



NEET CHEMISTRY 2019

- When a block of mass M is suspended by a long wire of length L , the length of the wire becomes $(L + l)$. The elastic potential energy stored in the extended wire is:
 (a) Mgl (b) MgL (c) $\frac{1}{2}Mgl$ (d) $\frac{1}{2}MgL$
- A mass m is attached to a thin wire and whirled in a vertical circle. The wire is most likely to break when:
 (a) the mass is at the highest point (b) the wire is horizontal
 (c) the mass is at the lowest point (d) inclined at an angle of 60° from vertical
- Ionized hydrogen atoms and α -particles with same momenta enters perpendicular to a constant magnetic field, B . The ratio of their radii of their paths $r_H : r_\alpha$ will be
 (a) 2 : 1 (b) 1 : 2 (c) 4 : 1 (d) 1 : 4
- Body A of mass $4m$ moving with speed u collides with another body B of mass $2m$, at rest. The collision is head on and elastic in nature. After the collision the fraction of energy lost by the colliding body A is:
 (a) $1/9$ (b) $8/9$ (c) $4/9$ (d) $5/9$
- In a double slit experiment, when light of wavelength 400 nm was used, the angular width of the first minima formed on a screen placed 1 m away, was found to be 0.2° . What will be the angular width of the first minima, if the entire experimental apparatus is immersed in water? [$\mu_{\text{water}} = 4/3$]
 (a) 0.266° (b) 0.15° (c) 0.05° (d) 0.1°
- In which of the following devices, the eddy current effect is not used?
 (a) Induction furnace (b) Magnetic braking in train
 (c) Electromagnet (d) Electric heater
- A soap bubble, having radius of 1 mm , is blown from a detergent solution having a surface tension of $2.5 \times 10^{-2} \text{ N/m}$. The pressure inside the bubble equals at a point Z_0 below the free surface of water in a container. Taking $g = 10 \text{ m/s}^2$, density of water = 10^3 kg/m^3 , the value of Z_0 is:
 (a) 100 cm (b) 10 cm (c) 1 cm (d) 0.5 cm
- Which colour of the light has the longest wavelength?
 (a) Red (b) Blue (c) Green (d) Violet
- 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) 3 J (b) 30 kJ (c) 2 J (d) 1 J
- The displacement of a particle executing simple harmonic motion is given by:

$$y = A_0 + A \sin \omega t + B \cos \omega t$$

Then the amplitude of its oscillation is given by:

- $(a) A_0 + \sqrt{A^2 + B^2}$
 $(b) \sqrt{A^2 + B^2}$
 $(c) \sqrt{A_0^2 + (A + B)^2}$
 $(d) A + B$
- Two similar thin equi-convex lenses, of focal length f each, are kept coaxially in contact with each other such that the focal length of the combination is F_1 . When the space between the two lenses is filled with glycerin (which has the same refractive index ($\mu = 1.5$) as that of glass) then the equivalent focal length is F_2 . The ratio



$F_1 : F_2$ will be :

- (a) 2 : 1 (b) 1 : 2 (c) 2 : 3 (d) 3 : 4

12. Increase in temperature of a gas filled in a container would lead to :

- (a) Increase in its mass (b) Increase in its kinetic energy
(c) Decrease in its pressure (d) Decrease in intermolecular distance

13. An electron is accelerated through a potential difference of 10,000 V. Its de Broglie wavelength is, (nearly):

$[m_e = 9 \times 10^{-31} \text{ kg}]$

- (a) $12.2 \times 10^{-13} \text{ m}$ (b) $12.2 \times 10^{-12} \text{ m}$ (c) $12.2 \times 10^{-14} \text{ m}$ (d) 12.2 nm

14. A copper rod of 88 cm and an aluminium rod of unknown length have their increase in length independent of increase in temperature. The length of aluminium rod is:

$[\alpha_{\text{Cu}} = 1.7 \times 10^{-5} \text{ K}^{-1} \text{ and } \alpha_{\text{Al}} = 2.2 \times 10^{-5} \text{ K}^{-1}]$

- (a) 6.8 cm (b) 113.9 cm (c) 88 cm (d) 68 cm

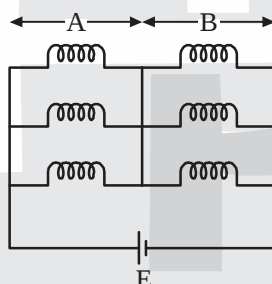
15. Pick the wrong answer in the context with rainbow.

- (a) When the light rays undergo two internal reflections in a water drop, a secondary rainbow is formed.
(b) The order of colours is reversed in the secondary rainbow.
(c) An observer can see a rainbow when his front is towards the sun.
(d) Rainbow is a combined effect of dispersion refraction and reflection of sunlight.

16. A body weighs 200 N on the surface of the earth. How much will it weigh half way down to the centre of the earth ?

- (a) 150 N (b) 200 N (c) 250 N (d) 100 N

17. Six similar bulbs are connected as shown in the figure with a DC source of emf E and zero internal resistance.



The ratio of power consumption by the bulbs when (i) all are glowing and (ii) in the situation when two from section A and one from section B are glowing, will be:

- (a) 4 : 9 (b) 9 : 4 (c) 1 : 2 (d) 2 : 1

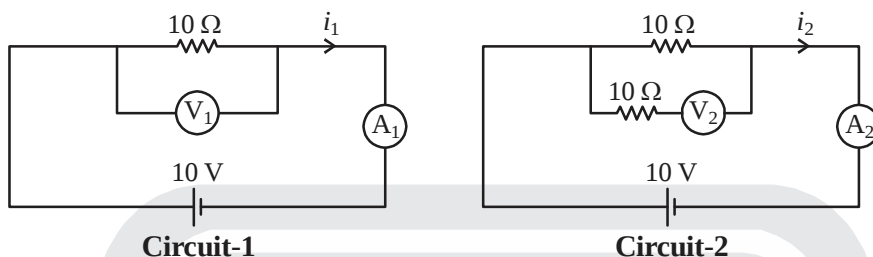
18. For a p-type semiconductor, which of the following statements is true ?

- (a) Electrons are the majority carriers and trivalent atoms are the dopants.
(b) Holes are the majority carriers and trivalent atoms are the dopants.
(c) Holes are the majority carriers and pentavalent atoms are the dopants.
(d) Electrons are the majority carriers and pentavalent atoms are the dopants.

