CBSE EXAMINATION PAPER-2020

NEET-ZOOLOGY

(Solved)

Time allowed : 3 hours | Maximum Marks : 720

General Instructions :

Read the following instructions carefully and follow them :

i. This question paper contains **180 questions.** All questions are **compulsory.**

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

iii. **Section A** – questions number **1 to 180** 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.

A series LCR circuit is connected to an ac voltage source. When L is removed from the circuit, the phase difference between current and voltage is π/3. If instead C is removed from the circuit, the phase difference is again π/3 between current and voltage. The power factor of the circuit is :

[4 Marks]

(A) 1.0

(B) 0.5

(C) -1.0

(D) zero

Question 2.

A wire of length L, area of cross section A is hanging from a fixed support. The length of the wire changes to L_1 when mass M is suspended from its free end. The expression for Young's modulus is :

[4 Marks]

(A) $MgL / A(L_1 - L)$

(B) MgL_1 / AL

(C) MgL / AL_1

(D) $Mg(L_1 - L) / AL$

Question 3.

A long solenoid of 50 cm length having 100 turns carries a current of 2.5 A. The magnetic field at the centre of the solenoid is :
($\mu_0 = 4\pi \times 10^{-7}$ T m A^{-1})

[4 Marks]

(A) 3.14×10^{-5} T

(B) 6.28×10^{-4} T

(C) 3.14×10^{-4} T

(D) 6.28×10^{-5} T

Question 4.

A ray is incident at an angle of incidence i on one surface of a small angle prism (with angle of prism A) and emerges normally from the opposite surface. If the refractive index of the material of the prism is μ, then the angle of incidence is nearly equal to :

[4 Marks]

(A) μA/2

(B) A/2μ

(C) μA

(D) 2A/μ

Question 5.

In a certain region of space with volume 0.2 m^3, the electric potential is found to be 5 V throughout. The magnitude of electric field in this region is :

[4 Marks]

(A) zero

(B) 5 N/C

(C) 0.5 N/C

(D) 1 N/C

Question 6.

For which one of the following, Bohr model is not valid?

[4 Marks]

(A) Deuteron atom

(B) Singly ionised neon atom (Ne^+)

(C) Singly ionised helium atom (He^+)

(D) Hydrogen atom

Question 7.

Light with an average flux of 20 W/cm^2 falls at a non- reflecting surface at normal incidence having surface area 20 cm^2. The energy received by the surface during time span of 1 minute is :

[4 Marks]

(A) 10×10^3 J

(B) 48×10^3 J

(C) 24×10^3 J

(D) 12×10^3 J

Question 8.

An electron is accelerated from rest through a potential difference of V volt. If the de Broglie wavelength of the electron is 1.227×10^{-2} nm, the potential difference is :

[4 Marks]

(A) 10^4 V

(B) 10 V

(C) 10^3 V

(D) 10^2 V

Question 9.

A body weighs 72 N on the surface of the earth. What is the gravitational force on it, at a height equal to half the radius of the earth?

[4 Marks]

(A) 32 N

(B) 48 N

(C) 30 N

(D) 24 N

Question 10.

Light of frequency 1.5 times the threshold frequency is incident on a photosensitive material. What will be the photoelectric current if the frequency is halved and intensity is doubled?

[4 Marks]

(A) zero

(B) doubled

(C) one-fourth

(D) four times

Question 11.

A 40 μF capacitor is connected to a 200 V, 50 Hz ac supply. The rms value of the current in the circuit is,nearly:

[4 Marks]

(A) 25.1 A

(B) 2.5 A

(C) 2.05 A

(D) 1.7 A

Question 12.

A ball is thrown vertically downward with a velocity of 20 m/s from the top of a tower. It hits the ground after some time with a velocity of 80 m/s. The height of the tower is : ($g = 10\ m/s^2$)

[4 Marks]

(A) 340 m

(B) 300 m

(C) 360 m

(D) 320 m

Question 13.

A cylinder contains hydrogen gas at pressure of 249 kPa and temperature 27°C.
Its density is : ($R = 8.3\ J\ mol^{-1}\ K^{-1}$)

[4 Marks]

(A) 0.5 kg/m^3

(B) 0.02 kg/m^3

(C) 0.1 kg/m^3

(D) 0.2 kg/m^3

Question 14.

When a uranium isotope $^{235}_{92}U$ is bombarded with a neutron, it generates $^{89}_{36}Kr$, three neutrons and :

[4 Marks]

(A) $^{103}_{36}Kr$

(B) $^{91}_{40}Zr$

(C) $^{144}_{56}Ba$

(D) $^{101}_{36}Kr$

Question 15.

The increase in the width of the depletion region in a p-n junction diode is due to :

[4 Marks]

(A) forward bias only

(B) increase in forward current

(C) both forward bias and reverse bias

(D) reverse bias only

Question 16.

