# PHYSICS

(SECTION-A)

1. Identify the false statement.
(A) Inside a charged or neutral conductor electrostatic field is zero.
(B) The electrostatic field at the surface of the charged conductor must be tangential to the surface at any point.
(C) There is no net charge at any point inside the conductor.
(D) Electrostatic potential is constant throughout

2. Gauss's law is valid for
(A) Any closed surface
(B) Only regular close surface
(C) Any open surface
(D) Only irregular open surface

3. The energy stored in the condenser is
(A) QV
(B) $\frac{1}{2}QV$
(C) $\frac{1}{2}C$
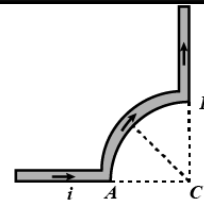(D) $\frac{1}{2}\frac{Q}{C}$

4. A wire has a resistance of 6 Ω. It is cut into two parts and both half value are connected in parallel.
The new resistance is
(A) 12 Ω (B) 1.5 Ω
(C) 3 Ω (D) 6 Ω

5. The potential difference between point A & B is
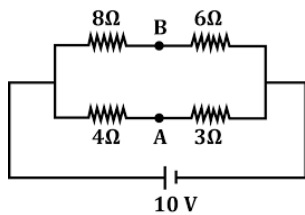
(A) $\frac{20}{7}$ V (B) $\frac{40}{7}$ V
(C) $\frac{10}{7}$ V (D) 0

6. A wire carrying current i is shaped as shown. Section AB is a quarter circle of radius r. The magnetic field is directed

(A) At an angle π/4 to the plane of the paper
(B) Perpendicular to the plane of the paper and directed in to the paper
(C) Along the bisector of the angle ACB towards AB
(D) Along the bisector of the angle ACB away from AB

7. A current carrying straight wire is kept along the axis of a circular loop carrying a current. The straight wire
(A) Will exert an inward force on the circular loop
(B) Will exert an outward force on the circular loop
(C) Will exert a force on the circular loop parallel to itself
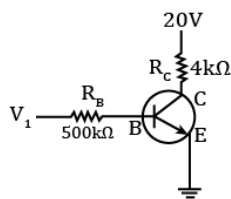(D) Will not exert any force on the circular loop

8. The magnetic field on the axis of a long solenoid having n turns per unit length and carrying a current i is
(A) $\mu_0 ni$
(B) $\mu_0 n^2 I$
(C) $\mu_0 ni^2$
(D) None of the above

9. A bar magnet of magnet moment $\overset{\leftrightarrow}{M}$ is placed in magnetic field of induction $\overset{\leftrightarrow}{B}$. The torque on it is
(A) $\overset{\leftrightarrow}{M} \cdot \overset{\leftrightarrow}{B}$ (B) $-\overset{\leftrightarrow}{M} \cdot \overset{\leftrightarrow}{B}$
(C) $\overset{\leftrightarrow}{M} \times \overset{\leftrightarrow}{B}$ (D) $\overset{\leftrightarrow}{B} \times \overset{\leftrightarrow}{M}$

10. Domain formation is the necessary feature of
(A) Ferromagnetism (B) Paramagnetism
(C) Diamagnetism (D) All of these

11. The coefficient of mutual inductance of two coils is 6. If the current flowing in one is 2 ampere, then the induced e.m.f. in the second coli will be
(A) 3 mV (B) 2 mV
(C) 3 V (D) zero

12. A short solenoid of radius a, number of turns per unit length n_1 and length L is kept coaxially inside a very long solenoid of radius b, number of turns per unit length n_2. What is the mutual inductance of the system
(A) $\mu_0 \pi b^2 n_1 n_2 L$
(B) $\mu_0 \pi a^2 n_1 n_2 L^2$
(C) $\mu_0 \pi a^2 n_1 n_2 L$
(D) $\mu_0 \pi b^2 n_1 n_2 L^2$

13. In a series resonant LCR circuit, the voltage across R is 100 volts and R = 1kΩ with C = $2\mu F$. The resonant frequency ϖ is 200 rad/s. At resonance the voltage across L is
(A) 40 V
(B) 250 V
(C) 4×10^{-3} V
(D) 2.5×10^{-3} V

14. The work function of a substance is 4.0 eV. The longest wavelength of light that can cause photoelectrons emission from this substance is approximately
(A) 540 nm
(B) 400 nm
(C) 310 nm
(D) 220 nm

15. According to Bhor's theory the moment of momentum of an electron revolving in second orbit of hydrogen atom will be
(A) $2\pi h$
(B) πh
(C) $\dfrac{h}{\pi}$
(D) $\dfrac{2h}{\pi}$

16. Minimum energy required to takeout the only one electron from ground state of He^+ is
(A) 13.6 eV
(B) 54.4 eV
(C) 27.2 eV
(D) 6.8 eV

17. A p-n junction diode contains a depletion layer
(A) Only if it unbiased
(B) Only if it forward biased
(C) Only if it is reverse biased
(D) Irrespective of whether it is biased or unbiased

18. In the circuit shown in the figure, the input voltage V_1 is 20 , $V_{BE} = 0$ and $V_{CE} = 0$. The values of I_B. I_C and β are given by

(A) I_B = 40 μA, I_c. = 10mA, β = 250
(B) I_B. = 25 μA, I_c. = 5mA, β = 200
(C) I_B. =20 μA, I_c. = 5mA, β = 250
(D) I_B. = 40 μA, I_c. = 5mA, β = 125

19. A man having height 6 m. He observes image of 2 m height erect, then mirror used is
(A) Concave
(B) Convex
(C) Plane
(D) None of these

20. Two lenses of power +12 and -2 dioptres are placed in contact. What will the focal length of combination
(A) 10 cm
(B) 12.5 cm
(C) 16.6 cm
(D) 8.33 cm

21. Two slits in Young's experiment have widths in the ratio 1:25. The ratio of intensity at the maximum and minimum in the interference pattern $\dfrac{l_{max}}{l_{min}}$ is .
(A) $\dfrac{121}{49}$
(B) $\dfrac{49}{121}$
(C) $\dfrac{4}{9}$
(D) $\dfrac{9}{4}$

22. A beam of light of wavelength 600 nm from a distant source falls on a single slit 1 mm wide and the resulting diffraction pattern is observed on a screen 2 m away. The distance between the first dark fringes on either side of the central bright fringe is
(A) 1.2 mm
(B) 1.2 cm
(C) 2.4 cm
(D) 2.4 mm

23. The polarizing angle of glass is 57°. A ray of light which is incident at this angle will have an angle of refraction as
(A) 33°
(B) 38°
(C) 25°
(D) 43°

24. The resistance $R = \dfrac{V}{i}$ where V = 100 ± 5 volts and i = 10 ± 0.2 amperes. What is the total error in R
(A) 5 %
(B) 7%
(C) 5.2%
(D) 5/2%