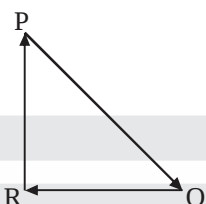
19. Average velocity of a particle executing SHM in one complete vibration is:

- (a) $\frac{A\omega}{2}$ (b) $A\omega$ (c) $\frac{A\omega^2}{2}$ (d) Zero

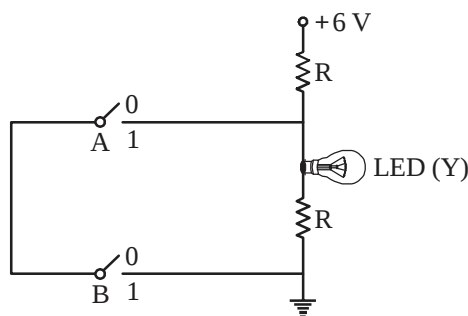
20. The unit of thermal conductivity is:
 (a) J m K^{-1} (b) $\text{J m}^{-1} \text{K}^{-1}$ (c) W m K^{-1} (d) $\text{W m}^{-1} \text{K}^{-1}$
21. A solid cylinder of mass 2 kg and radius 4 cm rotating about its axis at the rate of 3 rpm. The torque required to stop after 2π revolutions is
 (a) $2 \times 10^{-6} \text{ N m}$ (b) $2 \times 10^{-3} \text{ N m}$ (c) $12 \times 10^{-4} \text{ N m}$ (d) $2 \times 10^6 \text{ N m}$
22. A force $F = 20 + 10y$ acts on a particle in y -direction where F is in Newton and y in meter. Work done by this force to move the particle from $y = 0$ to $y = 1\text{m}$ is
 (a) 30 J (b) 5 J (c) 25 J (d) 20 J
23. Which of the following acts as a circuit protects device ?
 (a) Conductor (b) Inductor (c) Switch (d) Fuse
24. In the circuits shown below, the readings of voltmeters and the ammeters will be



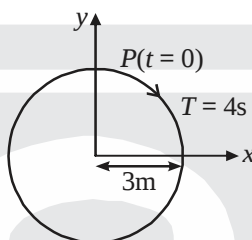
- (a) $V_2 > V_1$ and $i_1 = i_2$ (b) $V_1 = V_2$ and $i_1 > i_2$
 (c) $V_1 = V_2$ and $i_1 = i_2$ (d) $V_2 > V_1$ and $i_1 > i_2$
25. A hollow metal sphere of radius R is uniformly charged. The electric field due to the sphere at a distance r from the centre
 (a) Increases as r increases for $r < R$ and for $r > R$
 (b) Zero as r increases for $r < R$, decreases as r increases for $r > R$
 (c) Zero as r increases for $r < R$, increases as r increases for $r > R$
 (d) Decreases as r increases for $r < R$ and for $r > R$
26. At a point A on the earth's surface the angle of dip, $\delta = +25^\circ$. At a point B on the earth's surface the angle of dip, $\delta = -25^\circ$. We can interpret that:
 (a) A and B are both located in the northern hemisphere.
 (b) A is located in the southern hemisphere and B is located in the northern hemisphere.
 (c) A is located in the northern hemisphere and B is located in the southern hemisphere.
 (d) A and B are both located in the southern hemisphere.
27. The total energy of an electron in an atom in an orbit is -3.4 eV . Its kinetic and potential energies are, respectively:
 (a) $-3.4 \text{ eV}, -3.4 \text{ eV}$ (b) $-3.4 \text{ eV}, -6.8 \text{ eV}$ (c) $3.4 \text{ eV}, -6.8 \text{ eV}$ (d) $3.4 \text{ eV}, 3.4 \text{ eV}$
28. In total internal reflection when the angle of incidence is equal to the critical angle for the pair of media in contact, what will be angle of refraction ?
 (a) 180° (b) 0°
 (c) Equal to angle of incidence (d) 90°
29. The work done to raise a mass m from the surface of the earth to a height h , which is equal to the radius of the earth, is:
 (a) mgR (b) $2mgR$ (c) $\frac{1}{2} mgR$ (d) $\frac{3}{2} mgR$

30. When an object is shot from the bottom of a long smooth inclined plane kept at an angle 60° with horizontal, it can travel a distance x_1 along the plane. But when the inclination is decreased to 30° and the same object is shot with the same velocity, it can travel x_2 distance. Then $x_1 : x_2$ will be:
- (a) $1 : \sqrt{2}$ (b) $\sqrt{2} : 1$ (c) $1 : \sqrt{3}$ (d) $1 : 2\sqrt{3}$
31. Alpha-particle consists of :
- (a) 2 protons and 2 neutrons only (b) 2 electrons, 2 protons and 2 neutrons
(c) 2 electrons and 4 protons only (d) 2 protons only
32. The speed of a swimmer in still water is 20 m/s. The speed of river water is 10 m/s and is flowing due east. If he is standing on the south bank and wishes to cross the river along the shortest path the angle at which he should make his strokes w.r.t. north is given by :
- (a) 30° west (b) 0° (c) 60° west (d) 45° west
33. A particle moving with velocity $\vec{V}$ is acted by three forces shown by the vector triangle PQR. The velocity of the particle will:
- 
- (a) increase (b) decrease
(c) remain constant (d) change according to the smallest force QR
34. Two particles A and B are moving in uniform circular motion in concentric circles of radii r_A and r_B with speed v_A and v_B respectively. Their time period of rotation is the same. The ratio of angular speed of A to that of B will be:
- (a) $r_A : r_B$ (b) $v_A : v_B$ (c) $r_B : r_A$ (d) $1 : 1$
35. A block of mass 10 kg is in contact against the inner wall of a hollow cylindrical drum of radius 1 m. The coefficient of friction between the block and the inner wall of the cylinder is 0.1. The minimum angular velocity needed for the cylinder to keep the block stationary when the cylinder is vertical and rotating about its axis, will be: ($g = 10 \text{ m/s}^2$)
- (a) $\sqrt{10} \text{ rad/s}$ (b) $\frac{10}{2\pi} \text{ rad/s}$ (c) 10 rad/s (d) $10\pi \text{ rad/s}$
36. Two parallel infinite line charges with linear charge densities $+\lambda \text{ C/m}$ and $-\lambda \text{ C/m}$ are placed at a distance of $2R$ in free space. What is the electric field mid-way between the two line charges ?
- (a) Zero (b) $\frac{2\lambda}{\pi \epsilon_0 R} \text{ N/C}$ (c) $\frac{\lambda}{\pi \epsilon_0 R} \text{ N/C}$ (d) $\frac{\lambda}{2\pi \epsilon_0 R} \text{ N/C}$
37. Two point charges A and B, having charges $+Q$ and $-Q$ respectively, are placed at certain distance apart and force between them is F . If 25% charge of A is transferred to B, then force between the charges becomes:
- (a) F (b) $\frac{9F}{16}$ (c) $\frac{16F}{9}$ (d) $\frac{4F}{3}$
38. A small holes of area of cross-section 2 mm^2 is present near the bottom of a fully filled open tank of height 2m. Taking $g = 10 \text{ m/s}^2$, the rate of flow of water through the open hole would be nearly
- (a) $12.6 \times 10^{-6} \text{ m}^3/\text{s}$ (b) $8.9 \times 10^{-6} \text{ m}^3/\text{s}$ (c) $2.23 \times 10^{-6} \text{ m}^3/\text{s}$ (d) $6.4 \times 10^{-6} \text{ m}^3/\text{s}$

