is not viviparous?
(A) Elephant   (B) Platypus
(C) Whale   (D) Flying fox (bat)

153. Examine the figures A, B, C, and D. In which one of the four options given all the items A, B, C, and D are correctly identified?
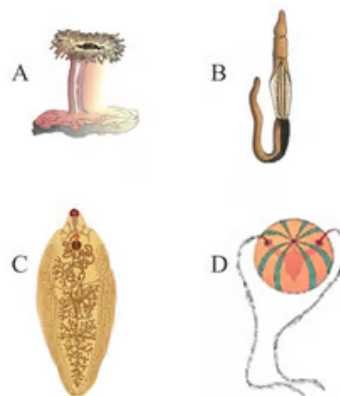
(A) A−Physalia; B−Nereis; C−Planaria;
D−Hormiphora

(B) A−Physalia; B−Ascaris; C−Fasciola;
D−Pleurobrachia

(C) A−Adamsia; B−Balanoglossus;
C−Fasciola; D−Pleurobrachia

(D) A−Hydra; B−Balanoglossus; C−Planaria;
D−Ctenophora

154. Cartilaginous cranium and vertebral column are observed in
(A) Aves   (B) Mammals
(C) Amphibia   (D) Cyclostomata

155. Which of the following found in frog :-
(A) five fingers and four toes
(B) four fingers and five toes
(C) five fingers and five toes
(D) four fingers and four toes

156. Mark the odd one w.r.t. paired structures found in frog's brain.
(A) Cerebral hemisphere   (B) Optic lobes
(C) Olfactory lobes   (D) Diencephalon

157. Sinus venosus is an accessory chamber of heart attached with
(A) Right ventricle
(B) Right atrium
(C) Left ventricle
(D) Left atrium

158. Prokaryotic DNA is:-
(A) double stranded round
(B) single stranded round
(C) double stranded straight
(D) double stranded RNA as nucleic acid

159. Protein in silk thread is:-
(A) Fibroin
(B) Keratin
(C) Albumin
(D) Globulin

160. Find the incorrect match.
(A) Maltose = Glucose + Glucose
(B) Sucrose = Glucose + Fructose
(C) Trehalose = Fructose + Galactose
(D) Lactose = Glucose + Galactose

161. Under normal physiological conditions in human being every of oxygenated blood can deliver _____ of to the tissues.
(A) 5 ml
(B) 4 ml
(C) 10 ml
(D) 2 ml

162. Read the following statements. Which of the following are correct?
(i) Lungs are covered with two-layered membrane called pleura.
(ii) Right primary bronchus divides into two secondary bronchi.
(iii) Respiratory bronchioles, alveolar ducts and alveoli constitute the exchange part of the respiratory tract.
(iv) Left lung has three lobes, while the right lung has two.
(A) (i) and (ii)
(B) (i) and (iii)
(C) (ii) and (iv)
(D) (iii) and (iv)

163. Flippers of Penguins and Dolphins are examples of
(A) Natural selection
(B) Adaptive radiation
(C) Convergent evolution
(D) Industrial melanism

164. The primary sites of exchange of gases are
(A) Trachea
(B) Alveoli
(C) Nasal chamber
(D) Bronchioles

165. Which of the following sequence is truly a systemic circulation pathway?
(A) Right ventricle → Pulmonary aorta → Tisues → Pulmonary veins → Left auricle
(B) Right auricle → Left ventricle → Aorta → Tissues → Veins → Right auricle
(C) Left auricle → Left ventricle → Pulmonary Aorta → Tissues → Right auricle
(D) Left auricle → Left ventricle → Aorta → Arteries → Tissues → Veins → Right auricle

166. Atherosclerosis refers to the ailment of:
(A) Lungs
(B) Heart
(C) Kidney
(D) Liver

167. _____ means the state of heart when it is not pumping blood effectively enough to meet the needs of the body.
(A) Heart attack
(B) Heart failure
(C) Atherosclerosis
(D) Hypertension

168. Hinge joint is present between:-
(A) Femur and ulna
(B) Humerus and ulna
(C) Femur and pectoral girdle
(D) Femur and pelvic girdle

169. Thoracic cage in Human is made up of:-
(A) Ribs, vertebral column and diaphragm
(B) Ribs, diaphragm
(C) Vertebral column, diaphragm and sternum
(D) Ribs, vertebral column and sternum

170. Identify the incorrect option from the following:
(A) White muscle fibres depend on anaerobic respiration and are rich in sarcoplasmic reticulum.
(B) Cardiac muscles are branched, striped and uninucleate.
(C) A neural signal at neuromuscular junction causes release of acetylcholine which generates action potential.
(D) Several motor neurons supplying a single muscle fibre constitute a motor unit.

