CBSE EXAMINATION PAPER-2022

NEET-ZOOLOGY

(Solved)

Time allowed : 3 hours | Maximum Marks : 802

General Instructions :

Read the following instructions carefully and follow them :

i. This question paper contains **200 questions.** All questions are **compulsory.**

ii. This question paper is divided into **1 sections.**

iii. **Section A** – questions number **1 to 200** are multiple choice questions

iv. There is no overall choice given in the question paper. However, an internal choice has been provided in few questions.

v. Use of calculator is NOT allowed.

Section A

Question 1.

An energy of 484 J is spent in increasing the speed of a flywheel from 60 rpm to 360 rpm. The moment of inertia of the flywheel is

[4 Marks]

(A) 3.22kg-m2

(B) 30.8 kg-m2

(C) 0.7kg-m2

(D) 0.07 kg-m2

Question 2.

Let R_1 be the radius of the second stationary and R_2 be the radius of the fourth stationary orbit of an electron in Bohr's model. The ratio R_1/R_2 is:

[4 Marks]

(A) 0.5

(B) 0.25

(C) 4

(D) 2

Question 3.

During a cloudy day, a primary and a secondary rainbow may be created, then the:

[4 Marks]

(A) secondary rainbow is due to double internal reflection and is formed above the primary one.

(B) primary rainbow is due to double internal reflection and is formed above the secondary one.

(C) primary rainbow is due to double internal reflection and is formed below the secondary one.

(D) secondary rainbow is due to single reflection and is formed above the primary one.

Question 4.

The reciprocal of resistance is:

[4 Marks]

(A) conductivity

(B) mobility

(C) conductance

(D) reactance

Question 5.

Two copper vessels A and B have the same base area but of different shapes. A take twice the volume of water as that B requires to fill upto a particular common height. Then the correct statement among the following is:

[4 Marks]

(A) Both vessels A and B weigh the same.

(B) Pressure on the base area of A and B is not same.

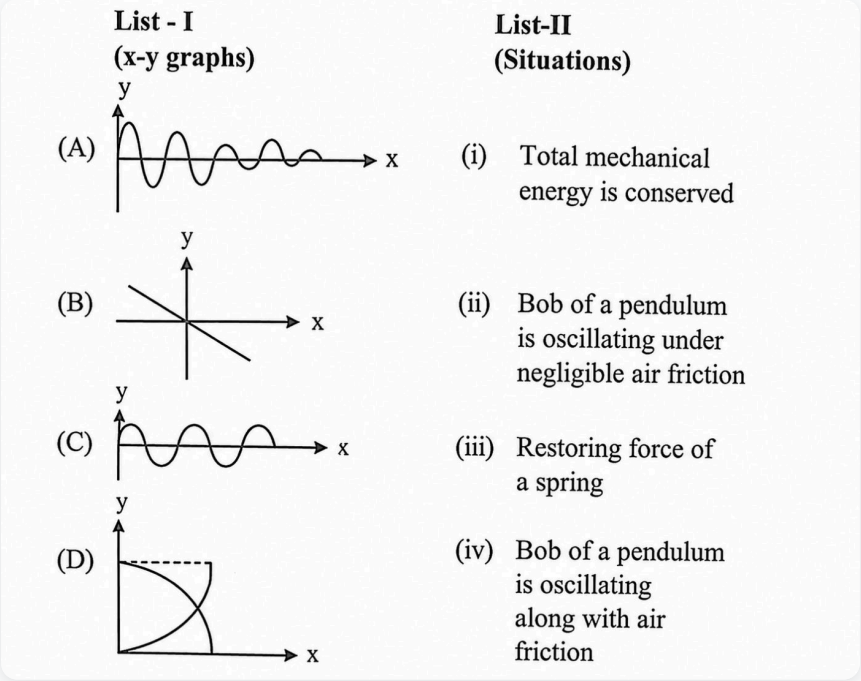
(C) Vessel B weighs twice that of A.

(D) Pressure on the base area of vessels A and B is same.

Question 6.

Match List - I with List - II: Choose the correct answer from the options given below:

[4 Marks]



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

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

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

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

Question 7.

The distance covered by a body of mass 5 g having linear momentum 0.3 kg m/s in 5 s is:

[4 Marks]

(A) 30 m

(B) 300 m

(C) 0.3 m

(D) 3 m

Question 8.

The distance between the two plates of a parallel plate capacitor is doubled and the area of each plate is halved. If C is its initial capacitance, its final capacitance is equal to:

[4 Marks]

(A) C/2

(B) 4 C

(C) 2 C

(D) C/4

Question 9.

A closely packed coil having 1000 turns has an average radius of 62.8 cm. If current carried by 62.8 cm the wire of the coil is 1 A the value of magnetic field produced at the centre of the coil will be (permeability of free space = $4\pi \times 10^{-7}$ H/m) nearly.

[4 Marks]

(A) 10-3T

(B) 102 T

(C) 10-1 T

(D) 10-2 T

Question 10.

The magnetic field of a plane electromagnetic wave is given by □□ = $3 \times 10^{-8} \cos(1.6 \times 10^{3}x + 48 \times 10^{10}t)$ ĵ, then the associated electric field will be:

[4 Marks]

(A) $3 \times 10^{-8} \sin(1.6 \times 10^{3}x + 48 \times 10^{10}t)$ î V/m

(B) $3 \times 10^{-8} \cos(1.6 \times 10^{3}x + 48 \times 10^{10}t)$ î V/m

(C) $9 \sin(1.6 \times 10^{3}x - 48 \times 10^{10}t)$ k̂ V/m

(D) $9 \cos(1.6 \times 10^{3}x + 48 \times 10^{10}t)$ k̂ V/m

Question 11.

The restoring force of a spring with a block attached to the free end of the spring is represented by:

[4 Marks]

(A)



(B)



(C)



(D)



Question 12.

A cricket ball is thrown by a player at a speed of 20 m/s in a direction 30° above the horizontal. The maximum height attained by the ball during its motion is. ($g = 10\ m/s^2$)

[4 Marks]

(A) 5 m

(B) 25 m

(C) 20 m

(D) 10 m

Question 13.

A cell of emf 4 V and internal resistance 0.5 Ω is connected to a 7.5 Ω external resistance. The terminal potential difference of the cell is.

[4 Marks]

(A) 0.375 V

(B) 3.75 V

(C) 4 V

(D) 4.25 V

Question 14.

An ideal gas follows a process described by the equation $PV^2 = C$ from the initial (P_1, V_1, T_1) to final (P_2, V_2, T_2) thermodynamic states, where C is a constant. Then :

[4 Marks]

(A) If $V_2 > V_1$ then $T_2 < T_1$

(B) If $V_2 > V_1$ then $T_2 > T_1$

(C) If $P_1 > P_2$ then $T_1 < T_2$

(D) If $P_1 > P_2$ then $V_1 > V_2$

Question 15.

The shape of the magnetic field lines due to an infinite long, straight current carrying conductor is:

[4 Marks]

(A) a plane

(B) elliptical

(C) circular

(D) a straight line

Question 16.

The light rays having photons of energy 4.2 eV are falling on a metal surface having a work function of 2.2 eV. The stopping potential of the surface is:

[4 Marks]

(A) 1.1 V

(B) 6.4 V

(C) 2 V

(D) 2 eV

Question 17.

Identify the function which represents a non periodic motion.

[4 Marks]

(A) sin ωt

(B) sin ωt + cos ωt

(C) e-wt

(D) sin(ωt + π/4)

Question 18.

An inductor of inductance 2 mH is connected to a 220 V, 50 Hz a.c. source. Let the inductive reactance in the circuit is X_1. If a 220 V dc source replaces the ac source in the circuit, then the inductive reactance in the circuit is X_2. X_1 and X_2 respectively are:

[4 Marks]

(A) 0.628 W, zero

(B) 6.28 W, infinity

(C) 6.28 W, zero

(D) 0.628 W, infinity

Question 19.

The ratio of the magnitude of the magnetic field and electric field intensity of a plane electromagnetic wave in free space of permeability μ_0 and permittivity ε_0 is (Given that C=velocity of light in free space):

[4 Marks]

(A) $c / \sqrt{(\mu_0\varepsilon_0)}$

(B) 1/c

(C) $\sqrt{(\mu_0\varepsilon_0)} / c$

(D) c

Question 20.

The threshold frequency of a photoelectric metal is ν_0. If light of frequency $4\nu_0$ is incident on this metal, then the maximum kinetic energy of emitted electrons will be

[4 Marks]

(A) 4 hn0

(B) 2 hn0

(C) hn0

(D) 3 hn0

Question 21.

Given below are two statements one is labelled as Assertion (A) and the other is labelled as Reason (R). Assertion (A): When a fire cracker (rocket) explodes in mid air, its fragments fly in such a way that they continue moving in the same path, which the fire cracker would have followed, had it not exploded. Reason (R): Explosion of cracker (rocket) occurs due to internal forces only and no external force acts for this explosion.

In the light of the above statements, choose the most appropriate answer from the options given below:

[4 Marks]

(A) (A) is not correct but (R) is correct

(B) Both (A) and (R) are correct and (R) is the correct explanation of (A)

(C) (A) is correct but (R) is not correct

(D) Both (A) and (R) are correct but (R) is not the correct explanation of (A)

Question 22.

Given below are two statements.

Statement I: In an ac circuit, the current through a capacitor leads the voltage across it.

Statement II: In ac circuits containing pure capacitance only, the phase difference between the current and the voltage is π.

In the light of the above statements, choose the most appropriate answer from the options given below:

[4 Marks]

(A) Statement I is incorrect but Statement II is correct

(B) Statement I is correct but Statement II is incorrect

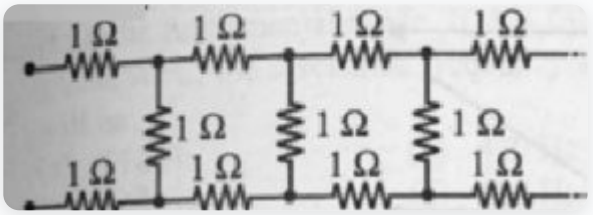
(C) Both Statement 1 and Statement II are correct

(D) Both Statement 1 and Statement II are incorrect

Question 23.