25. The motion of a particle is described by the equation u = at. The distance travelled by the particle in the first 4 seconds
(A) 4a
(B) 12a
(C) 6a
(D) 8a

26. A person of mass 60 κg is inside a lift of mass 940 κg and presses the button one control panel. The lift starts moving upwards with an acceleration 1.0 m/s^2 . If g = 10 ms^2, the tension in the supporting cable is
(A) 1200 N
(B) 8600 N
(C) 9680 N
(D) 1100 N

27. Two masses of 5 κg and 10 κg are connected to a pulley as shown. What will be the acceleration of the system (g = acceleration due to gravity)
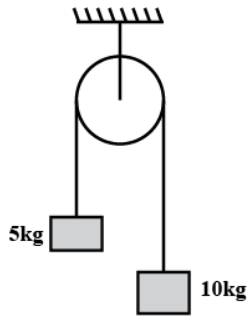
(A) g   (B) $\dfrac{g}{2}$ (C) $\dfrac{g}{3}$ (D) $\dfrac{g}{4}$

28. If a shell fired from a cannon, explodes in mid air, then
(A) Its total kinetic energy increases
(B) Its total momentum increases
(C) Its total momentum decreases
(D) None of these

29. A shell of mass 20 kg at rest explodes into two fragment whose masses are in the ratio 2 : 3 . The smaller fragment moves with a velocity of $6ms^{-1}$. The kinetic energy of the larger fragment is
(A) 96 J   (B) 216 J
(C) 144 J   (D) 360 J

30. A body of mass m is at rest. Another body of same mass moving with velocity V makes head on elastic collision with the first body. After collision the first body starts to move with velocity
(A) V   (B) 2V
(C) Remain at rest   (D) No predictable

31. 2 bodies of different masses of 2 kg and 4 kg are moving with velocities 20m / s and 10 m / s towards each other due to mutual gravitational attraction. What is the velocity of their central of mass
(A) 5 m/s   (B) 6 m/s
(C) 8 m/s   (D) Zero

32. In a thermodynamics process, pressure of a fixed mass of a gas is changed in such a manner that the gas releases 20 J of heat and 8J of work is done on the gas. If the initial internal energy of the gas was 30J. The final internal energy will be
(A) 18J (B) 9J
(C) 4.5J (D) 36J

33. According to Kepler, the period of revolution of a planet (T) and its mean distance from the sun (r) are related by the equation
(A) $T^3 r^3$ = constant   (B) $T^3 r^{-3}$ = constant
(C) Tt^3 = constant   (D) $T^3 r$ = constant

34. According to Hooke's law of elasticity, if stress is increased, the ratio of stress to strain

(A) Increase
(B) Decreases
(C) Becomes zero
(D) Remain constant

35. A metallic rod of length I and cross-sectional area A is made of a material of Young's modulusγ. If the rod is elongated by an amount Y, then the work done is proportional to
(A) y   (B) $\dfrac{1}{y}$

(C) y^2 (D) $\dfrac{1}{y^2}$

(SECTION-B)

36. Oil spreads over the surface of water whereas water does not spread over the surface of the oil, due to
(A) surface tension of water is very high
(B) surface tension of water is very low
(C) Viscosity of oil is high
(D) Viscosity of water is high

37. Water is flowing in a diameter 4 cm with a velocity 3 m/s. The water then enters into a tube of diameter 2 cm. The velocity of water in the other pipe is
(A) 3 m/s   (B) 6 m/s
(C) 12 m/s   (D) 8 m/s

38. A beaker is completely filled with water at 4°C. It will overflow if
(A) Hated above 4°C
(B) Cooled below 4°C
(C) Both heated and cooled above and below 4°C respectively
(D) None of the above

39. The pressure is P, volume V and temperature T of a gas in the jar A and the other gas in the jar B is at pressure 2P, volume V/4 and temperature 2T, then the ratio of the number of molecules in the jar A and B will be
(A) 1: 1   (B) 1 : 2
(C) 2 : 1   (D) 4 : 1

40. The curve between absolute temperature and v^2_{rms} is.

(A)

(B)

(C)

(D)
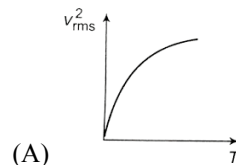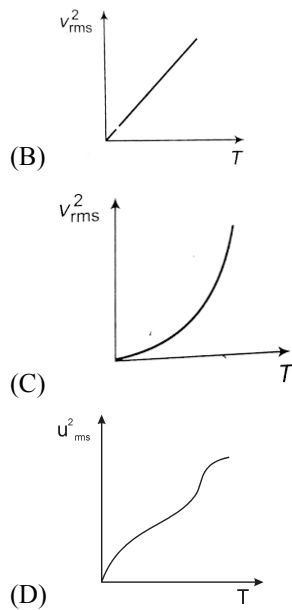
41. Two rods A and B are of equal. Their ends are kept between the same temperature and their area of cross- sections are A_1 and A_2 and thermal conductivities K_1 and k_2. The rate of heat transmission in the two rods will be equal, if

(A) $k_1 k_2 = k_1 A_1$ (B) $k_2 k_2 = k_2 A_2$

(C) $k_1 = k_2$ (D) $k_1 \ A_2^2 = k_2 A_2^2$

42. For a perfectly black body. Its absorptive power is

(A) 1   (B) 0.5

(C) 0   (D) Infinite

43. In changing the state of thermodynamics from A to B state, the heat required is Q and the work done by the system is W. The change in its internet energy is

(A) Q + W   (B) Q – W

(C) Q   (D) $\dfrac{Q - W}{2}$

44. A disc of radius 2 m and mass 100 kg rolls on a horizontal floor. Its centre of mass has speed of 20 cm/s. How much work is needed to stop it ?

(A) 1 J   (B) 3 J

(C) 30 kJ   (D) 2 J

45. A simple harmonic motion is represented by F (t) 10 sin (20 t + 0.5). The amplitude of the S.H.M. is

(A) $\alpha = 30$ (B) $\alpha = 20$

(B) $\alpha = 10$ (D) $\alpha = 5$

46. The period of a simple pendulum is doubled, when

(A) Its length is doubled

(B) The mass of the bob is doubled

(C) Its length is made four times

(D) The mass of the bob the length of the pendulum are doubled

47. If the pressure and the volume of certain quantity of ideal gas are halved, then its temperature

(A) Is doubled

(B) Becomes one-fourth

(C) Remains constant

(D) Is halved

48. An object is placed at 15 cm infront of a concave mirror whose focal length is 10 cm. The image formed will be

(A) Magnified and inverted

(B) Magnified and erect

(C) Reduced in size and inverted

(D) Reduced in size and erect

49. Which of the following postulates of the Bohr model led to the quantization of energy of the hydrogen atom

(A) The electron goes around the nucleus in circular orbits

(B) The angular momentum of the electron can only be an integral multiple of $h/2\pi$