171. Find the incorrect statement.
(A) During oogenesis, meiosis II is completed in fallopian tube
(B) Ovum moves due to ciliary action of cells lining oviducts
(C) Acrosome has enzymes called sperm lysins
(D) During oogenesis, meiosis I is completed in second- ary follicle

172. Use of an artificial kidney during hemodialysis may result in:
(a) Nitrogenous waste build-up in the body
(b) Non-elimination of excess potassium ions
(c) Reduced absorption of calcium ions from gastro-intestinal tract

(d) Reduced RBC production

Which of the following options is the most appropriate?
(A) (a) and (b) are correct
(B) (b) and (c) are correct
(C) (c) and (d) are correct
(D) (a) and (d) are correct

173. Choose the correct option from the following:
(A) Chances of failure through natural methods are very low.
(B) Barrier methods are available for both males and females.
(C) 'Nirodh' is a popular brand of female condoms.
(D) Barrier contraceptives are generally made of copper due to its spermicidal effects.

174. Identify the wrong statement:
(A) Active secretion of H^+ and K^- ions takes place in DCT.
(B) Glomerular filtrate is isotonic in comparison to blood plasma.
(C) Small amount of urea passes from collecting duct to medullary interstitium and enters ascending limb of loop of Henle.
(D) Water reabsorption in PCT takes place with the help of vasopressin.

175. Myelin sheath is derived from:
(A) Neuroglia cells   (B) Schwann cells
(C) Nerve cells   (D) All of these

176. Which of the following statements are correct?
(i) The cerebrum wraps around thalamus.
(ii) Corpus callosum is characteristic of mammalian brain
(iii) Midbrain and hindbrain together form the brainstem
(iv) Centres for hunger, thirst and temperature control are present in hypothalamus.
(A) (i) Only (B) (ii) and (iii) only
(C) (iv) Only   (D) All are correct

177. Who is known as "father of endocrinology"?
(A) Einthoven
(B) Thomas Addison
(C) Pasteur
(D) R.H. Whittaker

178. Hormones are_____ (i)_____ chemicals which act as _____(ii)_____ messengers and are produced in amounts.
Fill up the blanks with correct options.

	(i)	(ii)	(iii)
(A)	Nutrient	Intercellular	trace
(B)	Non-nutrient	Intercellular	trace
(C)	Non-nutrient	Intercellular	trace
(D)	Nutrient	Intercellular	trace

179. Progesterone hormone is secreted by:-
(A) corpus albicans
(B) corpus collosum
(C) corpus luteum in ovaries
(D) corpus uteri

180. Sertoli cells are involved in:-
(A) Respiration
(B) Nutrition of sperms
(C) Excretion
(D) Development of sex organs

181. How many of the following structures contain 46 chromosomes?

Spermatogonia, Secondary spermatocyte, Secondary oocyte, Spermatozoa, Oogonia, Polar body, Primary oocyte, Spermatid

(A) Four   (B) Five
(C) Six   (D) Three

182. Hysterectomy is surgical removal of
(A) Uterus
(B) Mammary glands
(C) Prostate gland
(D) Vasdeference

183. Match the following secually transmitted diseases column - I with their causartive agent column - II and select the correct option:
Column - I   **Column - II**
a. Gonorrhoea   i. HIV
b. syphilis   ii. Neisseria
c. Genital warts   iii. Treponoma
d. AIDs   iv. HP virus
(A) a-iii, b-iv, c-i, d-ii
(B) a-iv, b- ii, c-iii, d-i
(C) a-iv, b-iii, c-ii, d-i
(D) a-ii, b-iii, c-iv, d-i

184. Which of the following is not a natural method of contraception?
(A) Lactational amenorrhoea
(B) Coitus interruptus
(C) Periodic abstinence
(D) Saheli

185. Which of the following is the correct sequence of events in the origin of life?
I. Formation of protobionts
II. Synthesis of organic monomers
III. Synthesis of organic polymers
IV. Formation of DNA-based genetic systems
(A) II, III, I, IV   (B) I, III, II, IV

(C) III, II, I, IV   (D) III, I, II, IV

186. Read the following statements and identify true (T) and false (F) among them:
(i) T-lymphocytes mediate humoral immune response.
(ii) Mucus coating of the epithelium lining respiratory and urogenital tract form physical barrier of the specific immunity.
(iii) Bacteria-infected cells secrete proteins called interferons which protect non-infected cells from further infection.
(iv) An activated exotoxin called toxoid is used to induce active immunity to toxin-causing disease.