The phase difference between displacement an acceleration of a particle in a simple harmonic motion is :

[4 Marks]

(A) π rad

(B) zero

(C) 3π/2 rad

(D) π/2 rad

Question 17.

An iron rod of susceptibility 599 is subjected to a magnetising field of 1200 A m^{-1}. The permeability of the material of the rod is :

($\mu_0 = 4\pi \times 10^{-7}$ T m A^{-1})

[4 Marks]

(A) 8.0×10^{-5} T m A^{-1}

(B) $2.4\pi \times 10^{-5}$ T m A^{-1}

(C) $2.4\pi \times 10^{-7}$ T m A^{-1}

(D) $2.4\pi \times 10^{-4}$ T m A^{-1}

Question 18.

The quantities of heat required to raise the temperature of two solid copper spheres of radii r_1 and r_2 ($r_1 = 1.5\ r_2$) through 1 K are in the ratio :

[4 Marks]

(A) 9/4

(B) 3/2

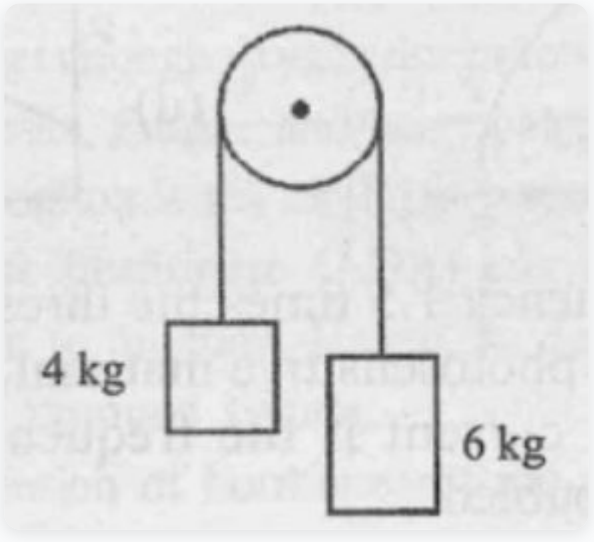
(C) 27/8

(D) 5/3

Question 19.

Two bodies of mass 4 kg and 6 kg are tied to the ends of a massless string. The string passes over a pulley which is frictionless (see figure). The acceleration of the system in terms of acceleration due to gravity (g) is :

[4 Marks]



(A) g

(B) g/10

(C) g/5

(D) g/2

Question 20.

The mean free path for a gas, with molecular diameter d and number density n can be expressed as :

[4 Marks]

(A) $1 / \sqrt{2}\, n^2\pi^2d^2$

(B) $1 / \sqrt{2}\, n\pi d$

(C) $1 / \sqrt{2}\, n^2\pi d^2$

(D) $1 / \sqrt{2}\, n\pi d^2$

Question 21.

A short electric dipole has a dipole moment of 16×10^{-9} C m. The electric potential due to the dipole at a point at a distance of 0.6 m from the centre of the dipole, situated on a line making an angle of 60° with the dipole axis is :
$(1 / 4\pi\varepsilon_0 = 9 \times 10^9\ N\ m^2 / C^2)$

[4 Marks]

(A) 400 V

(B) 200 V

(C) zero

(D) 50 V

Question 22.

Dimensions of stress are :

[4 Marks]

(A) $[ML^{-1}T^{-2}]$

(B) $[MLT^{-2}]$

(C) $[ML^2T^{-2}]$

(D) $[ML^0T^{-2}]$

Question 23.

The energy required to break one bond in DNA is 10^{-20} J. This value in eV is nearly

[4 Marks]

(A) 0.6

(B) 0.06

(C) 0.006

(D) 6

Question 24.

In a guitar, two strings A and B made of same material are slightly out of tune and produce beats of frequency 6 Hz. When tension in B is slightly decreased, the beat frequency increases to 7 Hz. If the frequency of A is 530 Hz, the original frequency of B will be

[4 Marks]

(A) 524 Hz

(B) 536 Hz

(C) 537 Hz

(D) 523 Hz

Question 25.

The color code of a resistance is given below

The values of resistance and tolerance, respectively, are

[4 Marks]



(A) 47 kΩ, 10%

(B) 4.7 kΩ, 5%

(C) 470 Ω, 5%

(D) 470 kΩ, 5%

Question 26.

The Brewsters angle i Subscriprt (b) for an interface should be

[4 Marks]

(A) 30° < i Subscripr (b) < 45°

(B) i Subscripr (b) = 90°

(C) 45° < i Subscripr (b) < 90°

(D) 0° < i Subscripr (b) < 30°

Question 27.