(C) The magnitude of the linear momentum of the electron is quantized

(D) Quantization of energy is itself a postulate of the Bohr model

50. Ohm's law is valid if

(A) V is directly proportional to I^3

(B) The relation between V and I depends on the sign of V for the same absolute value of V

(C) The relation between V and I is non-unique

(D) V depends on I linearly

(SECTION-A)

51. A sample of a mixture of $CaCl_2$ and Na_2CO_3 weighing 4.22 g was treated to precipitate all the Ca as $CaCO_3$. This $CaCO_3$ is heated and quantitatively converted into 0.959 g of CaO. Calculate the percentage of $CaCl_2$ in the mixture.
(Atomic mass of Ca = 40, O = 16, C = 12 and Cl = 35.5)
(A) 55.28 % (B) 37.3 %
(C) 45.00 % (D) 49.01 %

52. Suppose the elements X and Y combine to form two compounds XY_2 and X_3Y_2. When 0.1 mole of XY_2 and XY_2 weights 10 g and 0.05 mole of X_3Y_2 weights 9 g, the atomic weights of X and Y are
(A) 30, 20 (B) 40, 30
(C) 60, 40 (D) 20, 30

53. The most probable radius (in pm) for finding the electron in He^+ is :
(A) 0.0 (B) 52.9
(C) 26.5 (D) 105.8

54. The wavelength of the radiation emitted, when in a hydrogen atom electron falls from infinity to stationary state 1, would be (Rydberg constant = 1.097×10^7 m^{-1})
(A) 91 nm (B) 192 nm
(C) 406 (D) 9.1×10^{-6} nm

55. The formation of the oxide ion $O^{2-}_{(g)}$ requires first an exothermic and then an endothermic step as shown below :

$O_{(g)} + e^- = O^-_{(g)}$; $\Delta H° = -142$ $kJmol^{-1}$

$O^-_{(g)} + e^- = O^{2-}_{(g)}$; $\Delta H° = 844$ $kJmol^{-1}$

This is because :
(A) oxygen is more electronegative.
(B) oxygen has high electron affinity.
(C) O^- ion will tend to resist the addition of another electron.
(D) O^- ion has comparatively larger size than oxygen atom.

56. The increasing order of the first ionization enthalpies of the elements B, P, S and F (lowest first) is :
(A) F < S < P < B (B) P < S < B < F
(C) B < P < S < F (D) B < S < P < F

57. The correct sequence which shows decreasing order of the ionic radii of the elements is :
(A) $Al^{3+} > Mg^{2+} > Na^+ > F^- > O^{2-}$
(B) $Na^+ > Mg^{2+} > Al^{3+} > O^{2-} > F^-$
(C) $Na^+ > F^- > Mg^{2+} > O^{2-} > Al^{3+}$
(D) $O^{2-} > F^- > Na^+ > Mg^{2+} > Al^{3+}$

58. Stability of the species Li_2, Li_2^- and Li_2^+ increases in the order of :
(A) $Li_2 < Li_2^+ < Li_2^-$
(B) $Li_2^- < Li_2^+ < Li_2$
(C) $Li_2 < Li_2^- < Li_2^+$
(D) $Li_2^- < Li_2 < Li_2^+$

59. The species in which the N atom is in a state of sp hybridization is :
(A) NO_2^- (B) NO_3^-
(C) NO_2 (D) NO_2^+

60. The type of hybridisation and number of lone pair(s) of electrons of Xe in $XeOF_4$, respectively, are :
(A) sp^3d^2 and 1 (B) sp^3d^2 and 2
(C) sp^3d and 1 (D) sp^3d and 2

61. % s-character of N–H bond is maximum in :
(A) N_2H_2 (B) N_2H_4
(C) NH_3 (D) NH_4^+

62. Which one of the following compounds is a peroxide ?
(A) KO_2 (B) BaO_2
(C) MnO_2 (D) NO_2

63. Nitrogen dioxide and sulphur dioxide have some properties in common. Which property is shown by one of these compounds, but not by the other ?
(A) is a reducing agent
(B) is soluble in water
(C) is used as a food-preservative
(D) form 'acid-rain'

64. The d-block of the periodic table contains the elements of the groups :
(A) 2 – 11 (B) 3 – 12
(C) 3 – 11 (D) 5–14

65. The atomic numbers of V,Cr,Mn and Fe are respectively 23,24,25 and 26. Which one of these may be expected to have the highest second ionization enthalpy ?
(A) Cr (B) Mn (C) Fe (D) V

66. The correct order of magnetic moments (only spin value in BM) among is :

(A) $Fe(CN)_6^{4-} > [CoCl_4]^{2-} > [MnCl_4]^{2-}$

(B) $[MnCl_4]^{2-} > [Fe(CN)_6]^{4-} > [CoCl_4]^{2-}$

(C) $[Fe(CN)_6]^{4-} > [MnCl_4]^{2-} > [CoCl_4]^{2-}$

(D) $[MnCl_4]^{2-} > [CoCl_4]^{2-} > [Fe(CN)_6]^{4-}$

67. Which one of the following complexes would exhibit the lowest value of paramagnetic behaviour ?

(A) $[Co(CN)_6]^{3-}$ (B) $[Fe(CN)_6]^{3-}$

(C) $[Mn(CN)_6]^{3-}$ (D) $[Cr(CN)_6]^{3-}$

68. The 'spin only' magnetic moment (in units of Bohr magneton, μ_B) of Ni^{2+} in aqueous solution would be (atomic number Ni = 28)

(A) 2.84   (B) 4.80

(C) 0   (D) 1.73

69. Which of the following has an optical isomer ?

(A) $[Co(en)(NH_3)_2]^{2+}$

(B) $[Co(H_2O)_4(en)]^{3+}$

(C) $[Co(en)_2(NH_3)_2]^{3+}$

(D) $[Co(NH_3)_3Cl]^{+}$

70. The correct decreasing order for acid strength is :

(A) $CNCH_2COOH > O_2NCH_2COOH > FCH_2COOH > ClCH_2COOH$

(B) $FCH_2COOH > NCCH_2COOH > NO_2CH_2COOH > ClCH_2COOH$

(C) $NO_2CH_2COOH > NCCH_2COOH > FCH_2COOH > ClCH_2COOH$

(D) $NO_2CH_2COOH > FCH_2COOH > CNCH_2COOH > ClCH_2COOH$

71. The increasing order of the pK_a values of the following compounds is :

OH

(A)

OH

(B) NO_2

(C) (3-nitrophenol)