39. The correct Boolean operation represented by the circuit diagram drawn is:



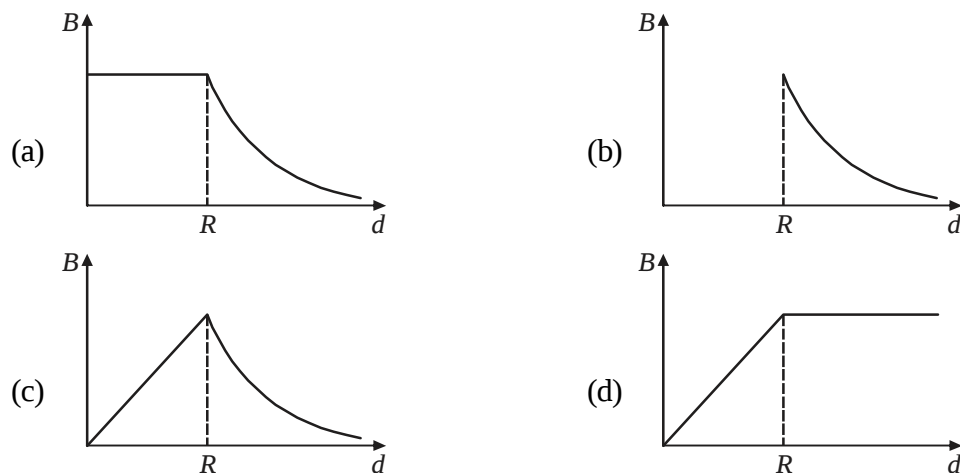
- (a) AND (b) OR (c) NAND (d) NOR
40. In which of the following processes, heat is neither absorbed nor released by a system?
 (a) Isothermal (b) Adiabatic (c) Isobaric (d) Isochoric
41. A 800 turn coil of effective area 0.05 m^2 is kept perpendicular to a magnetic field $5 \times 10^{-5} \text{ T}$. When the plane of the coil is rotated by 90° around any of its coplanar axis in 0.1 s , the e.m.f. induced in the coil will be:
 (a) 2 V (b) 0.2 V (c) $2 \times 10^{-3} \text{ V}$ (d) 0.02 V
42. The radius of circle, the period of revolution, initial position and sense of revolution are indicated in the figure.



y-projection of the radius vector of rotating particle P is:

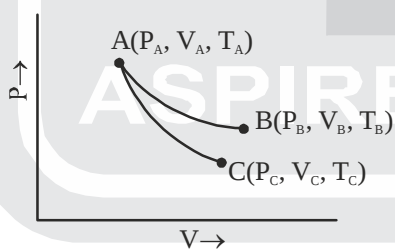
- (a) $y(t) = -3 \cos 2\pi t$, where y in m (b) $y(t) = 4 \sin\left(\frac{\pi t}{2}\right)$, where y in m
- (c) $y(t) = 3 \cos\left(\frac{3\pi t}{2}\right)$, where y in m (d) $y(t) = 3 \cos\left(\frac{\pi t}{2}\right)$, where y in m
43. A parallel plate capacitor of capacitance $20 \mu\text{F}$ is being charged by a voltage source whose potential is changing at the rate of 3 V/s . The conduction current through the connecting wires, and the displacement current through the plates of the capacitor, would be, respectively.
 (a) Zero, $60 \mu\text{A}$ (b) $60 \mu\text{A}$, $60 \mu\text{A}$ (c) $60 \mu\text{A}$, zero (d) Zero, zero
44. In an experiment, the percentage of error occurred in the measurement of physical quantities A , B , C and D are 1% , 2% , 3% and 4% respectively. Then the maximum percentage of error in the measurement X , where $X = \frac{A^2 B^{1/2}}{C^{1/3} D^3}$, will be
 (a) $\left(\frac{3}{13}\right)\%$ (b) 16% (c) -10% (d) 10%

45. A cylindrical conductor of radius R is carrying a constant current. The plot of the magnitude of the magnetic field, B with the distance d from the centre of the conductor, is correctly represented by the figure :



46. Which of the following is the correct order of dipole moment ?
 (a) $\text{BF}_3 < \text{NH}_3 < \text{NF}_3 < \text{H}_2\text{O}$ (b) $\text{H}_2\text{O} < \text{NF}_3 < \text{NH}_3 < \text{BF}_3$
 (c) $\text{NH}_3 < \text{BF}_3 < \text{NF}_3 < \text{H}_2\text{O}$ (d) $\text{BF}_3 < \text{NF}_3 < \text{NH}_3 < \text{H}_2\text{O}$
47. Crude sodium chloride obtained by crystallisation of brine solution does not contain
 (a) MgCl_2 (b) CaSO_4 (c) MgSO_4 (d) Na_2SO_4
48. Which of the alkali metal chloride (MCI) forms its dihydrate salt ($\text{MCI} \cdot 2\text{H}_2\text{O}$) easily ?
 (a) RbCl (b) KCl (c) LiCl (d) CsCl
49. Aluminium chloride in acidified aqueous solution forms a complex 'A', in which hybridisation state of Al is 'B'. What are 'A' and 'B', respectively?
 (a) $[\text{Al}(\text{H}_2\text{O})_4]^{3+}$, dsp^2 (b) $[\text{Al}(\text{H}_2\text{O})_6]^{3+}$, d^2sp^3
 (c) $[\text{Al}(\text{H}_2\text{O})_6]^{3+}$, sp^3d^2 (d) $[\text{Al}(\text{H}_2\text{O})_4]$, sp^3
50. Which of the following compounds is used in cosmetic surgery ?
 (a) Silicones (b) Zeolites (c) Silica (d) Silicates
51. Identify the incorrect statement.
 (a) Ores are minerals that may contain a metal.
 (b) Gangue is an ore contaminated with undesired materials.
 (c) The scientific and technological process used for isolation of the metal from its ore is known as metallurgy.
 (d) Minerals are naturally occurring chemical substances in the earth's crust.
52. A compound 'X' upon reaction with H_2O produces a colorless gas 'Y' with rotten fish smell. Gas 'Y' is absorbed in a solution of CuSO_4 to give Cu_3P_2 as one of the products. Predict the compound 'X'.
 (a) As_2O_3 (b) $\text{Ca}_3(\text{PO}_4)_2$ (c) Ca_3P_2 (d) NH_4Cl
53. Which of the following oxoacids of phosphorus has strongest reducing property?
 (a) H_3PO_2 (b) H_3PO_4 (c) $\text{H}_4\text{P}_2\text{O}_7$ (d) H_3PO_3
54. Identify the correct formula of 'oleum' from the following.
 (a) H_2SO_4 (b) $\text{H}_2\text{S}_2\text{O}_8$ (c) $\text{H}_2\text{S}_2\text{O}_7$ (d) H_2SO_3
55. When neutral or faintly alkaline KMnO_4 is treated with potassium iodide, iodide ion is converted into 'X', 'X' is
 (a) IO_3^- (b) IO^- (c) I_2 (d) IO_4^-

56. The Crystal Field Stabilisation Energy (CFSE) for $[\text{CoCl}_6]^{4-}$ is 18000 cm^{-1} . The CFSE for $[\text{CoCl}_4]^-$ will be
 (a) 18000 cm^{-1} (b) 8000 cm^{-1} (c) 6000 cm^{-1} (d) 16000 cm^{-1}
57. Match the oxide given in **column-A** with its property given in **column B**:
- | Column - A | Column - B |
|------------------------------|-------------------|
| (i) Na_2O | (a) Neutral |
| (ii) Al_2O_3 | (b) Basic |
| (iii) N_2O | (c) Acidic |
| (iv) Cl_2O | (d) Amphoteric |
- Which of the following options has all correct pairs?
- (a) (i)-(a), (ii)-(d), (iii)-(b), (iv)-(c) (b) (i)-(b), (ii)-(d), (iii)-(a), (iv)-(c)
 (c) (i)-(b), (ii)-(a), (iii)-(d), (iv)-(c) (d) (i)-(c), (ii)-(b), (iii)-(a), (iv)-(d)
58. The density of 2 M aqueous solution of NaOH is 1.28 g/cm^3 . The molality of the solution is [Given that molecular mass of NaOH = 40 g mol^{-1}]
 (a) 1.67 m (b) 1.32 m (c) 1.20 m (d) 1.56 m
59. Orbital having 3 angular nodes and 3 total nodes is
 (a) 4 f (b) 6 d (c) 5 p (d) 3 d
60. In hydrogen atom, the de-Broglie wavelength of an electron in the second Bohr orbit is [Given that Bohr radius, $a_0 = 52.9 \text{ pm}$]
 (a) $52.9 \pi \text{ pm}$ (b) 105.8 pm (c) 211.6 pm (d) $211.6 \pi \text{ pm}$
61. The volume occupied by 1.8 g of water vapour at 374°C and 1 bar pressure will be [Use $R = 0.083 \text{ bar L K}^{-1} \text{ mol}^{-1}$]
 (a) 3.10 L (b) 5.37 L (c) 96.66 L (d) 55.87 L
62. An ideal gas expands isothermally from 10^{-3} m^3 to 10^{-2} m^3 at 300 K against a constant pressure of 10^5 Nm^2 . The work done on the gas is
 (a) + 900 kJ (b) -900 kJ (c) + 270 kJ (d) -900 J
63. Reversible expansion of an ideal gas under isothermal and adiabatic conditions are as shown in the figure.