The capacitance of a parallel plate capacitor with air as medium is 6 μF. With the introduction of a dielectric medium, the capacitance becomes 30 μF. The permittivity of the medium is :

($\varepsilon_0 = 8.85 \times 10^{-12}\ C^2\ N^{-1}\ m^{-2}$)

[4 Marks]

(A) $0.44 \times 10^{-10}\ C^2\ N^{-1}\ m^{-2}$

(B) $1.77 \times 10^{-12}\ C^2\ N^{-1}\ m^{-2}$

(C) $5.00\ C^2\ N^{-1}\ m^{-2}$

(D) $0.44 \times 10^{-13}\ C^2\ N^{-1}\ m^{-2}$

Question 28.

Find the torque about the origin when a force of $3\hat{j}$ N acts on a particle whose position vector is $2\hat{k}$ m.

[4 Marks]

(A) $6\hat{i}$ Nm

(B) $-6\hat{i}$ Nm

(C) $6\hat{k}$ Nm

(D) $6\hat{j}$ Nm

Question 29.

A resistance wire connected in the left gap of a metre bridge balances a 10 Ω resistance in the right gap at a point which divides the bridge wire in the ratio 3 : 2. If the length of the resistance wire is 1.5 m, then the length of 1 Ω of the resistance wire is :

[4 Marks]

(A) 1.5×10^{-2} m

(B) 1.0×10^{-2} m

(C) 1.0×10^{-1} m

(D) 1.5×10^{-1} m

Question 30.

For transistor action, which of the following statements is correct?

[4 Marks]

(A) Base, emitter and collector regions should have same size.

(B) Both emitter junction as well as the collector junction are forward biased.

(C) The base region must be very thin and lightly doped.

(D) Base, emitter and collector regions should have same doping concentrations.

Question 31.

The ratio of contributions made by the electric field and magnetic field components to the intensity of an electromagnetic wave is :

(c = speed of electromagnetic waves)

[4 Marks]

(A) 1 : 1

(B) 1 : c

(C) $1 : c^2$

(D) c : 1

Question 32.

A charged particle having drift velocity of 7.5×10^{-4} m s^{-1} in an electric field of 3×10^{-10} V m^{-1}, has a mobility in m^2 V^{-1} s^{-1} of :

[4 Marks]

(A) 2.5×10^6

(B) 2.25×10^{15}

(C) 2.5×10^{-6}

(D) 2.25×10^{-15}

Question 33.

A spherical conductor of radius 10 cm has a charge of 3.2×10^{-7} C distributed uniformly. What is the magnitude of electric field at a point 15 cm from the centre of the sphere?

$(1/4\pi\varepsilon_0 = 9 \times 10^9\ Nm^2/C^2)$

[4 Marks]

(A) 1.28×10^7 N/C

(B) 1.28×10^6 N/C

(C) 1.28×10^4 N/C

(D) 1.28×10^5 N/C

Question 34.

Taking into account the significant figures, what is th value of 9.99 m − 0.0099 m?

[4 Marks]

(A) 9.9801 m

(B) 9.980 m

(C) 9.9 m

(D) 9.98 m

Question 35.

In Young's double slit experiment, if the separation between coherent sources is halved and the distance of the screen from the coherent sources is doubled, then the fringe width becomes:

[4 Marks]

(A) one-fourth

(B) double

(C) four times

(D) half

Question 36.

Two cylinders A and B of equal capacity are connected to each other via a stop cock. A contains an ideal gas at standard temperature and pressure. B is completely evacuated. The entire system is thermally insulated. The stop cock is suddenly opened. The process is:

[4 Marks]

(A) isobaric

(B) isothermal

(C) adiabatic

(D) isochoric

Question 37.

The energy equivalent of 0.5 g of a substance is:

[4 Marks]

(A) 4.5×10^{16} J

(B) 0.5×10^{13} J

(C) 1.5×10^{13} J

(D) 4.5×10^{13} J

Question 38.

A capillary tube of radius r is immersed in water andwater rises in it to a height h. The mass of the water in the capillary is 5 g. Another capillary tube of radius 2r is immersed in water. The mass of water that will rise in this tube is:

[4 Marks]

(A) 5.0 g

(B) 10.0 g

(C) 20.0 g

(D) 2.5 g

Question 39.

A screw gauge has least count of 0.01 mm and there are 50 divisions in its circular scale. The pitch of the screw gauge is:

[4 Marks]

(A) 0.01 mm

(B) 1.0 mm

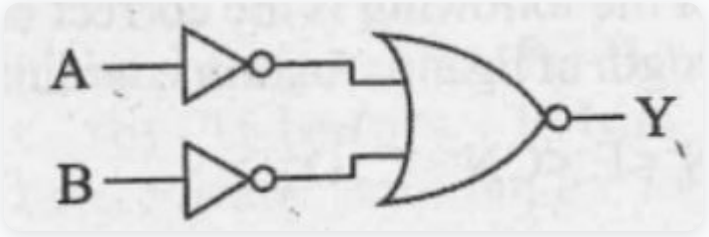
(C) 0.5 mm

(D) 0.25 mm

Question 40.