(D) (4-methoxyphenol)
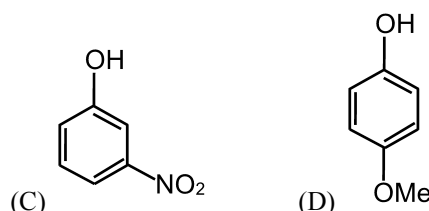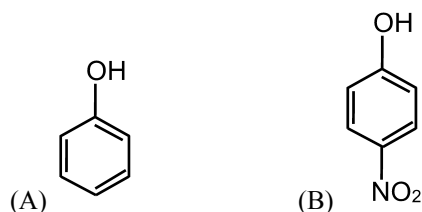
(A) C < B < A < D   (B) B < C < D < A

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

72. In the following reaction

$$H_3C-C\equiv CH \xrightarrow[\text{873K}]{\text{Red Hot Iron Tube}} A$$
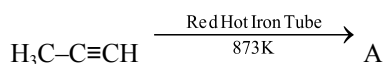
number of (σ) bond present in product (A) is -

(A) 21   (B) 9   (C) 24   (D) 18

73. Which of the following reactions is not an example of electrophilic substitution:

(A) $C_6H_6 + NO_2^{\oplus} \longrightarrow C_6H_5NO_2$

(B) $C_6H_6 + CH_3Cl \xrightarrow{AlCl_3} C_6H_5 - CH_3 + HCl$

(C) $C_6H_6 + Cl_2 \xrightarrow{UV\ light} C_6H_6Cl_6$

(D) $C_6H_6 + CO + HCl \xrightarrow[\text{AlCl}_3]{\text{anhydrous}}$

(benzaldehyde CHO)
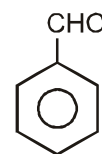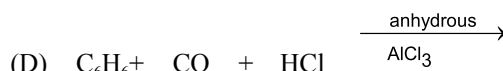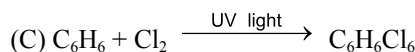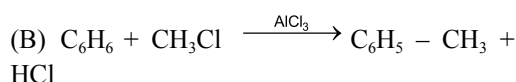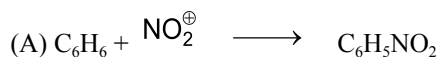
74. In which of the following compounds, nitrogen exhibits highest oxidation state ?

(A) N_2H_4 (B) NH_3

(C) N_3H (D) NH_2OH

75. Standard enthalpy of vapourisation $\Delta_{vap} H^\circ$ for water at 100ºC is 40.66 kJ mol^{-1}. The internal energy of vaporisation of water at 100ºC (in kJmol^{-1}) is :

(A) + 37.56   (B) – 43.76

(C) + 43.76   (D) + 40.66

(Assume water vapour to behave like an ideal gas).

76. The correct thermodynamic conditions for the spontaneous reaction at all temperatures is :

(A) $\Delta H < 0$ and $\Delta S < 0$

(B) $\Delta H < 0$ and $\Delta S = 0$

(C) $\Delta H > 0$ and $\Delta S < 0$

(D) $\Delta H < 0$ and $\Delta S > 0$

77. The bond dissociation energies of X_2, Y_2 and XY are in the ratio of 1 : 0.5 : 1. ΔH for the formation of XY is –200 kJ mol^{-1}. The bond dissociation energy of X_2 will be :
(A) 200 kJ mol^{-1} (B) 400 kJ mol^{-1}
(C) 800 kJ mol^{-1} (D) 100 kJ mol^{-1}

78. What is the pH of an aqueous solution of ammonium acetate ($K_a = K_b = 1.8 \times 10^{-5}$) ?
(A) > 7   (B) 7.0
(C) < 7.0   (D) Zero

79. Buffer solutions have constant acidity and alkalinity because :
(A) these give unionised acid or base on reaction with added acid or alkali.
(B) acids and alkalies in these solution are shielded from attack by other ions.
(C) they have large excess of H$^+$ or OH$^-$ ions.
(D) they have fixed value of pH.

80. Solution of 0.1 N NH_4OH and 0.1 N NH_4Cl has pH 9.25, then find out pK_b of NH_4OH.
(A) 9.25   (B) 4.75
(C) 3.75   (D) 8.25

81. If α is the degree of dissociation of Na_2SO_4, the vant Hoff's factor (i) used for calculating the molecular mass is :
(A) $1 + \alpha$ (B) $1 - \alpha$

(C) $1 + 2\alpha$ (D) $1 - 2\alpha$.

82. The vapour pressure of water at 20ºC is 17.5 mm Hg. If 18 g of glucose ($C_6H_{12}O_6$) is added to 178.2 g of water at 20°C, the vapour pressure of the resulting solution will be :
(A) 15.750 mm Hg   (B) 16.500 mm Hg
(C) 17.325 mm Hg   (D) 17.675 mm Hg

83. K_f for water is 1.86 K kg mol^{-1}. If your automobile radiator holds 1.0 kg of water, how may grams of ethylene glycol ($C_2H_6O_2$) must you add to get the freezing point of the solution lowered to –2.8ºC ?
(A) 72 g   (B) 93 g
(C) 39 g   (D) 27 g

84. The position of some metals in the electrochemical series in decreasing electeopositive character is given as Mg > Al > Zn > Cu > Ag . What will happen if a copper spoon is used to stir a solution of aluminium nitrate?
(A) The spoon will get coated with aluminium
(B) An alloy of copper and aluminium is formed
(C) The solution becomes blue
(D) There is no reaction

85. Given standard electrode potentials :

$Fe^{3+} + 3e^- \longrightarrow Fe$; $E° = -0.036$ volt

$Fe^{2+} + 2e^- \longrightarrow Fe$; $E° = -0.440$ volt

The standard electrode potential $E°$ for $Fe^{3+} + e^- \longrightarrow Fe^{2+}$
(A) –0.476 volt   (B) –0.404 volt
(C) 0.440 volt   (D) 0.772 volt

(SECTION-B)

86. The EMF of a concentration cell consisting of two zinc electrodes, one dipping into $\dfrac{M}{4}$ sol. of zinc sulphate & the other into $\dfrac{M}{16}$ sol. of the same salt at 25^0C is

(A) 0.0125 V   (B) 0.0250 V
(C) 0.0178 V   (D) 0.0356 V

87. **Assertion :** A brown gas which intensifies on adding *Cu*-turnings in conc. H_2SO_4 test is NO_2.

Reason : Copper reacts with conc. HNO_3 to give NO_2 .

(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.