	(i)	(ii)	(iii)	(iv)
(A)	F	F	F	T
(B)	T	F	F	F
(C)	F	F	F	F
(D)	T	T	F	F

187. Smoking is not associated with increased incidence of cancers in
(A) Throat   (B) Lungs
(C) Large intestine   (D) Urinary bladder

188. A certain patient is suspected to be suffering from acquired immuno deficiency syndrome. Which diagnostic technique will you recommend for its detection ?
(A) MRI   (B) Ultra sound
(C) WIDAL   (D) ELISA

189. The term 'antibiotic' was coined by
(A) Selman Waksman
(B) Alexander Fleming
(C) Edward Jenner
(D) Louis pasteur

190. Which of the following enzymes is not used while extracting DNA from an organism?
(A) Cellulase
(B) Chitinase
(C) Lysozyme
(D) Deoxyribonuclease

191. The primers used in the PCR technique should be
(A) Formed of polypeptide.
(B) Polynucleotide chain tagged with radioisotope.
(C) Complementary to the 3'-end sequence of the DNA segment to be amplified.
(D) Complementary to the 5'-end sequence of the DNA segment to be amplified

192. Which of the following is an incorrect statement?
(A) The term "chemical knife" is used for restriction endonuclease.

(B) In the case of EcoRI, R represents the genus of the prokaryote from which the enzyme is obtained.
(C) The linking of the antibiotic-resistance gene with the plasmid vector became possible with enzyme ligase
(D) The substrate for restriction enzyme is double- stranded DNA.

193. In gene gun method used to introduce alien DNA into host cells, microparticles of _____ metal are used.
(A) Copper   (B) Zinc
(C) Tungsten or gold   (D) Silver

194. The process of separation and purification of expressed protein before marketing is called :
(A) Downstream processing
(B) Bioprocessing
(C) Postproduction processing
(D) Upstream processing

195. Which of the following is an incorrect statement?
(A) Silencing of a gene can be achieved using RNA interference.
(B) Tobacco plants resistant to a nematode have been developed by the introduction of DNA that produces both sense and anti-sense RNA.
(C) Bacillus thuringiensis strains have been used for designing biofertilisers.
(D) Genetically modified (GM) crops can be produced by recombinant DNA technology.

196. Which of the following is incorrect regarding the plant *Pentadiplandra brazzeana*?
(A) It is found in West Africa.
(B) It produces the protein Brazzein, which is 2000 times sweeter than sugar.
(C) It is a low-calorie sweetener.
(D) The local people in Africa have patented the protein and are using it commercially.

197. The Indian Parliament has recently cleared the second amendment of the_____Bill, which takes issues such as patent terms, emergency provisions, and research and development initiative.
(A) RTI
(B) Indian Patents
(C) Biopiracy
(D) Genetic approval

198. Cultivation of Bt cotton has been much in the news. The prefix "Bt" means :–
(A) "Barium – treated" cotton seeds.
(B) "Bigger thread" variety of cotton with batter tensile strength.
(C) Produced by "biotechnology" using restriction enzymes and ligases.

(D) Carrying an endotoxin gene from Bacillus thuringiensis.

199. A transgenic rice (Golden rice) has been developed for increased content of :-
(A) Vitamin A   (B) Viamin B1
(C) Vitamin C   (D) Vitamin D

200. Study the following statements and select the option with incorrect ones.

(i) Hirudin is an anticoagulant produced from transgenic Brassica napus.
(ii) Twenty-five recombinant therapeutics worldwide have been approved for human use.
(iii) Twelve recombinant therapeutics are being marketed in India.
(iv) Bt toxins are extracellular crystalline proteins.
(v) Transgenic food may cause toxicity and produce allergy in human beings.
(A) (ii) and (iv)   (B) (ii) and
(C) (iii) and (iv)   (D) (ii) only