For the logic circuit shown, the truth table is:

[4 Marks]



(A)

A	B	Y
0	0	0
0	1	1
1	0	1
1	1	1

(B)

A	B	Y
0	0	1
0	1	1
1	0	1
1	1	0

(C)

A	B	Y
0	0	0
0	1	0
1	0	0
1	1	1

(D)

A	B	Y
0	0	1
0	1	0
1	0	0
1	1	0

Question 41.

The average thermal energy for a mono-atomic gas is :

(k subscript (B) is Boltzmann constant and T, absolute temperature)

[4 Marks]

(A) 1/2 k subscript (B) T

(B) 7/2 k subscript (B) T

(C) 3/2 k subscript (B) T

(D) 5/2 k subscript (B) T

Question 42.

The solids which have the negative temperature coefficient of resistance are:

[4 Marks]

(A) semiconductors only

(B) insulators and semiconductors

(C) metals

(D) insulators only

Question 43.

Two particles of mass 5 kg and 10 kg respectively areattached to the two ends of a rigid rod of length 1 m withnegligible mass. The centre of mass of the system fromthe 5 kg particle is nearly at a distance of :

[4 Marks]

(A) 67 cm

(B) 80 cm

(C) 33 cm

(D) 50 cm

Question 44.

Sucrose on hydrolysis gives:

[4 Marks]

(A) α-D-Glucose + β-D-Fructose

(B) α-D-Glucose + β-D-Glucose

(C) α-D-Glucose + β-D-Fructose

(D) α-D-Fructose + β-D-Fructose

Question 45.

Elimination reaction of 2-Bromo-pentane to form pent-2-ene is:

(A) β-Elimination reaction

(B) Follows Zaitsev rule

(C) Dehydrohalogenation reaction

(D) Dehydration reaction

[4 Marks]

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

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

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

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

Question 46.

The number of Faradays (F) required to produce 20 g of calcium from molten $CaCl_2$(Atomic mass of Ca = 40 g mol^{-1}) is:

[4 Marks]

(A) 1

(B) 4

(C) 3

(D) 2

Question 47.

An element has a body centered cubic (bcc) structure with a cell edge of 288 pm. The atomic radius is:

[4 Marks]

(A) (√2/4) × 288 pm

(B) $(4/\sqrt{2}) \times 288$ pm

(C) $(4/\sqrt{3}) \times 288$ pm

(D) $(\sqrt{3}/4) \times 288$ pm

Question 48.

Find out the solubility of $Ni(OH)_2$ in 0.1 M NaOH. Given that the ionic product of $Ni(OH)_2$ is 2×10^{-15}

[4 Marks]

(A) 2×10^{-8} M

(B) 1×10^{-13} M

(C) 1×10^{8} M

(D) 2×10^{-13} M

Question 49.

For the reaction, $2Cl(g) \longrightarrow Cl_2(g)$, the correct option is:

[4 Marks]

(A) $\Delta_r H > 0$ and $\Delta_r S < 0$

(B) $\Delta_r H > 0$ and $\Delta_r S > 0$

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

(D) $\Delta_r H < 0$ and $\Delta_r S < 0$

Question 50.

Which of the following is the correct order of increasing field strength of ligands to form coordination compounds?

[4 Marks]

(A) $SCN^- < F^- < C_2O_4^{2-} < CN^-$

(B) $CN^- < C_2O_4^{2-} < SCN^- < F^-$

(C) $SCN^- < F^- < CN^- < C_2O_4^{2-}$

(D) $F^- < SCN^- < C_2O_4^{2-} < CN^-$

Question 51.

The calculated spin only magnetic moment of Cr^{2+} ion is

[4 Marks]

(A) 2.84 BM

(B) 4.90 BM

(C) 3.87 BM

(D) 5.92 BM

Question 52.

Which of the following set of molecules will have zero dipole moment?

[4 Marks]

(A) Boron trifluoride, beryllium difluoride, carbon dioxide, 1,4-dichlorobenzene

(B) Nitrogen trifluoride, beryllium difluoride, water, 1,3-dichlorobenzene

(C) Ammonia, beryllium difluoride, water, 1,4-dichlorobenzene

(D) Boron trifluoride, hydrogen fluoride, carbon dioxide, 1,3-dichlorobenzene

Question 53.

The following metal ion activates many enzymes, participates in the oxidation of glucose to produce ATP and with Na, is responsible for the transmission of nerve signals.