The equivalent resistance of the infinite network given below is :

[4 Marks]



(A) (1 + √3) Ω

(B) (1 + √5) Ω

(C) 2 W

(D) (1 + √2) Ω

Question 24.

If □□ = 2î + ĵ - k̂ and □□ = 3î + 2ĵ - 2k̂ then the scalar and vector products of □□ and□□ have the magnitudes respectively as:

[4 Marks]

(A) 4, √5

(B) 10, √2

(C) 10, 2

(D) 5, √3

Question 25.

Given below are two statements:

Statement I: The law of radioactive decay states that the number of nuclei undergoing the decay per unit time is inversely proportional to the total number of nuclei in the sample.

Statement II: The half life of a radionuclide is the sum of the life time of all nuclei, divided by the initial concentration of the nuclei at time t = 0.

In the light of the above statements, choose the most appropriate answer from the options given below:

[4 Marks]

(A) Statement I is correct but Statement II is incorrect

(B) Both Statement 1 and Statement II are correct

(C) Both Statement I and Statement II are incorrect

(D) Statement I is incorrect but Statement II is correct

Question 26.

The physical quantity that has the same dimensional formula as pressure is:

[4 Marks]

(A) Coefficient of viscosity

(B) Force

(C) Momentum

(D) Young's modulus of elasticity

Question 27.

The effective capacitances of two capacitors are 3 μF and 16 μF, when they are connected in series and parallel respectively. The capacitance of two capacitors are:

[4 Marks]

(A) 12 μF, 4 μF

(B) 8 μF, 8 μF

(C) 10 mF, 6mF

(D) 1.2 mF, 1.8 mF

Question 28. After passing through a polariser a linearly polarised light of intensity I is incident on an analyser making an angle of 30° with that of the polariser. The intensity of light emitted from the analyser will be:

[4 Marks]

(A) 2I/3

(B) I/3

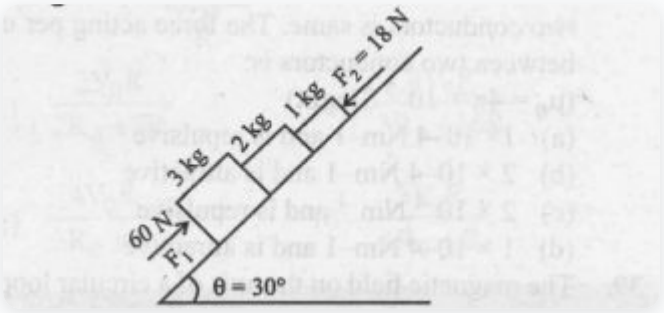
(C) I/2

(D) 3I/4

Question 29.

In the diagram shown, the normal reaction force between 2 kg and 1 kg is (Consider the surface, to be smooth): Given g = 10 ms^{-2}

[4 Marks]



(A) 25 N

(B) 10 N

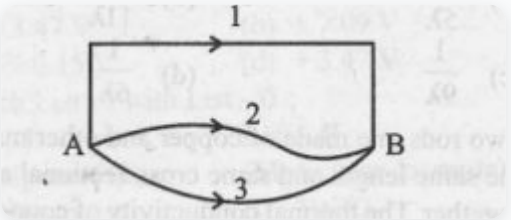
(C) 39 N

(D) 6 N

Question 30.

A gravitational field is present in a region and a mass is shifted from A to B through different paths as shown. If W_1, W_2 and W_3 represent the work done by the gravitational force along the respective paths, then:

[4 Marks]



(A) $W_1 > W_3 > W_2$

(B) $W_1 = W_2 = W_3$

(C) $W_1 > W_2 > W_3$

(D) $W_1 < W_2 < W_3$

Question 31.

A standard filament lamp consumes 100 W when connected to 200 V ac mains supply. The peak current through the bulb will be:

[4 Marks]

(A) 1.414 A

(B) 1 A

(C) 2 A

(D) 0.707 A

Question 32.

The terminal velocity of a copper ball of radius 5 mm falling through a tank of oil at room temperature is 10 cm s^{-1}. If the viscosity of oil at room temperature is 0.9 kg $m^{-1}s^{-1}$ the viscous drag force is:

[4 Marks]

(A) 8.48 × 10-3 N

(B) 4.23 × 10-3N

(C) 4.23 × 10-6 N

(D) 8.48 × 10-5N

Question 33.

In a gravitational field, the gravitational potential is given by V = -K/x (J/kg). The gravitational field intensity at point (2,0,3) m is:

[4 Marks]

(A) +K/2

(B) +K/4

(C) -K/4

(D) -K/2

Question 34. The percentage error in the measurement of g is (Given that $g = 4\pi^2L/T^2$, L = (10 ± 0.1) cm, T = (100 ± 1) s)

[4 Marks]

(A) 7%

(B) 2%

(C) 5%

(D) 3%

Question 35.

Two very long, straight, parallel conductors A and B carry current of 5 A and 10 A respectively and are at a distance of 10 cm from each other. The direction of current in two conductors is same. The force acting per unit length between two conductors is: ($\mu_0 = 4\pi \times 10^{-7}$ SI unit)

[4 Marks]

(A) 2×10^{-4} Nm-1 and is repulsive

(B) 1×10^{-4} Nm - 1 and is attractive

(C) 1×10^{-4} Nm-1 and is repulsive

(D) 2×10^{-4} Nm-1 and is attractive

Question 36.

The magnetic field on the axis of a circular loop of radius 100 cm carrying current I = $\sqrt{2}$ A at point 1 m away from the centre of the loop is given by:

[4 Marks]

(A) 6.28×10^{-7} T

(B) 3.14×10^{-4} T

(C) 3.14×10^{-7} T

(D) 6.28×10^{-4} T

Question 37.

At any instant, two elements X_1 and X_2 have same number of radioactive atoms. If the decay constant of X_1 and X_2 are 10λ and λ respectively, then the time when the ratio of their atoms becomes 1/e respectively will be :

[4 Marks]

(A) 1/(11λ)

(B) 1/5 λ

(C) 1/(9λ)

(D) 1/(6λ)

Question 38.

Two rods one made of copper and other made of steel of the same length and same cross sectional area are joined together. The thermal conductivity of copper and steel are 385 J s^{-1} K^{-1} m^{-1} and 50 J s^{-1} K^{-1} m^{-1} respectively. The free ends of copper and steel are held at 100°C and 0°C respectively. The temperature at the junction is, nearly:

[4 Marks]

(A) 88.5°C

(B) 73°C

(C) 50°C

(D) 12°C

Question 39.

The ratio of Coulomb's electrostatic force to the gravitational force between an electron and a proton separated by some distance is 2.4×10^{39}. The ratio of the proportionality constant, $K = 1/(4\pi\varepsilon_0)$ to the Gravitational constant G is nearly (Given that the charge of the proton and electron each = 1.6×10^{-19} C, the mass of the electron = 9.11×10^{-31} kg, the mass of the proton = 1.67×10^{-27} kg):

[4 Marks]

(A) 10^{30}

(B) 10^{40}

(C) 10^{20}

(D) 10

Question 40.

An astronomical refracting telescope is being used by an observer to observe planets in normal adjustment. The focal lengths of the objective and eye piece used in the construction of the telescope

are 20 m and 2 cm respectively. Consider the following statements about the telescope:

(A) The distance between the objective and eyepiece is 20.02 m

(B) The magnification of the telescope is (-) 1000

(C) The image of the planet is erect and diminished

(D) The aperture of eye piece is smaller than that of objective. The correct statements are:

[4 Marks]

(A) (A), (B) and (d)

(B) (A), (B) and (C)

(C) (C), (D) and (A)

(D) (B), (C) and (d)

Question 41.

The magnetic flux linked to a circular coil of radius R is $\phi = 2t^3 + 4t^2 + 2t + 5$ Wb. The magnitude of induced emf in the coil at t = 5 is:

[4 Marks]

(A) 197 V

(B) 150 V

(C) 192 V

(D) 108 V

Question 42.

Three vessels of equal capacity have gases at the same temperature and pressure. The first vessel contains helium (monoatomic), the second contains fluorine (diatomic) and the third contains sulfur hexafluoride (polyatomic). The correct statement, among the following is:

[4 Marks]

(A) All vessels contain unequal number of respective molecules

(B) The root mean square speed of helium is the largest

(C) The root mean square speed of molecules is same in all three cases

(D) The root mean square speed of sulfur hexafluoride is the largest

Question 43.

An organ pipe filled with a gas at 27°C resonates at 400 Hz in its fundamental mode. If it is filled with the same gas at 90°C, the resonance frequency at the same mode will be:

[4 Marks]

(A) 484 Hz

(B) 512 Hz

(C) 440 Hz

(D) 420 Hz

Question 44. The collector current in a common base amplifier using n-p-n transistor is 24 mA. If 80% of the electrons released by the emitter is accepted by the collector, then the base current is numerically:

[4 Marks]

(A) 3 mA and entering the base

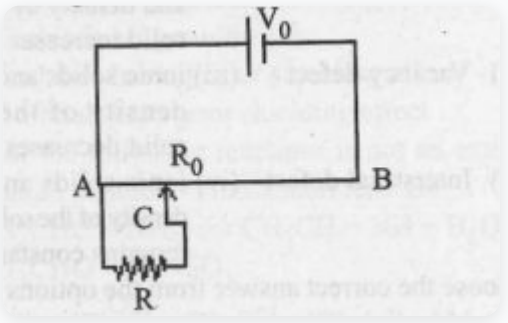
(B) 6 mA and leaving the base

(C) 3 mA and leaving the base

(D) 6 mA and entering the base

Question 45. The sliding contact C is at one fourth of the length of the potentiometer wire (AB) from A as shown in the circuit diagram. If the resistance of the wire AB is R_0 then the potential drop (V) across the resistor R is

[4 Marks]



(A) $2V_0R / (4R_0 + R)$

(B) $4V_0R / (3R_0 + 16R)$

(C) $4V_0R / (3R_0 + R)$

(D) $2V_0R / (2R_0 + 3R)$

Question 46.