88. The rate of a first-order reaction is 0.04 mol L^{-1} s^{-1} at 10 seconds and 0.03 mol L^{-1} s^{-1} at 20 seconds after initiation of the reaction. The half-life period of the reaction is :

(A) 54.1 s (B) 24.1 s

(C) 34.1 s (D) 44.1 s

89. When initial concentration of the reactant is doubled, the half-life period of a zero order reaction

(A) in halved

(B) remains unchanged

(C) is tripled

(D) is doubled

90. Glucose is a/an

(A) Aldohexose (B) Aldopentose

(C) Aldotetrose (D) Ketohexose

91. Which one of the following esters gets hydrolysed most easily under alkaline conditions ?

(A) O₂N—⟨⟩—OCOCH₃

(B) H₃CO—⟨⟩—OCOCH₃

(C) ⟨⟩—OCOCH₃

(D) Cl—⟨⟩—OCOCH₃
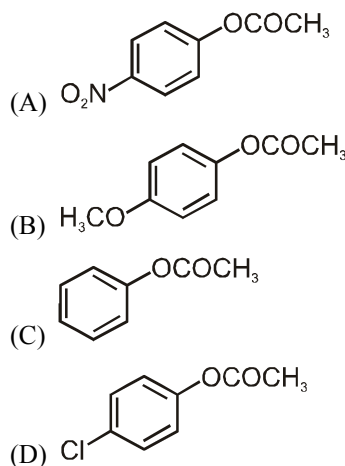
92. **Assertion :** Phenol is more reactive than benzene towards electrophilic substitution reaction

Reason : In the case of phenol, the intermediate carbocation is more resonance stabilized

(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.

93. The correct statement regarding a carbonyl compound with a hydrogen atom on its alpha-carbon, is :

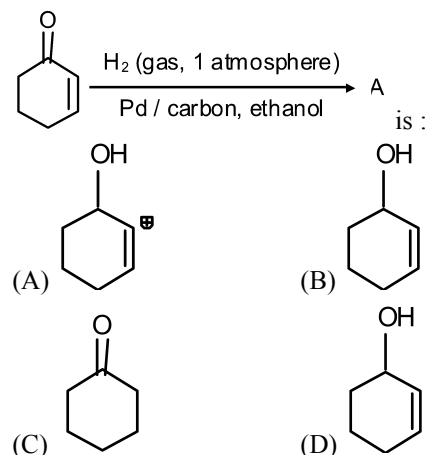(A) a carbonyl compound with a hydrogen atom on its alpha-carbon rapidly equilibrates with its corresponding enol and this processes is known as keto-enol tautomerism .

(B) a carbonyl compound with a hydrogen atom on its alpha-carbon never equilibrates with its corresponding enol.

(C) a carbonyl compound with a hydrogen atom on its alpha-carbon rapidly equilibrates with its corresponding enol and this process is known as aldehyde-ketone equilibration.

(D) a carbonyl compound with a hydrogen atom on its alpha-carbon rapidly equilibrates with its corresponding enol and this process is known a carbonylation.

94. The **correct** structure of the product A formed in the reaction:

[Reaction: cyclohexenone + H₂ (gas, 1 atmosphere), Pd / carbon, ethanol → A]

is :

(A) [cyclohexene ring with OH and carbocation]

(B) [cyclohexene ring with OH]

(C) [cyclohexanone]

(D) [cyclohexenol with OH]

95. **Assertion :** Melting point of *n*-butane is higher than propane.

Reason : It is called oscillation effect.

(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.

96. How many alkenes which on hydrogenation give 2-methylbutane.

(A) One (B) Two

(C) Three (D) Four

97. **Assertion :** The value of K gives us a relative idea about the extent to which a reaction proceeds.

Reason : The value of K is independent of the stochiometry of reactants and products at the point of equilibrium.

(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.

98. Which of the following is least reactive in a nucleophilic substitution reaction ?
(A) $(CH_3)_3$ C–Cl
(B) $CH_2 = CHCl$
(C) CH_3CH_2Cl
(D) $CH_2 = CHCH_2Cl$

99. Which of the following reactions is an example of nucleophilic substitution reaction ?

(A) $RX + KOH \longrightarrow ROH + KX$

(B) $2RX + 2Na \longrightarrow R – R + 2NaX$

(C) $RX + H_2 \longrightarrow RH + HX$

(D) $RX + Mg \longrightarrow RMgX$

100. **Assertion :** NF_3 is a weaker ligand than $N(CH_3)_3$

Reason : NF_3 ionizes to give F^- ions in aqueous solution.

(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.

BOTANY (SECTION-A)

101. The term 'species' was coined by

(A) Aristotle   (B) Engler

(C) John Ray   (D) Linnaeus

102. Reverse transcriptase is:
(A) RNA dependent RNA polymerase
(B) DNA dependent RNA polymerase
(C) DNA dependent DNA polymerase
(D) RNA dependent DNA polymerase

103. The significance of meiosis lies in
(A) Maintaining constancy in the number of chromosomes in an organism
(B) Production of genetic variability in the population of species
(C) Reduction of the diploid number of chromosomes to haploid
(D) All of the above

104. Archaebacteria differ from eubacteria in:
(A) Mode of nutrition
(B) Cell shape
(C) Mode of reproduction
(D) Cell membrane structure

105. A physiological adaptation of people living at higher altitudes is/are
(a) High respiratory rate
(b) Increase in binding capacity of hemoglobin with oxygen
(c) Increase in RBC production
(A) Only (a)
(B) Only (a) and (c)
(C) Only (a) and (b)
(D) All (a), (b), and (c)

106. Which one of the following is not a characteristic feature of bryophytes?
(A) Dominant gametophytic generation
(B) Filamentous rhizoids
(C) Amphibious habitat
(D) Vascular tissues

107. Formation of mRNA from DNA is :-
(A) Translation   (B) Transcription
(C) Transformation   (D) Transduction

108. Strobili or cones are found in

(A) Equisetum   (B) Salvinia

(C) Pteris   (D) Marchantia

109. Given below are two statements: One labeled as Assertion A and the other labelled as Reason R:

Assertion A : The first stage of gametophyte in the life cycle of moss is protonema stage.

Reason R : Protonema develops directly from spores produced in capsule. In the light of the above statements, choose the most appropriate answer from options given below
(A) Both A and R are correct and R is the correct explanation of A
(B) Both A and R are correct but R is NOT the correct explanation of A
(C) A is correct but R is not correct
(D) A is not correct but R is correct

110. Plants which yield pulses belong to family
(A) Papilionaceae   (B) Rosaceae
(C) Malvaceae   (D) Compositae

111. In Malvaceae family, the anthers are
(A) dithecous   (B) monothecous
(C) corms   (D) bulbs

112. "Bast-fibers" are obtained from which part of woody stem?
(A) Cork   (B) Cortex
(C) Xylem   (D) Phloem

113. Which of the following is made up of dead cells?
(A) Collenchyma
(B) Phellem
(C) Phloem
(D) Xylem parenchyma

114. Unisexuality of flowers prevents:-
(A) Geitonogamy, but not xenogamy
(B) Autogamy and geitonogamy
(C) Autogamy, but not geitonogamy
(D) Both geitonogamy and xenogamy

115. Vascular bundle in which phloem is surrounded by xylem is called:-
(A) Amphicribral
(B) Conjoint collateral
(C) Amphivasal
(D) Radial

116. Smooth endoplasmic reticulum synthesises
(A) Carbohydrates   (B) Proteins
(C) Steroids and lipids   (D) All of these

117. Read the following statement about cell envelope of bacteria:
(I) It is tightly bound three-layered structure.
(II) The outermost glycocalyx, followed by cell wall and then cell membrane.
(III) Each layer has a distinct function, but they act as single unit.
Correct statements are
(A) Only (I)   (B) Only (I) and (II)
(C) Only (II)   (D) (I), (II) and (III)

118. Crossing over takes place between:-
(A) 2 sister chromatids
(B) 2 non-sister chromatids
(C) 3 homologous chromosomes
(D) 4 non-homologous chromosomes

119. Choose the incorrect statement w.r.t. cell cycle:
(A) Duplication of genes occurs twice in meiosis.
(B) Karyokinesis occurs twice during meiotic division.
(C) If cell is signalled not to divide further it enters quiescent stage.
(D) After telophase I chromosome number is reduced to half.