AB $\rightarrow$ Isothermal expansion

AC $\rightarrow$ Adiabatic expansion

Which of the following options is **not** correct?

- (a) Isothermal Adiabatic (b) $T_C > T_A$
 (c) $\Delta S_{\text{isothermal}} > \Delta S_{\text{adiabatic}}$ (d) $T_A = T_B$
64. The pH of 0.01 M NaOH (aq) solution will be
 (a) 12 (b) 9 (c) 7.01 (d) 2
65. Which of the following cannot act both as Bronsted acid and as Bronsted base?
 (a) HCl (b) HSO_4^- (c) HCO_3^- (d) NH_3

66. The molar solubility of CaF_2 ($K_{sp} = 5.3 \times 10^{-11}$) in 0.1 M solution of NaF will be

- (a) $5.3 \times 10^{-9} \text{ mol L}^{-1}$ (b) $5.3 \times 10^{-10} \text{ mol L}^{-1}$
(c) $5.3 \times 10^{-11} \text{ mol L}^{-1}$ (d) $5.3 \times 10^{-8} \text{ mol L}^{-1}$

67. The oxidation state of Cr in CrO_6 is

- (a) +6 (b) +4 (c) -6 (d) +12

68. Match the catalyst with the process:

Catalyst

- (i) V_2O_5
(ii) $\text{TiCl}_4 + \text{Al}(\text{CH}_3)_3$
(iii) PdCl_2
(iv) Nickel complexes

Process

- (a) The oxidation of ethyne to ethanal
(b) Polymerisation of alkynes
(c) Oxidation of SO_2 in the manufacture of H_2SO_4
(d) Polymerisation of ethylene

Which of the following is the correct option?

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

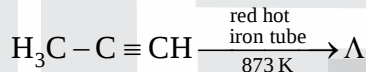
69. The most stable carbocation, among the following, is

- (a) $\text{CH}_3-\overset{\oplus}{\text{C}}\text{H}-\text{CH}_2-\text{CH}_2-\text{CH}_3$ (b) $\text{CH}_3-\text{CH}_2-\overset{\oplus}{\text{C}}\text{H}_2$
(c) $(\text{CH}_3)_3\text{C}-\overset{\oplus}{\text{C}}\text{H}-\text{CH}_3$ (d) $\text{CH}_3-\text{CH}_2-\overset{\oplus}{\text{C}}\text{H}-\text{CH}_2-\text{CH}_3$

70. The alkane that gives only one mono-chloro product on chlorination with Cl_2 in presence of diffused sunlight is

- (a) n-pentane (b) Isopentane (c) 2, 2-dimethylbutane (d) neopentane

71. In the following reaction, red hot iron tube



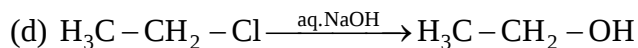
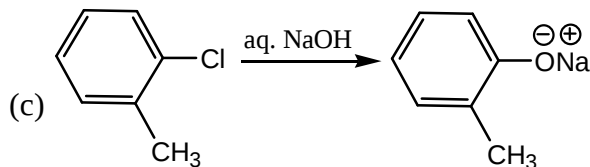
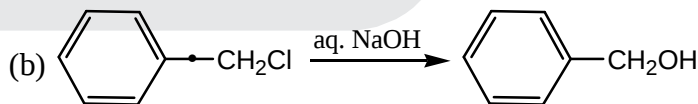
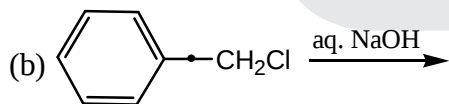
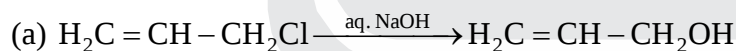
the number of sigma (σ) bonds present in the product A, is

- (a) 24 (b) 18 (c) 21 (d) 9

72. The liquified gas that is used in dry cleaning along with a suitable detergent is

- (a) NO_2 (b) CO_2 (c) Water gas (d) Petroleum gas

73. The hydrolysis reaction that takes place at the slowest rate, among the following, is



74. When vapours of a secondary alcohol is passed over heated copper at 573 K, the product formed is

- (a) a ketone (b) an alkene (c) a carboxylic acid (d) an aldehyde

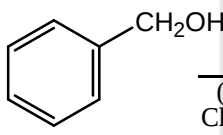
75. The number of hydrogen bonded water molecule(s) associated with $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ is

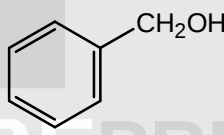
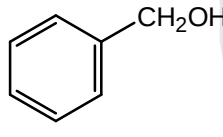
- (a) 2 (b) 5 (c) 3 (d) 1

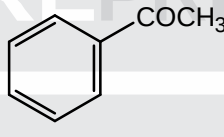


76. Formula of nickel oxide with metal deficiency defect in its crystal is $\text{Ni}_{0.980}$. The crystal contains Ni^{2+} and Ni^{3+} ions. The fraction of nickel existing as Ni^{2+} ions in the crystal is
 (a) 0.50 (b) 0.31 (c) 0.96 (d) 0.04
77. Which of the following statements is correct regarding a solution of two components A and B exhibiting positive deviation from ideal behaviour?
 (a) $\Delta_{\text{mix}} V = 0$ at constant T and P.
 (b) Intermolecular attractive forces between A-A and B-B are equal to those between A-B.
 (c) Intermolecular attractive forces between A-A and B-B are stronger than those between A-B.
 (d) $\Delta_{\text{mix}} H = 0$ at constant T and P.
78. In water saturated air, the mole fraction of water vapour is 0.02. If the total pressure of the saturated air is 1.2 atm, the partial pressure of dry air is
 (a) 1.176 atm (b) 0.98 atm (c) 1.18 atm (d) 1.76 atm
79. The standard electrode potential (E) values of Al^{3+}/Al , Ag^+/Ag , K^+/K and Cr^{3+}/Cr are -1.66 V , 0.80 V , 2.93 V and -0.74 V , respectively. The correct decreasing order of reducing power of the metal is
 (a) $\text{K} > \text{Al} > \text{Ag} > \text{Cr}$ (b) $\text{Al} > \text{K} > \text{Ag} > \text{Cr}$ (c) $\text{Ag} > \text{Cr} > \text{Al} > \text{K}$ (d) $\text{K} > \text{Al} > \text{Cr} > \text{Ag}$
80. The major products C and D formed in the following reaction respectively are