Match List - I with List - II: Choose the correct answer from the options given below:

[4 Marks]

List - I (quantum number)	List - II (orbital)
(A) $n = 2, \ell = 1$	(i) 2 s
(B) $n = 3, \ell = 2$	(ii) 3 s
(C) $n = 3, \ell = 0$	(iii) 2 p
(D) $n = 2, \ell = 0$	(iv) 3 d

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

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

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

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

Question 47. If the screen is moved away from the plane of the slits in a Young's double slit experiment, then the :

[4 Marks]

(A) linear separation of the fringes decreases

(B) angular separation of the fringes increases

(C) angular separation of the fringes decreases

(D) linear separation of the fringes increases

Question 48.

The density of the solution is 2.15 g mL^{-1}, then mass of 2.5 mL solution in correct significant figures is:

[4 Marks]

(A) 5375×10^{-3} g

(B) 5.4 g

(C) 5.38 g

(D) 53.75 g

Question 49.

Two half cell reactions are given below.

$Co^{3+} + e^- \rightarrow Co^{2+}$, $E^\circ_{(Co^{2+}/Co^{3+})} = -1.81$ v

$2Al^{3+} + 6e^- \rightarrow 2Al(s)$, $E^\circ_{(Al/Al^{3+})} = +1.66$ V

The standard EMF of a cell with feasible redox reaction will be:

[4 Marks]

(A) -3.47 V

(B) +7.09 V

(C) +3.47 V

(D) +0.15 V

Question 50.

Match List - I with List - II:

Choose the correct answer from the options given below:

[4 Marks]

List - I (Compounds)	List - II (Molecular formula)
(A) Borax	(i) $NaBO_2$
(B) Kernite	(ii) $Na_2B_4O_7 \cdot 4H_2O$
(C) Orthoboric acid	(iii) H_3BO_3
(D) Borax bead	(iv) $Na_2B_4O_7 \cdot 10H_2O$

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

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

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

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

Question 51.

The correct order of first ionization enthalpy for the given four elements is:

[4 Marks]

(A) C < N < F < O

(B) C < N < O < F

(C) C < F < N < O

(D) C < O < N < F

Question 52.

Match List - I with List - II:

Choose the correct answer from the options given below:

[4 Marks]

	List - I (Defects)		List - II (shown by)
(A)	Frenkel defect	(i)	non-ionic solids and density of the solid decreases
(B)	Schottky defect	(ii)	non-ionic solids and density of the solid increases
(C)	Vacancy defect	(iii)	ionic solids and density of the solid decreases
(D)	Interstitial defect	(iv)	ionic solids and density of the solid remains constant

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

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

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

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

Question 53.

Predict the order of reactivity of the following four isomers towards S_N2 reaction:

(I) $CH_3CH_2CH_2CH_2Cl$

(II) $CH_3CH_2CH(Cl)CH_3$

(III) $(CH_3)_2CHCH_2Cl$

(IV) $(CH_3)_3CCl$

[4 Marks]

(A) (IV) > (II) > (III) > (I)

(B) (I) > (III) > (II) > (IV)

(C) (IV) > (III) > (II) > (I)

(D) (I) > (II) > (III) > (IV)

Question 54.

Match List - I with List - II:

correct answer from the options given below:

[4 Marks]

List - I (molecules)	List - II (shape)
(A) NH_3	(i) square pyramidal
(B) ClF_3	(ii) trigonal bipyramidal
(C) PCl_5	(iii) trigonal pyramidal
(D) BrF_5	(iv) T-shape

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

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

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

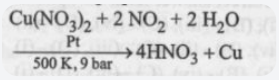
(D) (A)-(iii), (B)-(iv), (C)-(ii), (D)-(i)

Question 55.

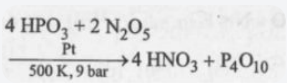
Which of the following reactions is a part of the large scale industrial preparation of nitric acid?

[4 Marks]

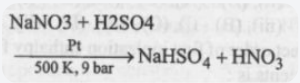
(A)



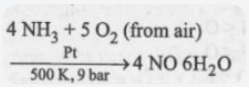
(B)



(C)



(D)



Question 56.

Match List - I with List - II:

Choose the correct answer from the options given below:

[4 Marks]

	List - I		List - II
(A)	Sodium laurylsulphate	(i)	Toilet soap
(B)	Cetyltrimethyl ammonium chloride	(ii)	Non-ionic detergent
(C)	Sodium stearate	(iii)	Anionic detergent
(D)	Polyethyleneglycyl stearate	(iv)	Cationic detergent

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

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

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

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

Question 57. Which among the following is a thermoplastic polymer?

[4 Marks]

(A) Melamine polymer

(B) Bakelite

(C) Polythene

(D) Urea-formaldehyde resin

Question 58.

[4 Marks]

$$Na_2B_4O_7 \xrightarrow{heat} X + NaBO_2$$

in the above reaction the product "X" is :

(A) B_2O_3

(B) $Na_2B_2O_5$

(C) H_3BO_3

(D) NaB_3O_5

Question 59. One mole of an ideal gas at 300 K is expanded isothermally from 1 L to 10 L volume. ΔU for this process is: (Use R = 8.314 J K^{-1} mol^{-1})

[4 Marks]

(A) 0 J

(B) 1260 J

(C) 2520 J

(D) 5040 J

Question 60.

Match List - I with List - II:

Choose the correct answer from the options given below:

[4 Marks]

	List - I (Complexes)		List - II (Types)
(A)	$[Co(NH_3)_5NO_2]Cl_2$ and $[Co(NH_3)_5ONO]Cl_2$	(i)	ionisation isomerism
(B)	$[Cr(NH_3)_6][Co(CN)_6]$ and $[Cr(CN)_6][Co(NH_3)_6]$	(ii)	coordination isomerism
(C)	$[Co(NH_{3)5}(SO_4)]Br$ and $[Co(NH_3)_5Br]SO_4$	(iii)	linkage isomerism
(D)	$[Cr(H_2O)_6]CI_3$ and $[Cr(H_2O)_5Cl]Cl_2 \cdot H_2O$	(iv)	solvate isomerism

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

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

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

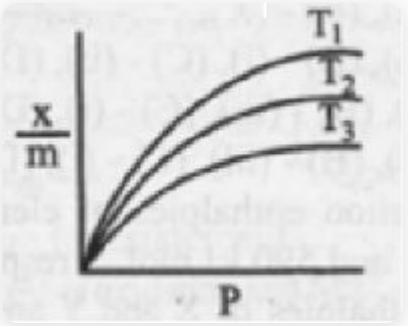
(D) (A)-(iii), (B)-(i), (C)-(ii), (D)-(iv)

Question 61.

Shown below are adsorption isotherms for a gas 'X' at temperatures T_1, T_2 and T_3: p and x/m represent pressure and extend of adsorption, respectively.

The correct order of temperatures for the given adsorption is:

[4 Marks]



(A) $T_1 > T_2 > T_3$

(B) $T_1 = T_2 > T_3$

(C) $T_1 = T_2 = T_3$

(D) $T_3 > T_2 > T_1$

Question 62.

0.01 M acetic acid solution is 1% ionised, then pH of this acetic acid solution is:

[4 Marks]

(A) 2

(B) 3

(C) 1

(D) 4

Question 63.

The half life of a first order reaction is 2000 years. If the concentration after 8000 years is 0.02 M, then the initial concentration was:

[4 Marks]

(A) 0.08 M

(B) 0.32 M

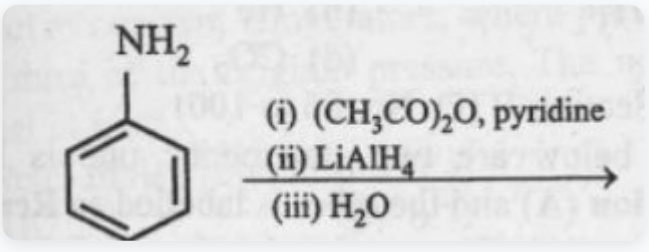
(C) 0.04 M

(D) 0.16 M

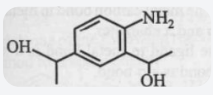
Question 64.

The product formed from the following reaction sequence is:

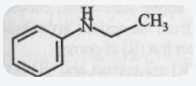
[4 Marks]



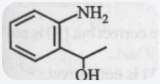
(A)



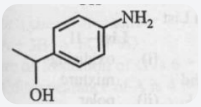
(B)



(C)



(D)



Question 65.

The decreasing order of boiling points of the following alkanes is:

(A) heptane

(B) butane

(C) 2-methylbutane

(D) 2-methylpropane

(E) hexane

[4 Marks]

(A) (A) > (C) > (E) > (D) > (B)

(B) (C) > (D) > (A) > (E) > (B)

(C) (A) > (E) > (B) > (C) > (D)

(D) (A) > (E) > (C) > (B) > (D)

Question 66. The element used for welding metals with high melting points is:

[4 Marks]

(A) He

(B) Cl_2

(C) Ne

(D) H_2

Question 67.

Decrease in size from left to right in actinoid series is greater and gradual than that in lanthanoid series due to :

[4 Marks]

(A) 5f orbitals have poor shielding effect

(B) 4f orbitals have greater shielding effect

(C) 4f orbitals are penultimate

(D) 5f orbitals have greater shielding effect

Question 68. $CaCl_2$ and $Ca(OCl)_2$ are components of:

[4 Marks]

(A) lime water

(B) gypsum

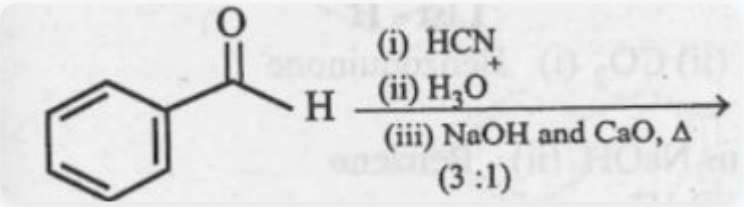
(C) Portland cement

(D) bleaching powder

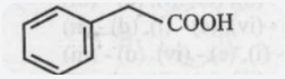
Question 69.