[4 Marks]

(A) Iron

(B) Copper

(C) Potassium

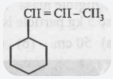
(D) Calcium

Question 54.

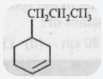
An alkene on ozonolysis gives methanal as one of the product. Its structure is:

[4 Marks]

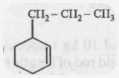
(A)



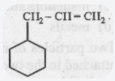
(B)



(C)



(D)



Question 55.

Reaction between acetone and methylmagnesium chloride followed by hydrolysis will give:

[4 Marks]

(A) Isopropyl alcohol

(B) Sec. butyl alcohol

(C) Tert. butyl alcohol

(D) Isobutyl alcohol

Question 56.

Which of the following is a natural polymer?

[4 Marks]

(A) poly (Butadiene-styrene)

(B) polybutadiene

(C) poly (Butadiene-acrylonitrile)

(D) cis-1, 4-polyisoprene

Question 57.

Identify the correct statements from the following:

(A) $CO_2(g)$ is used as refrigerant for ice-cream and frozen food.

(B) The structure of C_{60} contains twelve six carbon rings and twenty five carbon rings.

(C) ZSM-5, a type of zeolite, is used to convert alcohols into gasoline.

(D) CO is colorless and odourless gas.

[4 Marks]

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

(B) (C) and (D) only

(C) (A) and (C) only

(D) (B) and (C) only

Question 58.

The correct option for free expansion of an ideal gas under adiabatic condition is

[4 Marks]

(A) $q = 0, \Delta T = 0$ and $w = 0$

(B) $q > 0, \Delta T > 0$ and $w > 0$

(C) $q = 0, \Delta T < 0$ and $w > 0$

(D) $q < 0, \Delta T = 0$ and $w = 0$

Question 59.

Which of the following oxoacid of sulphur has –O–O– linkage?

[4 Marks]

(A) $H_2S_2O_8$, peroxodisulphuric acid

(B) H_2SO_4, sulphuric acid

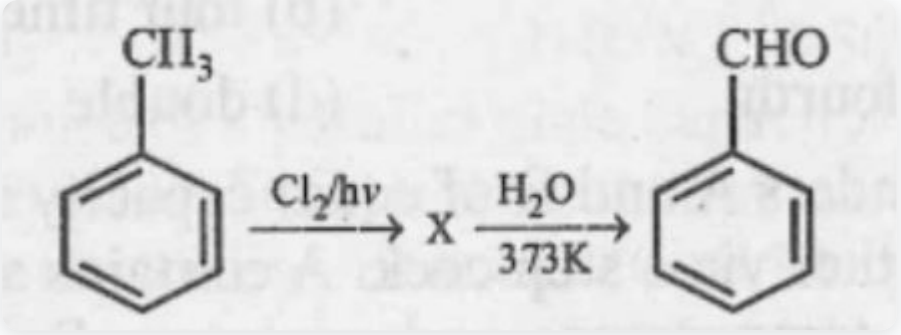
(C) $H_2S_2O_7$, pyrosulphuric acid

(D) H_2SO_3, sulphurous acid

Question 60.

Identify compound X in the following sequence of reactions

[4 Marks]



(A)



(B)



(C)



(D)



Question 61.

The number of protons, neutrons and electrons in $^{175}_{71}Lu$, respectively, are

[4 Marks]

(A) 71, 71 and 104

(B) 175, 104 and 71

(C) 71, 104 and 71

(D) 104, 71 and 71

Question 62.

Identify the incorrect statement.

[4 Marks]

(A) Cr^{2+} is a stronger reducing agent than Fe^{2+} in water.

(B) The oxidation states of chromium in CrO_4^{2-} and $Cr_2O_7^{2-}$ are not the same.

(C) The transition metals and their compounds are known for their catalytic activity due to their ability to adopt multiple oxidation states and to form complexes.

(D) Interstitial compounds are those that are formed when small atoms like H, C or N are trapped inside the crystal lattices of metals.

Question 63.

Which of the following is a cationic detergent?

[4 Marks]

(A) Sodium lauryl sulphate

(B) Sodium dodecylbenzene sulphonate

(C) Cetyltrimethyl ammonium bromide

(D) Sodium stearate

Question 64.

The freezing point depression constant (Kf) of benzene is 5.12 K kg mol^{-1}. The freezing point depression for the solution of molality 0.078 m containing a non-electrolyte solute in benzene is (rounded off upto two decimal places)

[4 Marks]

(A) 0.20 K

(B) 0.80 K

(C) 0.40 K

(D) 0.60 K

Question 65.

Identify the incorrect match.

[4 Marks]

Name	IUPAC Official Name
(A) Unnilunium	Mendelevium
(B) Unniltrium	Lawrencium
(C) Unnilhexium	Seaborgium
(D) Ununnnium	Darmstadtium

(A) (A), (i)

(B) (D), (iv)

(C) (B), (ii)

(D) (C), (iii)

Question 66.