- (a) $\text{H}_3\text{C}-\text{CH}_2-\text{CH}_2-\text{I}$ and $\text{HO}-\text{C}(\text{CH}_3)_3$
 (b) $\text{H}_3\text{C}-\text{CH}_2-\text{CH}_2-\text{OH}$ and $\text{HO}-\text{C}(\text{CH}_3)_3$
 (c) $\text{H}_3\text{C}-\text{CH}_2-\text{CH}_2-\text{I}$ and $\text{I}-\text{C}(\text{CH}_3)_3$
 (d) $\text{H}_3\text{C}-\text{CH}_2-\text{CH}_2-\text{OH}$ and $\text{I}-\text{C}(\text{CH}_3)_3$
81. The reaction that does not give benzoic acid as the major product is
- (a)  $\xrightarrow[\text{(Pyridinium Chlorochromate)}]{\text{PCC}}$

(b)  $\xrightarrow{\text{KMnO}_4/\text{H}^+}$
- (c)  $\xrightarrow{\text{K}_2\text{Cr}_2\text{O}_7}$

(d)  $\xrightarrow[\text{(ii) H}_3\text{O}^+]{\text{(i) NaOCl}}$

82. Following limiting molar conductivities are given as

$$\lambda_{\text{m}(\text{H}_2\text{SO}_4)}^0 = x \text{ S cm}^2 \text{ mol}^{-1}$$

$$\lambda_{\text{m}(\text{K}_2\text{SO}_4)}^0 = y \text{ S cm}^2 \text{ mol}^{-1}$$

$$\lambda_{\text{m}(\text{CH}_3\text{COOK})}^0 = z \text{ S cm}^2 \text{ mol}^{-1}$$

$$\lambda_{\text{m}}^0 \left(\text{in S cm}^2 \text{ mol}^{-1} \right) \text{ for } \text{CH}_3\text{COOH} \text{ will be}$$

- (a) $x - y + z$ (b) $\frac{(x - y)}{2} + z$ (c) $x - y + 2z$ (d) $x + y + z$



83. A first order reaction has a rate constant of $2.303 \times 10^3 \text{ s}^{-1}$. The time required for 40 g of this reactant to reduce to 10 g will be [Given that $\log_{10} 2 = 0.3010$]
 (a) 2000 s (b) 602 s (c) 230.3 s (d) 301 s
84. For a reaction, activation energy $E_a = 0$ and the rate constant at 200 K is $1.6 \times 10^6 \text{ s}^{-1}$. The rate constant at 400 K will be [Given that gas constant, $R = 8.314 \text{ J K}^{-1} \text{ mol}^{-1}$]
 (a) $1.6 \times 10^3 \text{ s}^{-1}$ (b) $3.2 \times 10^6 \text{ s}^{-1}$ (c) $3.2 \times 10^4 \text{ s}^{-1}$ (d) $1.6 \times 10^6 \text{ s}^{-1}$
85. The correct option representing a Freundlich adsorption isotherm is -
 (a) $\frac{x}{m} = k p^{-0.5}$ (b) $\frac{x}{m} = k p^{-1}$ (c) $\frac{x}{m} = k p^{0.3}$ (d) $\frac{x}{m} = k p^{2.5}$
86. Which of the following is paramagnetic?
 (a) Li_2 (b) O_2 (c) N_2 (d) H_2
87. The amine that reacts with Hinsberg's reagent to give an alkali insoluble product is
 (a) $\text{H}_3\text{C}-\overset{\text{NH}_2}{\underset{\text{CH}_3}{\text{C}}}-\text{CH}_2\text{CH}_2\text{CH}_3$ (b) $\text{H}_3\text{C}-\overset{\text{CH}_3}{\underset{\text{CH}_3}{\text{C}}}-\overset{\text{H}}{\underset{\text{CH}_3}{\text{C}}}-\text{NH}_2$
 (c) $\text{H}_3\text{C}-\overset{\text{H}}{\underset{\text{CH}_3}{\text{C}}}-\text{N}-\overset{\text{H}}{\underset{\text{CH}_3}{\text{C}}}-\text{CH}_3$ (d) $\text{H}_3\text{C}-\overset{\text{H}_2}{\text{C}}-\overset{\text{CH}_2\text{CH}_3}{\text{N}}-\text{CH}_2\text{CH}_3$
88. Which structure(s) of proteins remain(s) intact during denaturation process?
 (a) Secondary structure only (b) Tertiary structure only
 (c) Both secondary and tertiary structures (d) Primary structure only
89. The polymer that is used as a substitute for wool in making commercial fibres is
 (a) polyacrylonitrile (b) Buna-N (c) melamine (d) nylon-6, 6
90. The artificial sweetener stable at cooking temperature and does not provide calories is
 (a) sucralose (b) alitame (c) saccharin (d) aspartame
91. The Earth Summit held in Rio de Janeiro in 1992 was called
 (a) to reduce CO_2 emissions and global warming
 (b) for conservation of biodiversity and sustainable utilization of its benefits
 (c) to assess threat posed to native species by invasive weed species
 (d) for immediate steps to discontinue use of CFCs that were damaging the ozone layer
92. Colostrum the yellowish fluid, secreted by mother during the initial days of lactation is very essential to impart immunity to the new born infants because it contains :
 (a) Natural killer cells (b) Monocytes (c) Macrophages (d) Immunoglobulin A
93. Grass leaves curl inwards during very dry weather. Select the most appropriate reason from the following :
 (a) Closure of stomata (b) Flaccidity of bulliform cells
 (c) Shrinkage of air spaces in spongy mesophyll (d) Tyloses in vessels
94. The shorter and longer arms of a submetacentric chromosome are referred to as
 (a) s-arm and l-arm respectively (b) p-arm and q-arm respectively
 (c) q-arm and p-arm respectively (d) m-arm and n-arm respectively
95. Respiratory Quotient (RQ) value of tripalmitin is
 (a) 0.9 (b) 0.7 (c) 0.07 (d) 0.09



96. Which of the following is a commercial blood cholesterol lowering agent?
(a) Cyclosporin A (b) Statin (c) Streptokinase (d) Lipases
97. Match the following structures with their respective location in organs
(a) Crypts of Lieberkuhn (i) Pancreas
(b) Glisson's Capsule (ii) Duodenum
(c) Islets of Langerhans (iii) Small intestine
(d) Brunner's Glands (iv) Liver
- Select the correct option from the following
(a) (b) (c) (d)
(a) (iii) (i) (ii) (iv)
(b) (ii) (iv) (i) (iii)
(c) (iii) (iv) (i) (ii)
(d) (iii) (ii) (i) (iv)
98. Which of the following is the most important cause for animals and plants being driven to extinction?
(a) Habitat loss and fragmentation (b) Drought and floods
(c) Economic exploitation (d) Alien species invasion
99. Which part of the brain is responsible for thermoregulation?
(a) Cerebrum (b) Hypothalamus (c) Corpus callosum (d) Medulla oblongata
100. Consider following features
(A) Organ system level of organisation
(B) Bilateral symmetry
(C) True coelomates with segmentation of body
- Select the correct option of animal groups which possess all the above characteristics
(a) Annelida, Arthropoda and Chordata (b) Annelida, Arthropoda and Mollusca
(c) Arthropoda, Mollusca and Chordata (d) Annelida, Mollusca and Chordata
101. Select the correct sequence of organs in the alimentary canal of cockroach starting from mouth
(a) Pharynx → Oesophagus → Crop → Gizzard → Ileum → Colon → Rectum
(b) Pharynx → Oesophagus → Gizzard → Crop → Ileum → Colon → Rectum
(c) Pharynx → Oesophagus → Gizzard → Ileum → Crop → Colon → Rectum
(d) Pharynx → Oesophagus → Ileum → Crop → Gizzard → Colon → Rectum
102. Which of the following pairs of gases is mainly responsible for green house effect?
(a) Ozone and Ammonia (b) Oxygen and Nitrogen
(c) Nitrogen and Sulphur dioxide (d) Carbon dioxide and Methane
103. Which of the following muscular disorders is inherited?
(a) Tetany (b) Muscular dystrophy (c) Myasthenia gravis (d) Botulism
104. The ciliated epithelial cells are required to move particles or mucus in a specific direction. In humans, these cells are mainly present in
(a) Bile duct and Bronchioles (b) Fallopian tubes and Pancreatic duct
(c) Eustachian tube and Salivary duct (d) Bronchioles and Fallopian tubes
105. Match the Column-I with Column-II
- | Column-I | Column-II |
|--------------|----------------------------------|
| (a) P - wave | (i) Depolarisation of ventricles |