120. Which of the following gases is not related as a byproduct of anaerobic digestion of activated sludge?
(A) Nitrogen oxide
(B) Carbon dioxide
(C) Methane
(D) Hydrogen sulphide

121. In plants, meiosis cannot occur in
(A) Pollen grain
(B) Endosperm
(C) Spore mother cell
(D) Both (A) and (B)

122. Which of the following is the major check point for regulation of cell cycle?
(A) $G_1 \rightarrow S$ (B) $S \rightarrow G_2$
(C) $G_2 \rightarrow M$ (D) $G_0 \rightarrow G_1$

123. I. Primary CO, acceptor
II. Extent of photorespiration
III. Presence of Calvin cycle
IV. Leaf anatomy
V. Carboxylase enzyme
Which one does not differ between C_3 and C_4 plants?
(A) I and V   (B) Only III
(C) II and III   (D) (IV) and (V)

124. Both PS I and PS II operate

(A) Separately.

(B) One after the other.

(C) PS I first followed by PS II.

(D) Simultaneously

125. _____ found that glucose is produced in the green part of the plant.
(A) Joseph Priestley
(B) T. W. Engelmann
(C) Julius Von Sachs
(D) Jan Ingenhousz

126. Which of the following is not a limitation of ecological pyramids?
(A) Does not accommodate the same species belonging to two or more trophic levels
(B) Does not accommodate food web
(C) Decomposers not given any place in the ecological pyramids
(D) Considers dry weight as a reliable parameter to form a pyramid

127. Photosynthesis in C_4 plants is relatively less limited by atmospheric CO_2 levels because:
(A) Four carbon acids are the primary initial CO_2 fixation products
(B) The primary fixation of CO_2 is mediated via PEP carboxylase
(C) Effective pumping of CO_2 into bundlesheath cells
(D) Rubisco in C_4 plants has higher affinity for CO_2

128. Which statement is wrong for Krebs' cycle?
(A) There are three points in the cycle where NAD+ is reduced to NADH + H+
(B) There is one point in the cycle where FAD+ is reduced to FADH2
(C) During conversion of succinyl Co-A to succinic acid, a molecule of GTP is synthesised
(D) The cycle starts with condensation of acetyl group (acetyl Co-A) with pyruvic acid to yield citric acid

129. Conversion of glucose to glucose-6-phosphate, the first irreversible reaction of glycolysis, is catalyzed by
(A) Aldolase
(B) Hexokinase
(C) Enolase
(D) Phosphofructokinase

130. "Foolish seeding" disease of rice led to the discovery of:-
(A) IAA   (B) GA
(C) ABA   (D) 2, 4−D

131. Which one of the following pairs, is not correctly matched?

(A) IAA − Cell wall elongation

(B) Abscisic acid – Stomatal closure
(C) Gibberellic acid – Leaf fall
(D) Cytokinin – Cell division

132. Phototropism is due to the hormone
(A) 1AA   (B) GA
(C) 2-4 D   (D) Cytokinin

133. Double fertilization involves:-
(A) Fertilization of the egg by two male gametes
(B) Fertilization of two eggs in the same embryosac by two sperms brought by one pollen tube
(C) Fertilization of the egg and the central cell by two sperms brought by different pollen tubes
(D) Fertilization of the egg and the central cell by two sperms brought by the same pollen tube

134. Viability of pollen grains is maintained for months in all, except
(A) Solanaceae   (B) Rosacea
(C) Leguminosae   (D) Poaceae

135. If a cross is made between AA and aa, the nature of F1 progeny will be:-
(A) genotypically AA, phenotypically a
(B) genotypically Aa, phenotypically a
(C) genotypically Aa, phenotypically A
(D) genotypically aa, phenotypically A

(SECTION-B)

136. Theoretically, the modified allele should be responsiblefor production of
I. the normal/less efficient enzyme
II. A non-functional enzyme
III. No enzyme at all
(A) Only (II)
(B) (II) and (III) only
(C) (A) and (II)
(D) (I), (II) and (III)

137. Select the incorrectly matched pair.
(A) Lac operon-Positive and negative controls
(B) i-gene Constitutive gene
(C) Repressor protein-Binds to lac operator to stop protein synthesis
(D) Tryptophan operon-Inducible operon

138. Formaion of RNA on DNA template is called :-
(A) Transduction   (B) transformation
(C) Transcription   (D) Translation

139. D.N.A. strands are anti-parallel because of :-
(A) H-bonds
(B) Phosphate diester-bonds
(C) di-sulphide-bonds
(D) Phosphate-bonds

140. Unit of nucleic acid is :-
(A) Nucleotide   (B) Nucleoside
(C) Nucleic acid   (D) All of these

141. The enzyme involved in transcription is :-
(A) RNA polymerase
(B) DNA polymerase-I
(C) DNA polymerase-II
(D) DNA polymerase-III

142. Multiplication of DNA is called :-
(A) Translation   (B) Replication
(C) Transduction   (D) Transcription

143. Microorganisms are present
(A) in soil, water, and air
(B) inside the bodies of plants and animals
(C) in thermal vents
(D) All of the above

144. Fishes of the Antarctic water prevent their body fluids from freezing by
(A) A thick blubber layer
(B) The presence of oil in extracellular space
(C) The presence of antifreeze protein
(D) Migration to deeper water

145. Which of the following is incorrectly matched?

(A) Ulothrix − Mannitol

(B) Porphyra − Floridian Starch

(C) Volvox − Starch

(D) Ectocarpus – Fucoxanthin

146. A population with natality equal to mortality is :
(A) Increasing   (B) Declining

(C) Stable   (D) Growing

147. Find the correct match with respect to salinity (ppt).
(A) > 6 ppt in inland water
(B) 40-45 ppt in sea water
(C) <5 ppt in inland water
(D) <100 ppt in hypersaline lagoon

148. The two structural features of an ecosystem are

(A) Standing crop and standing state.