The product formed from the following reaction sequence is:

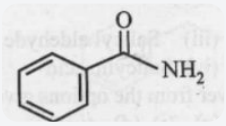
[4 Marks]



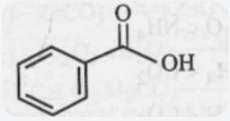
(A)



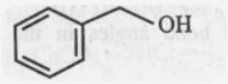
(B)



(C)



(D)



Question 70.

Which of the following reactions is a decomposition redox reaction?

[4 Marks]

(A) $Cl_2(g) + 2OH^-(aq) \rightarrow ClO^-(aq) + Cl^-(aq) + 4\ H_2O(l)$

(B) $P_4(s) + 3OH^-(aq) + 3H_2O(l) \rightarrow PH_3(g) + 3H_2PO_2^-(aq)$

(C) $2Pb(NO_3)_2(s) \rightarrow 2PbO(s) + 4NO_2(g) + O_2(g)$

(D) $N_2(g) + O_2(g) \rightarrow 2NO(g)$

Question 71.

What is the hybridization shown by C_1 and C_2 carbons, respectively in the given compound? OHC-CH=CH-CH_2COOCH_3

[4 Marks]

(A) sp^2 and sp^3

(B) sp^2 and sp^2

(C) sp^3 and sp^3

(D) sp^3 and sp^2

Question 72.

The correct order of bond angles in the following compounds/ species is:

[4 Marks]

(A) $CO_2 < NH_3 < H_2O < NH_4^+$

(B) $H_2O < NH_3 < NH_4^+ < CO_2$

(C) $H_2O < NH_4^+ < NH_3 < CO_2$

(D) $H_2O < NH_4^+ = NH_3 < CO_2$

Question 73.

Given below are two statements one is labelled as Assertion (A) and the other is labelled as Reason (R). Assertion (A): Chlorine is an electron withdrawing group but it is ortho, para directing in electrophilic aromatic substitution.

Reason (R): Inductive effect of chlorine destabilises the intermediate carbocation formed during the electrophilic substitution, however due to the more pronounced resonance effect, the halogen stabilises the carbocation at ortho and para positions.

In the light of the above statements, choose the most appropriate answer from the options given below:

[4 Marks]

(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).

Question 74.

Match the reagents (List - I) with the product (List - II) obtained from phenol.

Choose the correct answer from the options given below:

[4 Marks]

	List-I		List - II
(a)	(i) NaOH (ii) CO_2 (iii) H^+	(i)	Benzoquinone
(b)	(i) Aqueous NaOH + $CHCl_3$ (ii) H^+	(ii)	Benzene
(c)	Zn dust, Δ	(iii)	Salicyl aldehyde
(d)	$Na_2Cr_2O_7$, H_2SO_4	(iv)	Salicylic acid

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

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

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

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

Question 75.

Match List - I with List-II:

Choose the correct answer from the options given below:

[4 Marks]

List - I (Reaction)	List - II (Product formed)
(A) Gabriel synthesis	(i) Benzaldehyde
(B) Kolbe synthesis	(ii) Ethers
(C) Williamson synthesis	(iii) Primary amines
(D) Etard reaction	(iv) Salicylic acid

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

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

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

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

Question 76.

If first ionization enthalpies of elements X and Y are 419 kJ mol^{-1} and 590 kJ mol^{-1}, respectively and second ionization enthalpies of X and Y are 3069 kJ mol^{-1} and 1145 kJ mol^{-1}, respectively. Then correct statement is:

[4 Marks]

(A) Both X and Y are alkaline earth metals.

(B) X is an alkali metal and Y is an alkaline earth metal.

(C) X is an alkaline earth metal and Y is an alkali metal.

(D) Both X and Y are alkali metals.

Question 77.

The incorrect statement about denaturation of proteins is:

[4 Marks]

(A) A protein is formed from amino acids linked by peptide bonds.

(B) It results in loss of biological activity of proteins.

(C) Uncoiling of the helical structure takes place.

(D) It results due to change of temperature and/or pH.

Question 78.

Four gas cylinders containing He, N_2, CO_2 and NH_3 gases separately are gradually cooled from a temperature of 500 K. Which gas will liquify first? (Given T_c in K - He: 5.3, N_2: 126, CO_2: 304.1 and NH_3: 405.5)

[4 Marks]

(A) NH_3

(B) He

(C) N_2

(D) CO_2

Question 79.

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

Assertion (A): The metal carbon bond in metal carbonyls possesses both σ and π character.

Reason (R): The ligand to metal bond is a π bond and metal to ligand bond is a σ bond. In the light of the above statements, choose the most appropriate answer from the options given below:

[4 Marks]

(A) (A) is not correct but (R) is correct

(B) Both (A) and (R) are correct and (R) is the correct explanation of (A)

(C) Both (A) and (R) are correct but (R) is not the correct explanation of (A)

(D) (A) is correct but (R) is not correct

Question 80.

Match List - I with List - II:

Choose the correct answer from the options given below:

[4 Marks]

List – I		List – II	
(A)	Biochemical oxygen demand	(i)	oxidising mixture
(B)	Photochemical smog	(ii)	polar stratospheric cloud
(C)	Classical smog	(iii)	organic matter In water
(D)	Ozone layer depletion	(iv)	reducing mixture

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

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

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

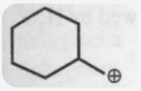
(D) (A)-(iv), (B)-(iii), (C)-(ii), (D)-(i)

Question 81.

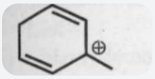
Which of the following is the most stable carbocation?

[4 Marks]

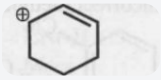
(A)



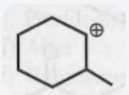
(B)



(C)



(D)



Question 82.

Given below are two statements:

Statement I: Cr^{2+} is oxidising and Mn^{3+} is reducing in nature.

Statement II: Sc^{3+} compounds are repelled by the applied magnetic field.

In the light of the above statements, choose the most appropriate answer from the options given below:

[4 Marks]

(A) Statement I is correct but Statement II is incorrect

(B) Both Statement I and Statement II are incorrect

(C) Statement I is incorrect but Statement II is correct

(D) Both Statement I and Statement II are correct

Question 83.

Kp for the following reaction is 3.0 at 1000 K. $CO_2(g) + C(s) \rightleftharpoons 2CO(g)$. What will be the value of Kc for the reaction at the same temperature? (Given R = 0.083 L bar K^{-1} mol^{-1})

[4 Marks]

(A) 3.6×10^{-2}

(B) 3.6×10^{-3}

(C) 0.36

(D) 3.6

Question 84.

A vessel contains 3.2 g of dioxygen gas at STP (273.15 K and 1 atm pressure). The gas is now transferred to another vessel at constant temperature, where pressure becomes one third of the original pressure. The volume of new vessel in L is: (Given - molar volume at STP is 22.4 L)

[4 Marks]

(A) 2.24

(B) 67.2

(C) 22.4

(D) 6.72

Question 85.

For a chemical reaction 4A + 3B → 6C + 9D, rate of formation of C is 6×10^{-2} mol L^{-1} s^{-1} and rate of disappearance of A is 4×10^{-2} mol L^{-1} s^{-1}. The rate of reaction and amount of B consumed in interval of 10 seconds, respectively will be:

[4 Marks]

(A) 10×10^{-2} mol L^{-1} s^{-1} and 10×10^{-2} mol L^{-1}

(B) 1×10^{-2} mol L^{-1} s^{-1} and 10×10^{-2} mol L^{-1}

(C) 1×10^{-2} mol L^{-1} s^{-1} and 30×10^{-2} mol L^{-1}

(D) 10×10^{-2} mol L^{-1} s^{-1} and 30×10^{-2} mol L^{-1}

Question 86.

Standard electrode potential for the cell with cell reaction $Zn(s) + Cu^{2+}(aq) \rightarrow Zn^{2+}(aq) + Cu(s)$ is 1.1 V. Calculate the standard Gibbs energy change for the cell reaction. (Given F = 96487 C mol^{-1})

[4 Marks]

(A) - 200.27 J mol^{-1}

(B) -200.27 kJ mol^{-1}

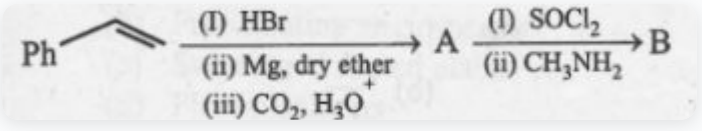
(C) -212.27 kJ mol^{-1}

(D) -212.27 J mol^{-1}

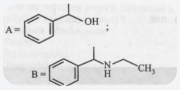
Question 87.

The products A and B in the following reaction sequence are:

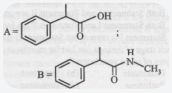
[4 Marks]



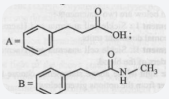
(A)



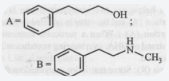
(B)



(C)



(D)



Question 88.

Which one of the following is not a calcination reaction?

[4 Marks]

(A) $CaCO_3 + 2HCl \xrightarrow{\Delta} CaCl_2 + H_2O + CO_2$

(B) $ZnCO_3 \xrightarrow{\Delta} ZnO + CO_2$

(C) $Fe_2O_3 \cdot xH_2O \xrightarrow{\Delta} Fe_2O_3 + xH_2O$

(D) $CaCO_3 \cdot MgCO_3 \xrightarrow{\Delta} CaO + MgO + 2CO_2$

Question 89.

The incorrect method for the synthesis of alkenes is:

[4 Marks]

(A) heating alkyl halides with alcoholic KOH

(B) treatment of alkynes with Na in liquid NH_3

(C) treating alkyl halides in aqueous KOH solution

(D) treating vicinal dihalides with Zn metal

Question 90.

When electromagnetic radiation of wavelength 300 nm falls on the surface of a metal, electrons are emitted with the kinetic energy of 1.68×10^5 J mol^{-1}. What is the minimum energy needed to remove an electron from the metal?