The mixture which shows positive deviation from Raoult's law is

[4 Marks]

(A) Acetone + Chloroform

(B) Benzene + Toluene

(C) Ethanol + Acetone

(D) Chloroethane + Bromoethane

Question 67.

Match the following:

Which of the following is the correct option?

[4 Marks]

Match the following :

Oxide	Nature
(A) CO	(i) Basic
(B) BaO	(ii) Neutral
(C) Al_2O_3	(iii) Acidic
(D) Cl_2O_7	(iv) Amphoteric

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

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

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

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

Question 68.

Which one of the following has maximum number of atoms?

[4 Marks]

(A) 1 g of Mg(s) [Atomic mass of Mg = 24]

(B) 1 g of O_2(g) [Atomic mass of O = 16]

(C) 1 g of Li(s) [Atomic mass of Li = 7]

(D) 1 g of Ag(s) [Atomic mass of Ag = 108]

Question 69.

Reaction between benzaldehyde and acetophenone in presence of dilute NaOH is known as

[4 Marks]

(A) Cannizzaro's reaction

(B) Cross Cannizzaro's reaction

(C) Cross Aldol condensation

(D) Aldol condensation

Question 70.

A tertiary butyl carbocation is more stable than a secondary butyl carbocation because of which of the following?

[4 Marks]

(A) +R effect of $–CH_3$ groups

(B) –R effect of $–CH_3$ groups

(C) Hyperconjugation

(D) –I effect of $–CH_3$ groups

Question 71.

Which of the following is not correct about carbon monoxide?

[4 Marks]

(A) It is produced due to incomplete combustion.

(B) It forms carboxyhaemoglobin.

(C) The carboxyhaemoglobin (haemoglobin bound to CO) is less stable than oxyhaemoglobin.

(D) It reduces oxygen carrying ability of blood.

Question 72.

Which of the following is a basic amino acid?

[4 Marks]

(A) Serine

(B) Alanine

(C) Tyrosine

(D) Lysine

Question 73.

Urea reacts with water to form A which will decompose to form B. B when passed through $Cu^{2+}(aq)$, deep blue colour solution C is formed. What is the formula of C from the following?

[4 Marks]

(A) $CuSO_4$

(B) $CuCO_3 \cdot Cu(OH)_2$

(C) $Cu(OH)_2$

(D) $[Cu(NH_3)_4]^{2+}$

Question 74.

A mixture of N_2 and Ar gases in a cylinder contains 7 g of N_2 and 8 g of Ar. If the total pressure of the mixture of the gases in the cylinder is 27 bar, the partial pressure of N_2 is:

[Use atomic masses (in g mol^{-1}): N = 14, Ar = 40]

[4 Marks]

(A) 15 bar

(B) 12 bar

(C) 9 bar

(D) 18 bar

Question 75.

Identify the correct statement from the following:

[4 Marks]

(A) Blister copper has blistered appearance due to evolution of CO_2.

(B) Pig iron can be moulded into a variety of shapes.

(C) Wrought iron is impure iron with 4% carbon.

(D) Vapour phase refining is carried out for Nickel by Van Arkel method.

Question 76.

Hydrolysis of sucrose is given by the following reaction.

Sucrose + $H_2O \rightleftharpoons$ Glucose + Fructose

If the equilibrium constant (Kc) is 2×10^{13} at 300 K, the value of $\Delta_r G°$ at the same temperature will be:

[4 Marks]

(A) $-8.314\ J\ mol^{-1}\ K^{-1} \times 300\ K \times \ln(2 \times 10^{13})$

(B) $-8.314\ J\ mol^{-1}\ K^{-1} \times 300\ K \times \ln(4 \times 10^{13})$

(C) $8.314\ J\ mol^{-1}\ K^{-1} \times 300\ K \times \ln(3 \times 10^{13})$

(D) $8.314\ J\ mol^{-1}\ K^{-1} \times 300\ K \times \ln(2 \times 10^{13})$

Question 77.

Identify a molecule which does not exist.

[4 Marks]

(A) Li_2

(B) O_2

(C) C_2

(D) He_2

Question 78.

An increase in the concentration of the reactants of a reaction leads to change in

[4 Marks]

(A) collision frequency

(B) activation energy

(C) threshold energy

(D) heat of reaction

Question 79.

Which of the following alkane cannot be made in good yield by Wurtz reaction?

[4 Marks]

(A) n-Hexane

(B) 2,3-Dimethylbutane

(C) n-Heptane

(D) n-Butane

Question 80.

Which of the following amine will give the carbylamine test?

[4 Marks]

(A)



(B)



(C)



(D)



Question 81.