- (b) QRS complex
(c) T - wave
(d) Reduction in the
(v) Repolarisation of atria
Select the correct option.

- (a) (b) (c) (d)
(a) (iv) (i) (ii) (iii)
(b) (iv) (i) (ii) (v)
(c) (ii) (i) (v) (iii)
(d) (ii) (iii) (v) (iv)

- 106 Which one of the following is not a method in situ conservation of biodiversity?
(a) Biosphere Reserve (b) Wildlife Sanctuary
(c) Botanical Garden (d) Sacred Grove
- 107 In a species, the weight of newborn ranges from 2 to 5 kg. 97% of the newborn with an average weight between 3 to 3.3 kg survive whereas 99% of the infants born with weight from 2 to 2.5 kg or 4.5 to 5 kg die. Which type of selection process is taking place?
(a) Directional Selection (b) Stabilizing Selection
(c) Disruptive Selection (d) Cyclical Selection
108. The correct sequence of phases of cell cycle is :
(a) $M \rightarrow G_1 \rightarrow G_2 \rightarrow S$ (b) $G_1 \rightarrow G_2 \rightarrow S \rightarrow M$
(c) $S \rightarrow G_1 \rightarrow G_2 \rightarrow M$ (d) $G_1 \rightarrow S \rightarrow G_2 \rightarrow M$
109. How does steroid hormone influence the cellular activities?
(a) Changing the permeability of the cell membrane
(b) Binding to DNA and forming a genehormone complex
(c) Activating cyclic AMP located on the cell membrane
(d) Using aquaporin channels as second messenger
110. Which of the following statements is not correct?
(a) Lysosomes have numerous hydrolytic enzymes
(b) The hydrolytic enzymes of lysosomes are active under acidic pH
(c) Lysosomes are membrane bound structures
(d) Lysosomes are formed by the process of packaging in the endoplasmic reticulum
111. Which one of the following statements regarding post-fertilization development in flowering plants is incorrect?
(a) Ovary develops into fruit (b) Zygote develops into embryo
(c) Central cell develops into endosperm (d) Ovules develop into embryo sac
112. Concanavalin A is
(a) an alkaloid (b) an essential oil (c) a lectin (d) a pigment
113. Which one of the following equipments is essentially required for growing microbes on a large scale, for industrial production of enzymes?
(a) BOD incubator (b) Sludge digester (c) Industrial oven (d) Bioreactor
114. Consider the following statement :
(A) Coenzyme or metal ion that is tightly bound to enzyme protein is called prosthetic group.
(B) A complete catalytic active enzyme with its bound prosthetic group is called apoenzyme.



Select the correct option.

- (a) Both (A) and (B) are true. (b) (A) is true but (B) is false.
(c) Both (A) and (B) are false. (d) (A) is false but (B) is true.
115. Purines found both in DNA and RNA are
(a) Adenine and thymine (b) Adenine and guanine
(c) Guanine and cytosine (d) Cytosine and thymine
116. Select the correct sequence for transport of sperm cells in male reproductive system.
(a) Testis „ Epididymis „ Vasa efferentia „ Rete testis „ Inguinal canal „ Urethra
(b) Seminiferous tubules „ Rete testis „ Vasa efferentia „ Epididymis „ Vas deferens „ Ejaculatory duct „ Urethra „ Urethral meatus
(c) Seminiferous tubules „ Vasa efferentia „ Epididymis „ Inguinal canal „ Urethra
(d) Testis „ Epididymis „ Vasa efferentia „ Vas deferens „ Ejaculatory duct „ Inguinal canal „ Urethra „ Urethral meatus
117. Match the hominids with their correct brain size :
(a) Homo habilis (i) 900 cc
(b) Homo neanderthalensis (ii) 1350 cc
(c) Homo erectus (iii) 650-800 cc
(d) Homo sapiens (iv) 1400 cc
- Select the correct option.
(a) (b) (c) (d)
(a) (iii) (i) (iv) (ii)
(b) (iii) (ii) (i) (iv)
(c) (iii) (iv) (i) (ii)
(d) (iv) (iii) (i) (ii)
118. Variations caused by mutation, as proposed by Hugo de Vries are
(a) random and directional (b) random and directionless
(c) small and directional (d) small and directionless
119. Which of the following pair of organelles does not contain DNA?
(a) Mitochondria and Lysosomes (b) Chloroplast and Vacuoles
(c) Lysosomes and Vacuoles (d) Nuclear envelope and Mitochondria
120. Due to increasing air-borne allergens and pollutants, many people in urban areas are suffering from respiratory disorder causing wheezing due to
(a) benign growth on mucous lining of nasal cavity
(b) inflammation of bronchi and bronchioles
(c) proliferation of fibrous tissues and damage of the alveolar walls
(d) reduction in the secretion of surfactants by pneumocytes.
121. Select the incorrect statement.
(a) Male fruit fly is heterogametic
(b) In male grasshoppers 50% of sperms have no sex-chromosome
(c) In domesticated fowls, sex of progeny depends on the type of sperm rather than egg
(d) Human males have one of their sexchromosome much shorter than the other



122. DNA precipitation out of a mixture of biomolecules can be achieved by treatment with
(a) Isopropanol (b) Chilled ethanol
(c) Methanol at room temperature (d) Chilled chloroform
123. Select the correct group of biocontrol agents.
(a) *Bacillus thuringiensis*, Tobacco mosaic virus, Aphids
(b) *Trichoderma*, *Baculovirus*, *Bacillus thuringiensis*
(c) *Oscillatoria*, *Rhizobium*, *Trichoderma*
(d) *Nostoc*, *Azospirillum*, Nucleopolyhedrovirus
124. Select the incorrect statement.
(a) Inbreeding increases homozygosity
(b) Inbreeding is essential to evolve purelines in any animal.
(c) Inbreeding selects harmful recessive genes that reduce fertility and productivity
(d) Inbreeding helps in accumulation of superior genes and elimination of undesirable genes
125. Match the following organisms with the products they produce
(a) *Lactobacillus* (i) Cheese
(b) *Saccharomyces cerevisiae* (ii) Curd
(c) *Aspergillus niger* (iii) Citric Acid
(d) *Acetobacter aceti* (iv) Bread
(v) Acetic Acid
Select the correct option.
(a) (b) (c) (d)
(a) (ii) (iv) (v) (iii)
(b) (ii) (iv) (iii) (v)
(c) (iii) (iv) (v) (i)
(d) (ii) (i) (iii) (v)
126. What is the direction of movement of sugars in phloem?
(a) Non-multidirectional
(b) Upward
(c) Downward
(d) Bi-directional
127. In some plants, the female gamete develops into embryo without fertilization. This phenomenon is known as
(a) Autogamy (b) Parthenocarpy
(c) Syngamy (d) Parthenogenesis
128. Persistent nucellus in the seed is known as
(a) Chalaza (b) Perisperm (c) Hilum (d) Tegmen
129. What map unit (Centimorgan) is adopted in the construction of genetic maps?
(a) A unit of distance between two expressed genes representing 10% cross over.
(b) A unit of distance between two expressed genes representing 100% cross over.
(c) A unit of distance between genes on chromosomes, representing 1% cross over.
(d) A unit of distance between genes on chromosomes, representing 50% cross over.