($h = 6.626 \times 10^{-34}$ Js, $c = 3 \times 10^8$ ms^{-1}, $NA = 6.022 \times 10^{23}$ mol^{-1})

[4 Marks]

(A) 2.31×10^5 J mol^{-1}

(B) 2.31×10^{6} J mol^{-1}

(C) 3.84×10^{4} J mol^{-1}

(D) 3.84×10^{-19} J mol^{-1}

Question 91.

What fraction of Fe exists as Fe(III) in $Fe_{0.96}O$?

(Consider $Fe_{0.96}O$ to be made up of Fe(II) and Fe(III) only)

[4 Marks]

(A) 1/20

(B) 1/12

(C) 1/16

(D) 0.08

Question 92.

Given below are two statements :

Statement I : Sickle cell anaemia and Haemophilia are autosomal dominant traits.

Statement II: Sickle cell anaemia and Haemophilia are disorders of the blood. In the light of the above statements, choose the correct answer from the options given below:

[4 Marks]

(A) Statement I is correct but Statement II is incorrect

(B) Both Statement I and Statement II are incorrect

(C) Both Statement I and Statement II are correct

(D) Statement I is incorrect but Statement II is correct

Question 93.

Which stage of meiosis can last for months or years in the oocytes of some vertebrates?

[4 Marks]

(A) Diakinesis

(B) Diplotene

(C) Pachytene

(D) Leptotene

Question 94.

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

Assertion (A) : When a particular restriction enzyme cuts strand of DNA, overhanging stretches or sticky ends are formed.

Reason (R): Some restriction enzymes cut the strand of DNA a little away from the centre of the palindromic site.

In the light of the above statements, choose the correct answer from the options given below

[4 Marks]

(A) (A)is correct but (R) is not correct

(B) Both (A) and (R) are correct and (R) is the correct explanation of (A)

(C) Both (A)and (R) are correct but (R) is not the correct explanation of (A)

(D) (A) is not correct but (R) is correct

Question 95.

Give the correct descending order of organisms with reference to their estimated number found in Amazon forest.

(A) Plants (B) Invertebrates (C) Fishes (D) Mammals (E) Birds

Choose the correct answer from the options given below

[4 Marks]

(A) (A)>(B)>(E)>(D)>(C)

(B) (A)>(C)>(D)>(B)>(E)

(C) (B)>(A)>(E)>(D)>(C)

(D) (B)>(A)>(C)>(E)>(D)

Question 96.

In lac operon, z gene codes for :

[4 Marks]

(A) B-galactosidase

(B) Transacetylase

(C) Repressor

(D) Permease

Question 97.

The 5-C compound formed during TCA cycle is:

[4 Marks]

(A) Oxalo succinic acid

(B) a-ketoglutaric acid

(C) Fumaric acid

(D) Succinic acid

Question 98.

In meiosis, crossing over and exchange of material between homologous chromosomes catalyzed by the enzyme:

[4 Marks]

(A) Phosphorylase

(B) Transferase

(C) Polymerase

(D) Recombinase

Question 99.

All successions irrespective of the habitat proceed to which type of climax community?

[4 Marks]

(A) Hydrophytic

(B) Xeric

(C) Mesic

(D) Edaphic

Question 100.

When a carrier protein facilitates the movement of two molecules across the membrane in same direction, it is called :

[4 Marks]

(A) Antiport

(B) Transport

(C) Symport

(D) Uniport

Question 101.

When one CO_2 molecule is fixed as one molecule of triose phosphate, which of the following photochemically made, high energy chemical intermediates are used in the reduction phase?

[4 Marks]

(A) 2 ATP + 1 NADPH

(B) 1 ATP + 2 NADPH

(C) 1 ATP + 1 NADPH

(D) 2 ATP + 2 NADPH

Question 102.

The ability of plants to follow different pathways in response to environment leading to formation of different kinds of structures is called :

[4 Marks]

(A) Redifferentiation

(B) Differentiation

(C) Development

(D) Plasticity

Question 103.

Match List-I with List-II :

Choose the correct answer from the options given below.

[5 Marks]

List – I	List - II
(A) Chlamydomonas	(i) Conidia
(B) Penicillium	(ii) Zoospores
(C) Hydra	(iii) Gemmules
(D) Sponge	(iv) Buds

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

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

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

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

Question 104.

The phenomenon by which the undividing parenchyma cells start to divide mitotically during plant tissue culture is called as :

[4 Marks]

(A) Secondary growth

(B) Differentiation

(C) Dedifferentiation

(D) Redifferentiation

Question 105.

Interfascicular cambium is present between

[5 Marks]

(A) Primary xylem and primary phloem

(B) Secondary xylem and secondary phloem

(C) Pericycle and endodermis Two vascular bundles

(D) Two vascular bundles

Question 106.

Which of the following growth regulators is an adenine derivative?

[4 Marks]

(A) Auxin

(B) Abscisic acid

(C) Ethylene

(D) Cytokinin

Question 107.

The chromosomal theory of inheritance was proposed by

[4 Marks]

(A) Gregor Mendel

(B) Sutton Boveri

(C) Robert Brown

(D) Thomas Morgan

Question 108.

Which of the following statements is not correct?

[4 Marks]

(A) The apical bud in rhizome always remains above the ground

(B) Rhizome is a condensed form of stem

(C) The rhizome is thick, prostrate and branched

(D) The rhizome is aerial with no distinct nodes and internodes

Question 109.

Match List I- with List-II :

Choose the correct answer from the options given below.

[4 Marks]

List-I	List-II
(A) Adenine	(i) Pigment
(B) Anthocyanin	(ii) Polysaccharide
(C) Chitin	(iii) Alkaloid
(D) Codeine	(iv) Purine

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

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

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

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

Question 110.

The residual persistent part which forms the perisperm in the seeds of beet is :

[4 Marks]

(A) Calyx

(B) Endosperm

(C) Integument

(D) Nucellus

Question 111.

The World Summit on sustainable development held in 2002 in Johannesburg, South Africa pledged for :

[4 Marks]

(A) A significant reduction in the current rate of biodiversity loss.

(B) Collection and preservation of seeds of different genetic strains of commercially important plants.

(C) Increase in agricultural production.

(D) Declaration of more biodiversity hotspots.

Question 112.

The type of tissue commonly found in the fruit wall of nuts is

[4 Marks]

(A) Collenchyma

(B) Parenchyma

(C) Sclereid

(D) Sclerenchyma

Question 113.

The pioneer species in a hydrarch succession are :

[4 Marks]

(A) Submerged rooted plants

(B) Phytoplanktons

(C) Free-floating angiosperms

(D) Filamentous algae

Question 114.

Which of the following protects nitrogenase inside the root nodule of a leguminous plant?

[4 Marks]

(A) leg haemoglobin

(B) Catalase

(C) Transaminase

(D) Glutamate dehydrogenase

Question 115.

Given below are two statements .

Statement I : DNA polymerases catalyses polymerisation only in one direction, that is 5' → 3'

Statement II : During replication of DNA, on one strand the replication is continuous while on the other strand it is discontinuous. In the light of the above statements, choose the correct answer from the

options given below

[4 Marks]

(A) Both Statement I and Statement II are incorrect

(B) Statement I is incorrect but Statement II is correct

(C) Statement I is correct but Statement II is incorrect

(D) Both Statement I and Statement II are correct

Question 116.

The species that come to appear in bare area are called

[4 Marks]

(A) Competitive species

(B) Species of seral community

(C) Invasive species

(D) Pioneer species

Question 117.

Initiation of lateral roots and vascular cambium during secondary growth takes place in cells of

[4 Marks]

(A) Endodermis

(B) Cortex

(C) Epiblema

(D) Pericycle

Question 118.

Match List - I with List - II

Choose the correct answer from the options given below.

[4 Marks]

List - I	List - II
(A) In lac operon i gene codes for	(i) transacetylase
(B) In lac operon x z gen codes for	(ii) permease
(C) In lac operon y gene codes for	(iii) b-galactosidase
(D) In lac operon a gene for	(iv) Repressor codes

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

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

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

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

Question 119.

To ensure that only the desired pollens fall on the stigma in artifical hybridization process

(A) the female flower buds of plant producing unisexual flowers need not be bagged

(B) there is no need to emasculate unisexual flowers of selected female parent

(C) emasculated flowers are to be bagged immediately after cross pollination

(D) emasculated flowers are to be bagged after removal of anthers bisexual flowers, showing protogyny are never selected for cross

Choose the correct answer from the options given below:

[4 Marks]

(A) (B), (C) and (D) only

(B) (A), (D) and (E) only

(C) (A), (B) and (C) only

(D) (B), (C) and (E) only

Question 120.

The ascent of xylem sap in plants is mainly accomplished by the:

[4 Marks]

(A) size of the stomatal aperture

(B) distribution of stomata on the upper and lower epidermis

(C) cohesion and adhesion between water molecules

(D) root pressure

Question 121.

Match List - I with List - IT :

Choose the correct answer from the options given below

[4 Marks]

List - I	List - II
(A) Imbricate	(i) Calotropis
(B) Valvate	(ii) Cassia
(C) Vexillary	(iii) Cotton
(D) Twisted	(iv) Bean

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

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

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

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

Question 122.

The number of time(s) decarboxylation of isocitrate occurs during single TCA cycle is:

[5 Marks]

(A) Four

(B) Three

(C) One

(D) Two

Question 123.

Match List - I with List - II:

Choose the correct answer from the options given below:

[4 Marks]

List –I	List –II
(A) Porins	(i) Pink coloured nodules
(B) leg haemoglobin	(ii) Lumen of thylakoid
(C) H+accumulation	(iii) Amphibolic pathway
(D) Respiration	(iv) Huge pores in outer membrane of mitochondria

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

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

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

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

Question 124.

Separation of DNA fragments is done by a technique known as

[4 Marks]

(A) Gel electrophoresis

(B) Southern blotting

(C) Polymerase Chain Reaction

(D) Recombinant technology

Question 125.