(B) Productivity and mineral recycling.

(C) Species composition and stratification.

(D) Stratification and energy flow.

149. Ecosystem has two components:
(A) Plants and animals.

(B) Biotic and abiotic.

(C) Consumers and producers.

(D) Consumers and decomposers.

150. Read the following statements and select the correct option:
A. Out of every 10 animals on this planet, 7 species are of insects.
B. The number of fungi species in this world is more than the combined total of species of fishes, amphibians, reptiles and mammals.
(A) Only (A) is correct
(B) Only (B) is correct
(C) Both (A) and (B) are correct
(D) Both (A) and (B) are incorrect

ZOOLOGY (SECTION-A)

151. In lung, maximum gaseous exchange is due to:-
(A) Simple diffusion
(B) Active transport
(C) Passive transport
(D) fascilitated diffusion

152. Which of the following is the correct passage of air from outside into lungs?
(A) Nasal cavity-Larynx-Pharynx-Trachea-Bronchi-Alveoli
(B) Nasal cavity Pharynx-Larynx-Trachea-Bronchi Alveoli
(C) Nasal cavity-Pharynx-Larynx-Bronchioles-Bronchi-Alveoli
(D) Nasal cavity Pharynx-Larynx-Trachea-Bronchi Alveoli-Bronchioles

153. "Bundle of His" is group of:-
(A) Nerve fibres   (B) Ganglia
(C) Connective tissue   (D) Muscle fibres

154. Papillary muscles are located
(A) Heart ventricle of rabbit
(B) Dermis of mammalian skin
(C) Orbit of vertebrates eyes
(D) Pylorus of vertebrate stomach

155. Which of the following statement is incorrect?
(A) A person with blood group 'A' cannot donate blood to a person with 'O' blood group.
(B) A person with blood group 'AB' has anti 'A' and anti 'B' antibodies in plasma.
(C) RBCs of 'O' blood group do not have any surface antigens.
(D) A person of 'O' blood group is universal donor.

156. In Arthropoda, head and thorax are often fusedto form cephalothorax, but in which one of the following classes, is the body divided into head, thorax and abdomen ?
(A) Myriapoda
(B) Crustacea
(C) Arachnida and Crustacea
(D) Insecta

157. Which one of the following is a matching set of a phylum and its three examples?
(A) Porifera: Spongilla, Euplectella, Pennatula
(B) Cnidaria: Bonellia, Physalia, Aurelia
(C) Platyhelminthes: Planaria, Schistosoma, Enterobius
(D) Mollusca: Loligo, Teredo, Octopus

158. _____ valve is present at the opening of coronary sinus into right atrium.
(A) Thebesian   (B) Eustachian
(C) Mitral   (D) Tricuspid

159. Ascaris is characterized by:
(A) absence of true coclom but presence of metamerism
(B) presence of neither true coelom nor metamerism
(C) presence of true coclom but absence of metamerism
(D) presence of true coclom and metamerism (metamerisation)

160. Match the following.

Column I	Column II
A. Euspongia	(i) Deadman's fingers
B. Cliona	(ii) Bath sponge
C. Chalina	(iii) Freshwater sponge
D. Spongilla	(iv) Boring sponge

(A) A(i), B(iv), C(iii), D(ii)
(B) A(i), B(ii), C(iv), D(iii)
(C) A(i), B(iii), C(ii), D(iv)
(D) A(ii), B(iv), C(i), D(iii)

161. Areolar connective tissue joins –
(A) Fat body with muscles
(B) Integument with muscles
(C) Bones with muscles
(D) Bones with bones

162. Read the following statements and choose the correct option:
Statement I: If the dried tissue is fully burnt, all the carbon compounds are oxidised to gaseous form (CO vapour) and are removed.
Statement II: The ash contains inorganic elements like calcium and magnesium.
(A) Both statements are correct.
(B) Both statements are incorrect.
(C) Only statement I is correct.
(D) Only statement II is correct.

163. Kidney in frog are
(A) Identical in position
(B) Unidentical in position
(C) Absent
(D) None

164. The type of epithelial cells which line the inner surface of fallopian tubes, bronchioles and small bronchi are known as
(A) Squamous epithelium
(B) Columnar epithelium
(C) Ciliated epithelium
(D) Cubical epithelium

165. Real the following statements and choose the correct option:
Statement I: Alveolar ventilation is more than pulmonary ventilation.
Statement II: Pulmonary ventilation is more than alveolar ventilation.
(A) Both statements are correct.
(B) Both statements are incorrect.
(C) Only statement I is correct.
(D) Only statement II is correct.

166. Which of the following is incorrect w.r.t. smooth muscles?
(A) Supplied with nerves of autonomic neural system.
(B) Involuntary as their functioning cannot be directly controlled.
(C) Present in the wall of internal organs like blood vessels, stomach and intestine.
(D) Lack cell junctions

167. Correct order of molecular weight is:-
(A) DNA < r-RNA < t-RNA

(B) DNA < m-RNA < r-RNA
(C) t-RNA < m-RNA < DNA
(D) t-RNA < DNA < m-RNA

168. The chemical formulae for maltose and lactose are
(A) $C_{12}H_{22}O_{12}$ and $C_{12}H_{22}O_{12}$.
(B) $C_{12}H_{24}O_{12}$ and $C_{12}H_{24}O_{12}$.
(C) $C_{12}H_{22}O_{11}$ and $C_{12}H_{22}O_{11}$.
(D) $C_6H_{12}O_6$ and $C_6H_{12}O_6$.

169. Which of the following is a correct statement?
(A) During competitive inhibition, the substrate and inhibitor compete for binding with the active site of enzyme.
(B) Competitive inhibition occurs when the inhibitor resembles the product in its structure.
(C) Inhibition of hexokinase by glucose-6-phosphate is an example of competitive inhibition.
(D) Competitive inhibitors reduce the maximum velocity (V_{max}) of the enzyme.

170. Lumbar vertebra are found in:-
(A) Neck region
(B) Abdominal region
(C) Hip region
(D) Thorax

171. Three of the following pairs of the human skeletal parts are correctly matched with their respective inclusive skeletal category and one pair is not matched. Identify the non-matching pair.

	Pairs of skeletal parts	Category
(A)	Malleus and stapes	Ear ossicles
(B)	Sternum and ribs	Axial skeleton
(C)	Clavicle and Glenoid cavity	Pelvic girdle
(D)	Humerus and ulna	Appendicular skeleton

172. Select the correct statement with respect to locomotion in humans:
(A) The joint between adjacent vertebrae is a fibrosis joint
(B) A decreased level of progesterone causes osteoporosis in old people
(C) Accumulation of uric acid crystals in joints causes their inflammation
(D) The vertebral column has 10 thoracic Vertebrae

173. The correct sequence of meninges from inner to outer side is:

(A) arachnoid → duramater → piamater

(B) arachnoid → piamater → duramater

(C) piamater → duramater → arachnoid

(D) piamater → arachnoid → duramater

175. Read the following statements and choose the correct option:

Statement I: Action potential generation in neuron follows all or none principle.
Statement II: Higher than threshold stimulus causes larger amount of voltage change within in neuron.
(A) Both statements are correct.
(B) Both statements are incorrect.
(C) Only statement I is correct.
(D) Only statement II is correct.