On electrolysis of dil. sulphuric acid using Platinum (Pt) electrode, the product obtained at anode will be

[4 Marks]

(A) Hydrogen gas

(B) SO_2 gas

(C) H_2S gas

(D) Oxygen gas

Question 82.

What is the change in oxidation number of carbon in the following reaction?

$CH_4(g) + 4Cl_2(g) \longrightarrow CCl_4(l) + 4HCl(g)$

[4 Marks]

(A) −4 to +4

(B) 0 to +4

(C) +4 to +4

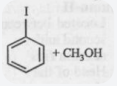
(D) 0 to −4

Question 83.

Anisole on cleavage with HI gives

[4 Marks]

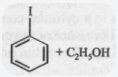
(A)



(B)



(C)



(D)



Question 84.

Measuring Zeta potential is useful in determining which property of colloidal solution?

[4 Marks]

(A) Stability of the colloidal particles

(B) Solubility

(C) Size of the colloidal particles

(D) Viscosity

Question 85.

Paper chromatography is an example of

[4 Marks]

(A) Adsorption chromatography

(B) Column chromatography

(C) Thin layer chromatography

(D) Partition chromatography

Question 86.

Match the following and identify the correct option.

[4 Marks]

(A) $CO(g) + H_2(g)$	(i) $Mg(HCO_3)_2 + Ca(HCO_3)_2$
(B) Temporary hardness of water	(ii) An electron deficient hydride
(C) B_2H_6	(iii) Synthesis gas
(D) H_2O_2	(iv) Non-planar structure

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

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

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

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

Question 87.

If the distance between two consecutive base pairs is 0.34 nm and the total number of base pairs of a DNA double helix in a typical mammalian cell is 6.6×10^9 bp, then the length of the DNA is approximately

[4 Marks]

(A) 2.7 meters

(B) 2.0 meters

(C) 2.5 meters

(D) 2.2 meters

Question 88.

Bilaterally symmetrical and acoelomate animals are exemplified by

[4 Marks]

(A) Platyhelminthes

(B) Aschelminthes

(C) Annelida

(D) Ctenophora

Question 89.

Match the following columns and select the correct option.

[4 Marks]

Column-I	Column-II
(A) Gregarious, polyphagous pest	(i) *Asterias*
(B) Adult with radial symmetry and larva with bilateral symmetry	(ii) *Scorpion*
(C) Book lungs	(iii) *Ctenoplana*
(D) Bioluminescence	(iv) *Locusta*

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

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

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

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

Question 90.

Which is the important site of formation of glycoproteins and glycolipids in eukaryotic cells?

[4 Marks]

(A) Polysomes

(B) Endoplasmic reticulum

(C) Golgi bodies

(D) Peroxisomes

Question 91.

The QRS complex in a standard ECG represents

[4 Marks]

(A) Repolarisation of auricles

(B) Repolarisation of ventricles

(C) Depolarisation of auricles

(D) Depolarisation of ventricles

Question 92.

Match the following columns and select the correct option.

[4 Marks]

Column-I	Column-II
(a) Floating Ribs	(i) Located between second and seventh ribs
(b) Acromion	(ii) Head of the Humerus
(c) Scapula	(iii) Clavicle
(d) Glenoid cavity	(iv) Do not connect with the sternum

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

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

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

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

Question 93.

Experimental verification of the chromosomal theory of inheritance was done by

[4 Marks]

(A) Sutton

(B) Boveri

(C) Mendel

(D) Morgan

Question 94.

Identify the incorrect statement.

[4 Marks]

(A) Sapwood is involved in conduction of water and minerals from root to leaf.

(B) Sapwood is the innermost secondary xylem and is lighter in colour.

(C) Due to deposition of tannins, resins, oils etc., heart wood is dark in colour. (d) Heart wood does not con

(D) Heart wood does not conduct water but gives mechanical support.

Question 95.

Match the following columns and select the correct option.

[4 Marks]

Column-I	Column-II
(A) Pituitary gland	(i) Grave's disease
(B) Thyroid gland	(ii) Diabetes mellitus
(C) Adrenal gland	(iii) Diabetes insipidus
(D) Pancreas	(iv) Addison's disease

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

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

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

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

Question 96.

Match the organism with its use in biotechnology.

[4 Marks]

(A) *Bacillus thuringiensis*	(i) Cloning vector
(B) *Thermus aquaticus*	(ii) Construction of first rDNA molecule
(C) *Agrobacterium tumefaciens*	(iii) DNA polymerase
(D) *Salmonella typhimurium*	(iv) Cry proteins

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

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

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

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

Question 97.

Identify the substances having glycosidic bond and peptide bond, respectively in their structure

[4 Marks]

(A) Cellulose, lecithin

(B) Glycerol, trypsin

(C) Inulin, insulin

(D) Chitin, cholesterol

Question 98.