In general the egg apparatus of embryo sac in angiosperm consists of

[4 Marks]

(A) One egg cell, two synergids, two antipodal cells, two Polar nuclei

(B) One egg cell, three synergids, two antipodal cells, two Polar nuclei

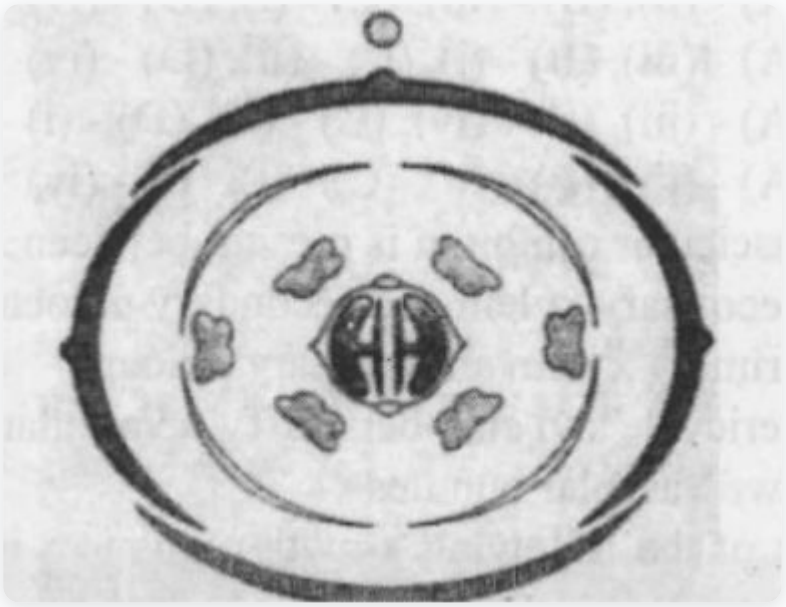
(C) One egg cell, two synergids, three antipodal cells, two Polar nuclei

(D) One egg cell, two synergids, two antipodal cells, three Polar nuclei

Question 126.

The Floral Diagram represents which one of the following families

[4 Marks]



(A) Fabaceae

(B) Brassicaceae

(C) Solanaceae

(D) Liliaceae

Question 127.

Primary proteins are also called as polypeptides because :

[4 Marks]

(A) They can assume many conformations

(B) They are linear chains

(C) They are polymers of peptide monomers

(D) Successive amino acids are joined by peptide bonds

Question 128.

Match List-I with List-II :

Choose the correct answer from the options given below:

[3 Marks]

List-I	List-II
(A) Bacteriophage ϕX174	(i) 48502 base pairs
(B) Bacteriophage Lambda	(ii) 5386 nucleotides
(C) Escherichia coli Base pairs	(iii) 3.3 × 109
(D) Haploid content Of human DNA	(iv) 4.6 × 106 base pairs

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

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

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

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

Question 129.

Which type of substance would face difficulty to pass through the cell membrane?

[4 Marks]

(A) Substance with hydrophobic moiety

(B) All substance irrespective of hydrophobic and hydrophilic moiety

(C) Substance with hydrophilic moiety

(D) Substance soluble in lipids

Question 130.

What is the expected percentage of F2 progeny with yellow and inflated pod in dihybrid cross experiment involving pea plants with green coloured, inflated pod and yellow coloured constricted pod?

[4 Marks]

(A) 9%

(B) 100%

(C) 56.25%

(D) 18.75%

Question 131.

Match List I with List - II:

Choose the correct answer from the options given below:

[3 Marks]

List-I	List-II
(A) Carbon dissolved	(i) 55 billion tons
(B) Annual fixation of Carbon through Photosynthesis	(ii) 71%
(C) PAR captured by Plants	(iii) 4 × 103 kg
(D) Productivity of oceans	(iv) 2 to 10%

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

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

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

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

Question 132.

If a female individual is with small round head, furrowed tongue, partially open mouth and broad palm with characteristic palm crease. Also the physical, psychomotor and mental development is retarded. The karyotype analysis of such an individual will show:

[4 Marks]

(A) 47 chromosomes with XXY sex chromosomes

(B) Trisomy of chromosome 21

(C) 45 chromosomes with XO sex chromosomes

(D) 47 Chromosomes with XYY sex chromosomes

Question 133.

Read the following statements and identify the characters related to the alga shown in the diagram

(A) It is a member of Chlorophyceae

(B) Food is stored in the form of starch

(C) It is a monoecious plant showing oogonium and antheridium

(D) Food is stored in the form of laminarin or mannitol

(E) It shows dominance of pigments Chlorophyll a, c and Fucoxanthin

Choose the correct answer from the options given below:

[4 Marks]



(A) (A) and (B) only

(B) (C), (D) and (E) only

(C) (A), (B) and (C) only

(D) (A), (C) and (D) only

Question 134.

The enzyme (a) is needed for isolating genetic material from plant cells and enzyme (b) for isolating genetic material from fungus. Choose the correct pair of options from the following:

[4 Marks]

(A) (a) Cellulase (b) Lipase

(B) (a) Chitinase (b) Lipase

(C) (a) Cellulase (b) Protease

(D) (a) Cellulase (b) Chitinase

Question 135.

Identify the correct sequence of events during Prophase I of meiosis: (A) Synapsis of homologous chromosomes (B) Chromosomes become gradually visible under microscope (C) Crossing over between non-sister chromatids of homologous chromosomes (D) Terminalisation of chiasmata (E) Dissolution of synaptonemal complex Choose the correct answer from the options given below:

[4 Marks]

(A) (B), (A), (C), (E), (D)

(B) (A), (B), (C), (D), (E)

(C) (B), (C), (D), (E), (A)

(D) (A), (C), (D), (E), (B)

Question 136.

Which of the following pair represents free living nitrogen fixing aerobic bacteria?

[4 Marks]

(A) Azotobacter and Beijernickia

(B) Anabaena and Rhodospirillum

(C) Rhizobium and Beijernickia

(D) Pseudomonas and Thiobacillus

Question 137.

Frugivorous birds are found in large numbers in tropical forests mainly because of:

[4 Marks]

(A) availability of fruits throughout the year

(B) lack of niche specialisation

(C) temperature conducive for their breeding

(D) higher annual rainfall

Question 138.

Identify the correct statements regarding chemiosmotic hypothesis: (A) Splitting of the water molecule takes place on the inner side of the membrane. (B) Protons accumulate within the lumen of the thylakoids. (C) Primary acceptor of electron transfers the electrons to an electron carrier. (D) NADP reductase enzyme is located on the stroma side of the membrane. (E) Protons increase in number in stroma. Choose the correct answer from the options given below:

[4 Marks]

(A) (B), (C) and (E)

(B) (A), (B) and (D)

(C) (B), (C) and (D)

(D) (A), (B) and (E)

Question 139.

Match List-I with List-II:

Choose the correct answer from the options given below:

[4 Marks]

List-I		List-II	
(A)	Gene gun	(i)	Replacement of a faulty gene normal healthvelthy gene
(B)	Gene therapy	(ii)	Used for transfer of Gene
(C)	Gene cloning	(iii)	Total DNA in the cells of an organism
(D)	Genome	(iv)	To obtain identical copies of aparticular DNA molecule

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

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

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

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

Question 140.

Which of the following can be expected if scientists succeed in introducing apomictic gene varieties of crops?

[4 Marks]

(A) Seeds of hybrid plants will show longer dormancy

(B) Polyembryony will be seen and each seed will produce many plantlets

(C) There will be segregation of the desired characters only in the progeny

(D) Farmers can keep on using the seeds produced by the hybrids to raise new crop year after year

Question 141.

Which of the following animals has three chambered heart?

[4 Marks]

(A) Chelone

(B) Scoliodon

(C) Hippocampus

(D) Pteropus

Question 142.

Which of the following types of epithelium is present in the bronchioles and Fallopian tubes?

[4 Marks]

(A) Stratified squamous epithelium

(B) Simple squamous epithelium

(C) Simple columnar epithelium

(D) Ciliated epithelium

Question 143.

Which of the following is not an Intra Uterine Device?

[4 Marks]

(A) Progestasert

(B) Progestogens

(C) Multiload 375

(D) Lippes loop

Question 144.

Match List - I with List - II:

Choose the correct answer from the options given below:

[4 Marks]

	List-I		List-II
(A)	Chlamydomonas	(i)	Moss
(B)	Cycas	(ii)	Pteridophyte
(C)	Selaginella	(iii)	Alga
(D)	Sphagnum	(iv)	Gymnosperm

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

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

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

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

Question 145.

Which of the following reasons is mainly responsible for graft rejection in transplantation of organs?

[4 Marks]

(A) Auto-immune response

(B) Inability of recipient to differentiate between 'self' and 'non-self' tissues/cells

(C) Humoral immune response only

(D) Cell-mediated response

Question 146.

Bivalent or Tetrad formation is a characteristic feature observed during:

[4 Marks]

(A) Synaptonemal complex in Pachytene stage

(B) Chiasmata in Diplotene stage

(C) Chiasmata in zygotene stage

(D) Synaptonemal complex in zygotene stage

Question 147.

Given below are two statements: one is labelled as Assertion (A) and the other is labelled as Reason (R). Assertion (A): FSH which interacts with membrane bound receptors does not enter the target cell. Reason (R): Binding of FSH to its receptors generates second messenger (cyclic AMP) for its biochemical and physiological responses. In the light of the above statements, choose the most appropriate answer from the options given below:

[4 Marks]

(A) (A) is correct but (R) is not correct

(B) (A) is not correct but (R) is correct

(C) Both (A) and (R) are correct but (R) is not the correct explanation of (A)

(D) Both (A) and (R) are correct and (R) is the correct explanation of (A)

Question 148.

Choose the correct statement about a muscular tissue:

[4 Marks]

(A) Intercalated discs allow the cardiac muscle cells to contract as a unit.

(B) The walls of blood vessels are made up of columnar epithelium.

(C) Smooth muscles are multinucleated and involuntary.

(D) Skeletal muscle fibres are uninucleated and found in parallel bundles.

Question 149.

Identify the region of human brain which has pneumotaxic centre that alters respiratory rate by reducing the duration of inspiration.

[4 Marks]

(A) Pons

(B) Medulla

(C) Cerebrum

(D) Thalamus

Question 150.