176. Which of the following statement are false/true:
I. Calcitonin regulates the metabolism of calcium
II. Oxytocin stimulates contraction of uterine muscle during birth
III. Grave's disease is caused by malfunctioning of adrenal gland
IV ADH stimulates absorption of water and increase the urine production
(A) I and III are true II and IV are flase
(B) I and II are true III and IV are flase
(C) I and IV are true II and III are flase
(D) I, II and III are true, IV only false

177. Addisons disease is caused due to:
(A) Hypertrophy of gland
(B) Hyposecretion of adrenal cortex
(C) Hyperactivity of Leydig cells
(D) Hypersecretion of pituitary

178. Humerus articulates with _____of scapula.
(A) Acetabulum
(B) Glenoid cavity
(C) Deltoid cavity
(D) Acromion process

179. Match the following hormones with the respective disease

(1) Insulin	(i) Addison's disease
(2) Thyroxin	(ii) Diabetes insipidus
(3) Corticoids	(iii) Acromegaly
(4) Growth Hormone	(iv) Goitre
	(v) Diabetes mellitus

Select the correct option.

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

180. The functional maturation of sperms takes place in:-
(A) Oviduct   (B) Epididymis
(C) Vagina   (D) All of these

181. Given below are two statements: one is labelled as Assertion (A) and the other is labelled as Reason (R).

Assertion (A): Polymerase chain reaction is used in DNA amplification
Reason (R): The ampicillin resistant gene is used as a selectable marker to check transformation In the light of the above statements, choose the
correct answer from the options given below :
(A) Both (A) and (R) are correct but (R) is not the correct explanation of (A)
(B) (A) is correct but (R) is not correct
(C) (A) is not correct but (R) is correct
(D) Both (A) and (R) are correct and (R) is the correct explanation of (A)

182. Which of the following is an incorrect statement?
(A) Sperms are produced by cells of seminiferous tubules.
(B) Sugars that sperms use for energy are secreted by prostate gland.
(C) Testis is the primary male sex organ.
(D) Dartos muscles are present in the wall of scrotum.

183. Which one of the following is the mostly widely accepted method of contraception in India, as at present?
(A) Tubectomy
(B) Diaphragms
(C) Cervical caps
(D) IUDs (Intra uterine devices)

184. Veneral diseases can spread through :
(a) Using sterile needles
(b) Transfusion of blood from infected person
(c) Infected mother to foetus
(d) Kissing
(e) Inheritance

Choose the correct answer from the options given below.
(A) (a), (b) and (c) only
(B) (b), (c) and (d) only
(C) (b) and (c) only
(D) (a) and (c) only

185. Saheli contraceptive pill
(A) Acts on estrogen receptor
(B) Contains ormeloxifene
(C) Is a selective estrogen receptor modulator
(D) All are correct

(SECTION-B)

186. Read the following statements and choose the correct option.

Statement I: The earliest organisms that appeared on earth were non-green and presumably anaerobes.

Statement II: The first autotrophic organisms were the chemoautotrophs that never released oxygen.

(A) Both statements are correct.
(B) Both statements are incorrect.
(C) Only statement I is correct.
(D) Only statement II is correct.

187. Miller synthesised simple amino acids from which of the following mixtures in his experiment?
(A) H_2, O_2, CH_1, and NH,
(B) H_2, NH, CH_1, and water vapour
(C) CH, NH,, O_2, and H_2O,
(D) N_2, O_2, H_2, and water vapour

188. In which of the following viral disease, the pathogen infects the nose and respiratory passage, but not the lungs?
(A) Pneumonia   (B) Common cold
(C) Diphtheria   (D) Pertussis

189. Which of the following statements is incorrect?
(A) The final maturation of spermatozoa with respect to motility in humans is completed in epididymis.
(B) The cells that undergo spermatogenesis arise by both mitosis and meiosis from spermatogonia.

(C) Secretions of epididymis, vas deferens, seminal vesicle, and prostate are essential for maturity and motility of sperms.
(D) In testis, the regions outside the seminiferous tubules called interstitial spaces contains small blood vessels and interstitial cells or Leydig cells.

190. All of the following are characteristics of ideal vector, except
(A) Multiple cloning site.
(B) Presence of origin of replication.
(C) Large size.
(D) Presence of selectable marker.

191. Which of the following is incorrect match regarding the type of macrophage and the corresponding organ where it is found?
(A) Microglia-Brain
(B) Kupffer cells-Lungs
(C) Histiocyte-Connective tissue
(D) Mesangial cells-Kidney

192. All of the following are correct match between the drug and its source, except
(A) Lysergic acid diethylamide-Claviceps purpurea
(B) Coke-Erythroxylum coca
(C) Mescalaine-Lophophora williamsii
(D) Marijuana-Psilocybin Mexicana

193. During the formation of recombinant DNA, the plasmid vector is cleaved by
(A) Exonuclease.
(B) Alkaline phosphatase.
(C) An enzyme different than the one that cleaves the donor DNA.
(D) The same enzyme that cleaves the donor DNA.

193. _____ helps in adding air that bubbles through the culture medium in a bioreactor.
(A) Stirrer   (B) Sparger
(C) Impeller   (D) Foam breaker

194. DNA or RNA segment tagged with a radiactive molecule is called :
(A) Clone   (B) Plasmid
(C) Vector   (D) Probe

195. GM brinjal in India has been developed for resistance against :-

(A) Virus　　　　　　(B) Bacteria
(C) Fungi　　　　　　(D) Insects

196. The enzyme used to cut the DNA molecule is :
(A) Restriction endonucleases
(B) 2-galactosidase
(C) DNA ligase
(D) DNA polymerase

197. An analytical technique that is used in solving dispute based on DNA polymorphism is called :
(A) DNA sequencing
(B) DNA fingerprinting
(C) Cloning
(D) Cell culture

198. 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.

199. When gene targetting involving gene amplification is attempted in an individual's tissue to treat disease, it is known as :
(A) Biopiracy　　　　(B) Gene therapy
(C) Molecular diagnosis　(D) Safety testing

200. Which of the following is an incorrect statement with respect to the use of protein products obtained by recombinant DNA technology?
(A) a-l antitrypsin is used to treat emphysema.
(B) Platelet-derived growth factor is used to stimulate wound healing.
(C) Humulin is an enzyme used for dissolving blood clots.
(D) Anti-haemophilic globulin (AHG) is used for treatment of haemophilia.