130. What would be the heart rate of a person if the cardiac output is 5 L, blood volume in the ventricles at the end of diastole is 100 mL and at the end of ventricular systole is 50 mL?
- (a) 50 beats per minute (b) 75 beats per minute
(c) 100 beats per minute (d) 125 beats per minute
131. *Thiobacillus* is a group of bacteria helpful in carrying out
- (a) Nitrogen fixation (b) Chemoautotrophic fixation
(c) Nitrification (d) Denitrification
132. Which of the following factors is responsible for the formation of concentrated urine?
- (a) Low levels of antidiuretic hormone
(b) Maintaining hyperosmolarity towards inner medullary interstitium in the kidneys.
(c) Secretion of erythropoietin by Juxtaglomerular complex
(d) Hydrostatic pressure during glomerular filtration
133. Which of the following statements regarding mitochondria is incorrect?
- (a) Outer membrane is permeable to monomers of carbohydrates, fats and proteins.
(b) Enzymes of electron transport are embedded in outer membrane.
(c) Inner membrane is convoluted with infoldings.
(d) Mitochondrial matrix contains single circular DNA molecule and ribosomes.
134. Xylem translocates.
- (a) Water only
(b) Water and mineral salts only
(c) Water, mineral salts and some organic nitrogen only
(d) Water, mineral salts, some organic nitrogen and hormones
135. Cell in G₀ phase :
- (a) exit the cell cycle (b) enter the cell cycle
(c) suspend the cell cycle (d) terminate the cell cycle
136. Which of the statements given below is not true about formation of Annual Rings in trees?
- (a) Annual ring is a combination of spring wood and autumn wood produced in a year
(b) Differential activity of cambium causes light and dark bands of tissue early and late wood respectively.
(c) Activity of cambium depends upon variation in climate.
(d) Annual rings are not prominent in trees of temperate region.
137. Which of the following ecological pyramids is generally inverted?
- (a) Pyramid of numbers in grassland
(b) Pyramid of energy
(c) Pyramid of biomass in a forest
(d) Pyramid of biomass in a sea
138. Placentation in which ovules develop on the inner wall of the ovary or in peripheral part, is
- (a) Basal (b) Axile (c) Parietal (d) Free central
139. Which of the following protocols did aim for reducing emission of chlorofluorocarbons into the atmosphere?
- (a) Montreal Protocol (b) Kyoto Protocol
(c) Gothenburg Protocol (d) Geneva Protocol
140. Which of the following contraceptive methods do involve a role of hormone?
- (a) Lactational amenorrhea, Pills Emergency contraceptives.
(b) Barrier method, Lactational amenorrhea, Pills.



- (c) CuT, Pills, Emergency contraceptives.
(d) Pills, Emergency contraceptives, Barrier methods.
141. Tidal Volume and Expiratory Reserve Volume of an athlete is 500 mL and 1000 mL, respectively. What will be his Expiratory Capacity if the Residual Volume is 1200 mL?
(a) 1500 mL (b) 1700 mL (c) 2200 mL (d) 2700 mL
142. What is the fate of the male gametes discharged in the synergid?
(a) One fuses with egg other(s) degenerate (s) in the synergid.
(b) All fuse with the egg.
(c) One fuses with the egg, other(s) fuse(s) with synergid nucleus.
(d) One fuses with the egg and other fuses with central cell nuclei.
143. What is the site of perception of photoperiod necessary for induction of flowering in plants?
(a) Lateral buds (b) Pulvinus (c) Shoot apex (d) Leaves
144. Select the correctly written scientific name of Mango which was first described by Carolus Linnaeus :
(a) *Mangifera indica* Car. Linn. (b) *Mangifera indica* Linn.
(c) *Mangifera indica* (d) *Mangifera Indica*
145. Following statements describe the characteristics of the enzyme Restriction Endonuclease. Identify the incorrect statement.
(a) The enzyme cuts DNA molecule at identified position within the DNA.
(b) The enzyme binds DNA at specific sites and cuts only one of the two strands.
(c) The enzyme cuts the sugar-phosphate backbone at specific sites on each strand.
(d) The enzyme recognizes a specific palindromic nucleotide sequence in the DNA.
146. From evolutionary point of view, retention of the female gametophyte with developing young embryo on the parent sporophyte for some time, is first observed in :
(a) Liverworts (b) Mosses
(c) Pteridophytes (d) Gymnosperms
147. In *Antirrhinum* (Snapdragon), a red flower was crossed with a white flower and in F₁ generation pink flowers were obtained. When pink flowers were selfed, the F₂ generation showed white, red and pink flowers. Choose the incorrect statement from the following :
(a) This experiment does not follow the Principle of Dominance.
(b) Pink colour in F₁ is due to incomplete dominance.
(c) Ratio of F₂ is 1/4(Red) : 2/4(Pink) : 1/4 (White)
(d) Law of Segregation does not apply in this experiment
148. Conversion of glucose to glucose-6-phosphate, the first irreversible reaction of glycolysis, is catalyzed by
(a) Aldolase (b) Hexokinase (c) Enolase (d) Phosphofructokinase
149. Drug called 'Heroin' is synthesized by
(a) methylation of morphine (b) acetylation of morphine
(c) glycosylation of morphine (d) nitration of morphine
150. Select the hormone-releasing Intra-Uterine Devices.
(a) Vaults, LNG-20 (b) Multiload 375, Progestasert
(c) Progestasert, LNG-20 (d) Lippes Loop, Multiload 375