The amount of biomass or organic matter produced per unit area over a time period by plants during photosynthesis is called:

[4 Marks]

(A) Secondary production

(B) Gross primary production

(C) Net primary production

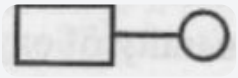
(D) Primary production

Question 151.

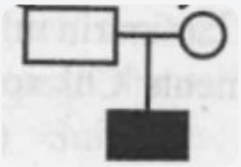
Select the incorrect match regarding the symbols used in Pedigree analysis

[4 Marks]

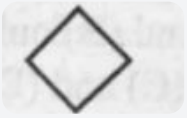
(A) Consanguineous mating



(B) Parent with male child affected with disease



(C) Sex unspecified



(D) Affected individual



Question 152.

If the pH in lysosomes is increased to alkaline, what will be the outcome?

[4 Marks]

(A) Hydrolytic enzymes will become inactive

(B) Hydrolytic enzymes will function more efficiently

(C) Lysosomal enzymes will be released into the cytoplasm

(D) Lysosomal enzymes will be more active

Question 153.

According to the sliding filament theory:

[4 Marks]

(A) I-band increases in length.

(B) Length of A-band does not change.

(C) Actin and myosin filaments slide over each other to increase the length of the sarcomere.

(D) The actin filaments slide away from A-band resulting in shortening of sarcomere.

Question 154.

Pathogenic bacteria gain resistance to antibiotics due to changes in their:

[4 Marks]

(A) Nucleoid

(B) Cosmids

(C) Nucleus

(D) Plasmids

Question 155.

Panspermia, an idea that is still a favourite for some astronomers, means:

[4 Marks]

(A) Creation of life from chemicals

(B) Origin of sperm in human testes

(C) Transfer of spores as unit of life from other planets to Earth

(D) Creation of life from dead and decaying matter

Question 156.

Why CNG is considered better fuel than diesel?

(A) It can not be adulterated.

(B) It takes less time to fill the fuel tank.

(C) It burns more efficiently.

(D) It is cheaper.

(E) It is less inflammable.

Choose the most appropriate answer from the options given below:

[4 Marks]

(A) (A), (B), (C), (E) only

(B) (C), (D), (E) only

(C) (A), (C), (D) only

(D) (A), (B), (D), (E) only

Question 157.

Which of the following statements are correct with respect to vital capacity?

(A) It includes ERV, TV and IRV.

(B) Total volume of air a person can inspire after a normal expiration.

(C) The maximum volume of air a person can breathe in after forced expiration.

(D) It includes ERV, RV and IRV.

(E) The maximum volume of air a person can breathe out after a forced inspiration.

Choose the most appropriate answer from the options given below:

[4 Marks]

(A) (A), (C) and (D)

(B) (A) and (E)

(C) (A), (C) and (E)

(D) (B), (D) and (E)

Question 158.

How many secondary spermatocytes are required to form 400 million spermatozoa?

[4 Marks]

(A) 50 million

(B) 400 million

(C) 200 million

(D) 100 million

Question 159.

Mad cow disease in cattle and Cr Jacob disease in humans are due to infection by.....

[4 Marks]

(A) Virus

(B) Bacterium

(C) Prion

(D) Viroid

Question 160.

Arrange the components of mammary gland (from proximal to distal):

(A) Mammary duct

(B) Lactiferous duct

(C) Alveoli

(D) Mammary ampulla

(E) Mammary tubules

Choose the most appropriate answer from the options given below:

[4 Marks]

(A) (C) → (A) → (D) → (E) → (B)

(B) (E) → (C) → (D) → (B) → (A)

(C) (C) → (E) → (A) → (D) → (B)

(D) (B) → (C) → (E) → (D) → (A)

Question 161.

Western Ghats have a large number of plants and animal species that are not found anywhere else. Which of the following term is used to notify such species?

[4 Marks]

(A) Threatened species

(B) Vulnerable species

(C) Endemic species

(D) Keystone species

Question 162.

Match List I with List II

Choose the correct answer from the options given below:

[4 Marks]

List - I	List - II
(A) Crop	(i) grinding the food particles
(B) Proventriculus	(ii) secretion of digestive juice
(C) Hepatic caecae	(iii) removal of nitrogenous waste
(D) Malpighian tubules	(iv) storage of food

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

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

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

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

Question 163.

Two butterfly species are competing for the same nectar of a flower in a garden. To survive and coexist together, they may avoid competition in the same garden by:

[4 Marks]

(A) predating on each other

(B) choosing different foraging patterns

(C) increasing time spent on attacking each other

(D) feeding at the same time

Question 164.

Role of enamel is to:

[4 Marks]

(A) Form bolus

(B) Masticate the food

(C) Give basic shape to the teeth

(D) Connect crown of tooth with its root

Question 165.

Choose the incorrect enzymatic reaction.

[4 Marks]

(A) Lactose → (Lactase) Glucose + Galactose

(B) Sucrose → (Sucrase) Glucose + Fructose

(C) Dipeptides → (Dipeptidases) Amino acids

(D) Maltose → (Maltase) Glucose + Galactose

Question 166.

Given below are two statements one is labelled as Assertion

(A) and the other is labelled as Reason (R). Assertion

(A): During pregnancy the level of thyroxine is increased in the maternal blood.

Reason (R): Pregnancy is characterised by metabolic changes in the mother.

In the light of the above statements, choose the most appropriate answer from the options given below:

[4 Marks]

(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)

Question 167.

Choose the correct statements:

(A) Bones support and protect softer tissues and organs

(B) Weight bearing function is served by limb bones

(C) Ligament is the site of production of blood

(D) Adipose tissue is specialised to store fats.

(E) Tendons attach one bone to another.

Choose the most appropriate answer from the options given below:

[4 Marks]

(A) (A), (B) and (E) only

(B) (A), (B) and (D) only

(C) (B), (C) and (E) only

(D) (A), (C) and (D) only

Question 168.

If DNA contained sulfur instead of phosphorus and proteins contained phosphorus instead of sulfur, what would have been the outcome of Hershey and Chase experiment?

[4 Marks]

(A) No radioactive sulfur in bacterial cells

(B) Radioactive phosphorus in bacterial cells

(C) Radioactive sulfur in bacterial cells

(D) Both radioactive sulfur and phosphorus in bacterial cells

Question 169.

Select the incorrect statements with respect to Cyclostomes.

(A) They lack scales and paired fins.

(B) They have circular mouth with jaws.

(C) They bear 6-15 pairs of gills.

(D) They migrate to deep sea for spawning.

Choose the most appropriate answer from the options given below:

[4 Marks]

(A) (B) and (D) only

(B) (A) and (D) only

(C) (B) and (C) only

(D) (A) and (B) only

Question 170.

A unique vascular connection between the digestive tract and liver is called:

[4 Marks]

(A) Renal portal system

(B) Hepato-cystic system

(C) Hepato-pancreatic system

(D) Hepatic portal system

Question 171.

Milk of transgenic 'Cow Rosie' was nutritionally more balanced product for human babies than natural cow milk because it contained:

[4 Marks]

(A) Human alpha-lactalbumin

(B) Human insulin-like growth factor

(C) Human enzyme Adenosine Deaminase (ADA)

(D) Human protein a-1-antitrypsin

Question 172.

Gout is a type of disorder which leads to:

[4 Marks]

(A) Weakening of bones due to low calcium level

(B) Weakening of bones due to decreased bone mass

(C) Inflammation of joints due to cartilage degeneration

(D) Inflammation of joints due to accumulation of uric acid crystals

Question 173.

Which of the following methods is not commonly used for introducing foreign DNA into the plant cell?

[4 Marks]

(A) Agrobacterium mediated transformation

(B) Bacteriophages

(C) Gene gun

(D) 'Disarmed pathogen' vectors

Question 174.

Given below are two statements:

Statement I: Amino acids have a property of ionizable nature of $-NH_2$ and -COOH groups, hence have different structures at different pH.

Statement II: Amino acids can exist as Zwitterionic form at acidic and basic pH. In the light of the above statements, choose the most appropriate answer from the options given below:

[4 Marks]

(A) Statement I is incorrect but Statement II is correct

(B) Both Statement I and Statement II are correct

(C) Statement I is correct but Statement II is incorrect

(D) Both Statement I and Statement II are incorrect

Question 175.

Given below are two statements one is labelled as Assertion (A) and the other is labelled as Reason (R). Assertion (A): Spirulina is a microbe that can be used for reducing environmental pollution.

Reason (R): Spirulina is a rich source of protein, carbohydrates, fats, minerals and vitamins.

In the light of the above statements, choose the most appropriate answer from the options given below:

[4 Marks]

(A) Both (A) and (R) are correct and (R) is the correct explanation of (A)

(B) (A) is not correct but (R) is correct

(C) (A) is correct but (R) is not correct

(D) Both (A) and (R) are correct but (R) is not the correct explanation of (A)

Question 176.

With respect to metaphase, which of the following statements is incorrect?

[4 Marks]

(A) Metaphase chromosomes are made up of four sister chromatids held together by centromere

(B) Complete disintegration of nuclear envelope takes place

(C) Chromosomes lie at the equator of the cell

(D) Chromosomes are highly condensed

Question 177.

Against the codon 5' UAC 3', what would be the sequence of anticodon on tRNA?

[4 Marks]

(A) 5' ATG 3'

(B) 5' AUG 3'

(C) 5' GTA 3'

(D) 5' GUA 3'

Question 178.

Arrange the following formed elements in the decreasing order of their abundance in blood in humans:
(A) Platelets

(B) Neutrophils

(C) Erythrocytes

(D) Eosinophils

(E) Monocytes

Choose the most appropriate answer from the options given below:

[4 Marks]

(A) (C), (A), (B), (E), (D)

(B) (C), (B), (A), (E), (D)

(C) (A), (C), (B), (D), (E)

(D) (D), (E), (B), (A), (C)

Question 179.

Which of the following are true about the taxonomical aid 'key'?

(A) Keys are based on the similarities and dissimilarities.

(B) Key is analytical in nature.

(C) Keys are based on the contrasting characters in pair called Couplet.

(D) Same key can be used for all taxonomic categories.

(E) Each statement in the key is called Lead.

Choose the most appropriate answer from the options given below:

[4 Marks]

(A) (A), (C), (D) and (E) only

(B) (A), (B) and (C) only

(C) (B), (C) and (D) only

(D) (A), (B), (C) and (E) only

Question 180.

A normal girl, whose mother is haemophilic marries a male with no ancestral history of haemophilia. What will be the possible phenotypes of the offsprings?

(a) Haemophilic son and haemophilic daughter.

(b) Haemophilic son and carrier daughter.

(c) Normal daughter and normal son.

(d) Normal son and haemophilic daughter.

Choose the most appropriate answer from the options given below:

[4 Marks]

(A) (b) and (c) only

(B) (a) and (b) only

(C) (a) and (d) only

(D) (b) and (d) only

Question 181.

In the enzyme which catalyses the breakdown of: $H_2O_2 \rightarrow H_2O + O_2$, the prosthetic group is:

[4 Marks]

(A) Haem

(B) Nicotinamide adenine dinucleotide

(C) Niacin

(D) Zinc

Question 182.

Select the incorrect statement with respect to inbreeding of animals.

[4 Marks]

(A) It is used for evolving pure lines in cattle.

(B) It decreases homozygosity.

(C) It exposes harmful recessive genes that are eliminated by selection.

(D) It helps in accumulation of superior genes and elimination of less desirable genes.

Question 183.

IUDs are small objects made up of plastic or copper that are inserted in the uterine cavity.

Which of the following statements are correct about IUDs?

(A) IUDs decrease phagocytosis of sperm within the uterus.

(B) The released copper ions suppress the sperm motility.

(C) IUDs do not make the cervix hostile to the sperm.

(D) IUDs suppress the fertilization capacity of sperm.

(E) The IUDs require surgical intervention for their insertion in the uterine cavity.

Choose the most appropriate answer from the options given below:

[4 Marks]

(A) (B) and (D) only

(B) (B) and (C) only

(C) (D) only

(D) (A), (D) and (E) only

Question 184.

Select the correct statement regarding mutation theory of evolution.

[4 Marks]

(A) This theory was proposed by Alfred Wallace

(B) Large differences due to mutations arise gradually in a population

(C) Single step large mutation is a cause of speciation

(D) Variations are small directional changes

Question 185.

Excretion in cockroach is performed by all, EXCEPT:

[4 Marks]

(A) Fat body

(B) Hepatic caeca

(C) Malpighian tubules

(D) Urecose glands

Question 186.

Select the correct statements.

(A) Angiotensin II activates the cortex of adrenal gland to release aldosterone.

(B) Aldosterone leads to increase in blood pressure.

(C) ANF acts as a check on renin-angiotensin mechanism.

(D) ADH causes vasodilation.

(E) Vasopressin is released from adenohypophysis.

Choose the most appropriate answer from the options given below:

[4 Marks]

(A) (A), (B) and (E) only

(B) (A), (B) and (C) only

(C) (C), (D) and (E) only

(D) (B), (C) and (D) only

Question 187.

If A and C make 30% and 20% of DNA, respectively, what will be the percentage composition of T and G?

[4 Marks]

(A) T: 20%, G: 30%

(B) T: 30%, G: 20%

(C) T: 30%, G: 30%

(D) T: 20%, G: 20%

Question 188.

Refer to the following statements for agarose-gel electrophoresis:

(A) Agarose is a natural polymer obtained from sea-weed.

(B) The separation of DNA molecules in agarose-gel electrophoresis depends on the size of DNA.

(C) The DNA migrates from negatively-charged electrode to the positively-charged electrode.

(D) The DNA migrates from positively-charged electrode to the negatively-charged electrode.

Choose the most appropriate answer from the options given below:

[4 Marks]

(A) (A), (B) and (C) only

(B) (A) and (B) only

(C) (A), (B) and (D) only

(D) (A), (B) and (D) only

Question 189.

Match List - I with List - II:

Choose the correct answer from the options given below:

[4 Marks]

List – I	List – 11
(A) Multipolar	(i) Somatic neural neuron system
(B) Bipolar neuron	(ii) Cerebral cortex
(C) Myelinated	(iii) Retina of Eye nerve fibre
(D) Unmyelinated	(iv) Spinal nerves nerve fibre

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

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

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

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

Question 190.

Match List - I with List II:

Choose the correct answer from the options given below:

[4 Marks]

List - I	List - 11
(A) Cellular barrier	(i) Interferons
(B) Cytokine barrier	(ii) Mucus
(C) Physical barrier	(iii) Neutrophils
(D) Physiological	(iv) HCI in gastric barrier juice

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

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

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

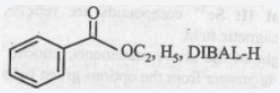
(D) (A)-(ii), (B)-(iii), (C)-(i), (D)-(iv)

Question 191.

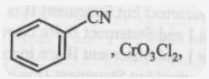
The incorrect method to synthesize benzaldehyde is:

[5 Marks]

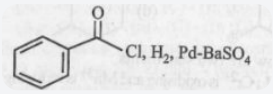
(A)



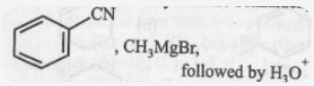
(B)



(C)



(D)

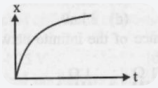


Question 192.

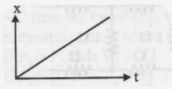
The position-time (x-t) graph for positive acceleration is

[4 Marks]

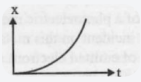
(A)



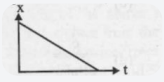
(B)



(C)



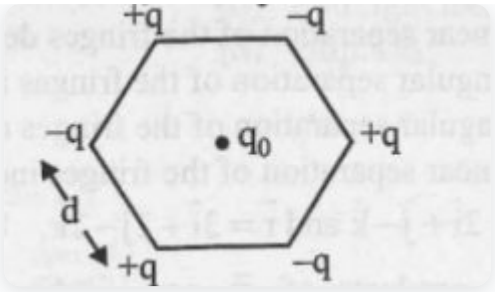
(D)



Question 193.

Six charges +q, -q, +q, -q +q and -q are fixed at the corners of a hexagon of side d as shown in the figure. The work done in bringing a charge q_0 to the centre of the hexagon from infinity is: (ε_0 - permittivity of free space)

[4 Marks]



(A) $-q^2/(4\pi\varepsilon_0 d)\ (3 - 1/\sqrt{2})$

(B) $-q^2/(4\pi\varepsilon_0 d)$

(C) $-q^2/(4\pi\varepsilon_0 d)\ (6 - 1/\sqrt{2})$

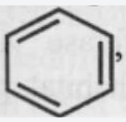
(D) Zero

Question 194.

Which one of the following reaction sequence is incorrect method to prepare phenol?

[4 Marks]

(A)


, oleum, NaOH, H3O+.

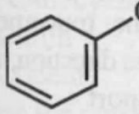
(B)

Aniline, $NaNO_2 + HCl$, H_2O, heating

(C)

Cumene, O_2, H_3O^+

(D)

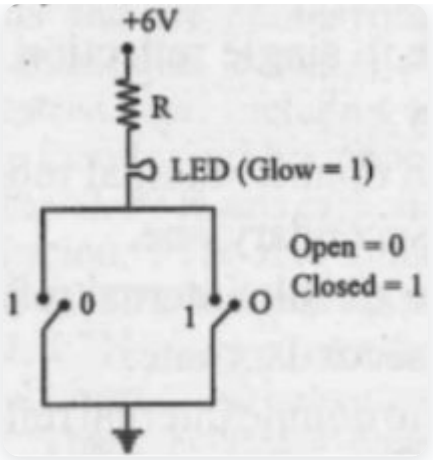


, NaOH, STP condition

Question 195.

Identify the equivalent logic gate represented by the given circuit:

[4 Marks]



(A) OR

(B) NAND

(C) NOR

(D) AND

Question 196.

The incorrect statement about the property of a Zener diode is:

[4 Marks]

(A) Zener voltage remains constant at breakdown

(B) p and n regions of zener diode are heavily doped

(C) It is designed to operate under reverse bias

(D) Depletion region formed is very wide

Question 197.

Which of the following reactions is not an example for nucleophilic addition - elimination reaction?

[4 Marks]

(A)

$$CH_3CHO + C_6H_5NHNH_2 \rightleftharpoons CH_3CH = N\text{–}NHC_6H_5 + H_2O$$

(B)

$$CH_3CHO + NH_2OH \rightleftharpoons CH_3CH = N - OH + H_2O$$

(C)

$$CH_3CHO + NH_3 \rightleftharpoons CH_3CH = NH + H_2O$$

(D)

$$CH_3CHO + NaHSO_3 \rightleftharpoons CH_3 - \underset{H}{\overset{OH}{\underset{|}{\overset{|}{C}}}} - OSO_2Na$$

Question 198.

Flourine is a stronger oxidising agent than chlorine because:

(A) F-F bond has a low enthalpy of dissociation.

(B) Flouride ion (F^-) has high hydration enthalpy.

(C) Electron gain enthalpy of flourine is less negative than chlorine.

(D) Flourine has a very small size.

Choose the most appropriate answer from the options given:

[4 Marks]

(A) (A) and (C) only

(B) (A) and (B) only

(C) (B) and (C) only

(D) (A) and (D) only

Question 199.

K_H value for some gases at the same temperature 'T' are given :

where K_H is Henry's Law constant in water. The order of their solubility in water is:

[4 Marks]

gas	K_H/k bar
Ar	40.3
CO_2	1.67
HCHO	1.83×10^{-5}
CH_4	0.413

(A) HCHO < CO_2 < CH_4 < Ar

(B) Ar < CH_4 < CO_2 < HCHO

(C) Ar < CO_2 < CH_4 < HCHO

(D) HCHO < CH_4 < CO_2 < Ar

Question 200.

DNA polymorphism forms the basis of:

[4 Marks]

(A) Translation

(B) DNA finger printing

(C) Genetic mapping

(D) Both genetic mapping and DNA finger printing