151. A gene locus has two alleles A, a. If the frequency of dominant allele A is 0.4, then what will be the frequency of homozygous dominant, heterozygous and homozygous recessive individuals in the population?
- (a) 0.36(AA); 0.48(Aa); 0.16(aa) (b) 0.16(AA); 0.24(Aa); 0.36(aa)
(c) 0.16(AA); 0.48(Aa); 0.36(aa) (d) 0.16(AA); 0.36(Aa); 0.48(aa)
152. Which of the following is true for Golden rice?
- (a) It is Vitamin A enriched, with a gene from daffodil
(b) It is pest resistant, with a gene from *Bacillus thuringiensis*
(c) It is drought tolerant, developed using *Agrobacterium* vector
(d) It has yellow grains, because of a gene introduced from a primitive variety of rice
153. *Pinus* seed cannot germinate and established without fungal association. This is because :
- (a) its embryo is immature.
(b) it has obligate association with mycorrhizae.
(c) it has very hard seed coat.
(d) its seeds contain inhibitors that present germination.
154. Which of the following features of genetic code does allow bacteria to produce human insulin by recombinant DNA technology?
- (a) Genetic code is not ambiguous
(b) Genetic code is redundant
(c) Genetic code is nearly universal
(d) Genetic code is specific
155. Which of the following sexually transmitted diseases is not completely curable?
- (a) Gonorrhoea (b) Genital warts (c) Genital herpes (d) Chlamydisias
156. Which of the following statements is incorrect?
- (a) Viroids lack a protein coat.
(b) Viruses are obligate parasites.
(c) Infective constituent in viruses is the protein coat.
(d) Prions consist of abnormally folded proteins.
157. Match the following organisms with their respective characteristics :
- | | |
|--------------------------|-------------------------|
| (a) <i>Pila</i> | (i) Flame cells |
| (b) <i>Bombyx</i> | (ii) Comb plates |
| (c) <i>Pleurobrachia</i> | (iii) Radula |
| (d) <i>Taenia</i> | (iv) Malpighian tubules |
- Select the correct option from the following :
- (a) (b) (c) (d)
(a) (iii) (ii) (i) (iv)
(b) (iii) (iv) (ii) (i)
(c) (ii) (iv) (iii) (i)
(d) (iii) (ii) (iv) (i)
158. Expressed Sequence Tags (ESTs) refers to :
- (a) Genes expressed as RNA (b) Polypeptide expression
(c) DNA polymorphism (d) Novel DNA sequences

159. Which is of the following statements is incorrect?

- (a) Morels and truffles are edible delicacies.
- (b) Claviceps is a source of many alkaloids and LSD.
- (c) Conidia are produced exogenously and ascospores endogenously.
- (d) Yeasts have filamentous bodies with long thread-like hyphae.

160. Match Column - I Column - II

- | Column - I | Column - II |
|----------------|---|
| (a) Saprophyte | (i) Symbiotic association of fungi with plant roots |
| (b) Parasite | (ii) Decomposition of dead organic materials |
| (c) Lichens | (iii) Living on living plants or animals |
| (d) Mycorrhiza | (iv) Symbiotic association of algae and fungi |

Choose the correct answer from the option given below

- (a) (b) (c) (d)
 - (a) (i) (ii) (iii) (iv)
 - (b) (iii) (ii) (i) (iv)
 - (c) (ii) (i) (iii) (iv)
 - (d) (ii) (iii) (iv) (i)
161. Which of the following glucose transporters is insulin-dependent?
- (a) GLUT I
 - (b) GLUT II
 - (c) GLUT III
 - (d) GLUT IV
162. Which of the following immune responses is responsible for rejection of kidney graft?
- (a) Auto-immune response
 - (b) Humoral immune response
 - (c) Inflammatory immune response
 - (d) Cell-mediated immune response
163. 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
164. Which of the following statements is correct?
- (a) Cornea is an external, transparent and protective proteinaceous covering of the eye-ball.
 - (b) Cornea consists of dense connective tissue of elastin and can repair itself.
 - (c) Cornea is convex, transparent layer which is highly vascularised.
 - (d) Cornea consists of dense matrix of collagen and is the most sensitive portion the eye.
165. The frequency of recombination between gene pairs on the same chromosome as a measure of the distance between genes was explained by :
- (a) T.H. Morgan
 - (b) Gregor J. Mendel
 - (c) Alfred Sturtevant
 - (d) Sutton Boveri
166. Match the following genes of the Lac operon with their respective products :
- (a) i gene
 - (i) β -galactosidase
 - (b) z gene
 - (ii) Permease
 - (c) a gene
 - (iii) Repressor



- (d) y gene (iv) Transacetylase

Select the correct option.

- (a) (b) (c) (d)
- (a) (i) (iii) (ii) (iv)
- (b) (iii) (i) (ii) (iv)
- (c) (iii) (i) (iv) (ii)
- (d) (iii) (iv) (i) (ii)
167. It takes very long time for pineapple plants to produce flowers. Which combination of hormones can be applied to artificially induce flowering in pineapple plants throughout the year to increase yield?
- (a) Auxin and Ethylene (b) Gibberellin and Cytokinin
- (c) Gibberellin and Absciscic acid (d) Cytokinin and Absciscic acid
168. Identify the cells whose secretion protects the lining of gastro-intestinal tract from various enzymes.
- (a) Chief Cells (b) Goblet Cells (c) Oxyntic Cells (d) Duodenal Cells
169. Which of the following can be used as a biocontrol agent in the treatment of plant disease?
- (a) Trichoderma (b) Chlorella (c) Anabaena (d) Lactobacillus
170. Phloem in gymnosperms lacks :
- (a) Albuminous cells and sieve cells (b) Sieve tubes only
- (c) Companion cells only (d) Both sieve tubes and companion cells
171. Extrusion of second polar body from egg nucleus occurs :
- (a) after entry of sperm but before fertilization
- (b) after fertilization
- (c) before entry of sperm into ovum
- (d) simultaneously with first cleavage
172. Under which of the following conditions will there be no change in the reading frame of following mRNA?
5,,SAACAGCGGUGCUAUU3,,S
- (a) Insertion of G at 5th position
- (b) Deletion of G from 5th position
- (c) Insertion of A and G at 4th and 5th positions respectively
- (d) Deletion of GGU from 7th, 8th and 9th positions
173. The concept of "Omnis cellula-e cellula" regarding cell division was first proposed by
- (a) Rudolf Virchow
- (b) Theodor Schwann
- (c) Schleiden
- (d) Aristotle
174. What triggers activation of protoxin to active Bt toxin of Bacillus thuringiensis in boll worm?
- (a) Body temperature
- (b) Moist surface of midgut
- (c) Alkaline pH of gut
- (d) Acidic pH of stomach
175. Identify the correct pair representing the causative agent of typhoid fever and the confirmatory test for typhoid.
- (a) Plasmodium vivax / UTI test
- (b) Streptococcus pneumoniae / Widal test



- (c) *Salmonella typhi* / Anthrone test
(d) *Salmonella typhi* / Widal test
176. What is the genetic disorder in which an individual has an overall masculine development gynaecomastia, and is sterile ?
(a) Turner's syndrome (b) Klinefelter's syndrome
(c) Edward syndrome (d) Down's syndrome
177. Polyblend, a fine powder of recycled modified plastic, has proved to be a good material for
(a) Making plastic sacks
(b) Use as a fertilizer
(c) Construction of roads
(d) Making tubes and pipes
178. Which of these following methods is the most suitable for disposal of nuclear waste?
(a) Shoot the waste into space
(b) Bury the waste under Antarctic ice-cover
(c) Dump the waste within rocks under deep ocean
(d) Bury the waste within rocks deep below the Earth's surface
179. Match the following hormones with the respective disease
(a) Insulin (i) Addison's disease
(b) Thyroxin (ii) Diabetes insipidus
(c) Corticoids (iii) Acromegaly
(d) Growth Hormone (iv) Goitre
(v) Diabetes mellitus
- Select the correct option.
(a) (b) (c) (d)
(a) (v) (i) (ii) (iii)
(b) (ii) (iv) (iii) (i)
(c) (v) (iv) (i) (iii)
(d) (ii) (iv) (i) (iii)
180. Select the correct option.
(a) 8th, 9th and 10th pairs of ribs articulate directly with the sternum.
(b) 11th and 12th pairs of ribs are connected to the sternum with the help of hyaline cartilage.
(c) Each rib is a flat thin bone and all the ribs are connected dorsally to the thoracic vertebrae and ventrally to the sternum.
(d) There are seven pairs of vertebrosteral, three pairs of vertebrochondral and two pairs of vertebral ribs.