Name the enzyme that facilitates opening of DNA helix during transcription.

[4 Marks]

(A) DNA ligase

(B) RNA polymerase

(C) DNA polymerase

(D) DNA helicase

Question 99.

If the head of cockroach is removed, it may live for few days because

[4 Marks]

(A) the cockroach does not have nervous system.

(B) the head holds a small proportion of a nervous system while the rest is situated along the ventral part of its body.

(C) the head holds a 1/3rd of a nervous system while the rest is situated along the dorsal part of its body.

(D) the supra-oesophageal ganglia of the cockroach are situated in ventral part of abdomen.

Question 100.

Select the correct events that occur during inspiration.

(i) Contraction of diaphragm

(ii) Contraction of external inter-costal muscles

(iii) Pulmonary volume decreases

(iv) Intra pulmonary pressure increases

[4 Marks]

(A) Only (iv)

(B) (i) and (ii)

(C) (i), (ii) and (iv)

(D) (iii) and (iv)

Question 101.

By which method was a new breed 'Hisardale' of sheep formed by using Bikaneri ewes and Marino rams?

[4 Marks]

(A) Mutational breeding

(B) Cross breeding

(C) Inbreeding

(D) Out crossing

Question 102.

Which one of the following is the most abundant protein in the animals?

[4 Marks]

(A) Collagen

(B) Insulin

(C) Lectin

(D) Haemoglobin

Question 103.

How many true breeding pea plant varieties did Mendel select as pairs, which were similar except in one character with contrasting traits?

[4 Marks]

(A) 2

(B) 8

(C) 4

(D) 14

Question 104.

The body of the ovule is fused within the funicle at

[4 Marks]

(A) Chalaza

(B) Hilum

(C) Nucellus

(D) Micropyle

Question 105.

Which of the following is correct about viroids?

[4 Marks]

(A) They have free RNA without protein coat

(B) They have DNA with protein coat

(C) They have free DNA without protein coat

(D) They have RNA with protein coat

Question 106.

The number of substrate level phosphorylations in one turn of citric acid cycle is

[4 Marks]

(A) Three

(B) Zero

(C) Two

(D) One

Question 107.

The product(s) of reaction catalyzed by nitrogenase in root nodules of leguminous plants is/are

[4 Marks]

(A) Ammonia and oxygen

(B) Nitrate alone

(C) Ammonia and hydrogen

(D) Ammonia alone

Question 108.

The rate constant for a first order reaction is $4.606 \times 10^3\ s^{-1}$ The time required to reduce 2.0 g of the reactant to 0.2 g is:

[4 Marks]

(A) 100s

(B) 500s

(C) 200s

(D) 1000s

Question 109.

Match the following diseases with the causative organism and select the correct option.

[4 Marks]

Column-I	Column-II
(A) Typhoid	(i) Wuchereria
(B) Pneumonia	(ii) Plasmodium
(C) Filariasis	(iii) Salmonella
(D) Malaria	(iv) Haemophilus

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

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

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

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

Question 110.

From his experiments, S.L. Miller produced amino acids by mixing the following in a closed flask

[4 Marks]

(A) CH_3, H_2, NH_4 and water vapor at 800°C

(B) CH_4, H_2, NH_3 and water vapor at 600°C

(C) CH_4, H_2, NH_3 and water vapor at 800°C

(D) CH_3, H_2, NH_3 and water vapor at 600°C

Question 111.

Which of the following statements is correct?

[4 Marks]

(A) Adenine pairs with thymine through three H-bonds

(B) Adenine pairs with thymine through one H-bond

(C) Adenine does not pair with thymine

(D) Adenine pairs with thymine through two H-bonds

Question 112.

Match the following with respect to meiosis

Select the correct option from the following

[4 Marks]

(A) Zygotene	(i) Terminalization
(B) Pachytene	(ii) Chiasmata
(C) Diplotene	(iii) Crossing over
(D) Diakinesis	(iv) Synapsis

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

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

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

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

Question 113.

Choose the correct pair from the following

[4 Marks]

(A) Exonucleases — Make cuts at specific positions within DNA

(B) Nucleases — Separate the two strands of DNA

(C) Ligases — Join the two DNA molecules

(D) Polymerases — Break the DNA into fragments

Question 114.

Select the option including all sexually transmitted diseases.

[4 Marks]

(A) Gonorrhoea, Malaria, Genital herpes

(B) AIDS, Malaria, Filaria

(C) Cancer, AIDS, Syphilis

(D) Gonorrhoea, Syphilis, Genital herpes

Question 115.

Embryological support for evolution was disapproved by

[4 Marks]

(A) Alfred Wallace

(B) Charles Darwin

(C) Karl Ernst von Baer

(D) Oparin

Question 116.

The roots that originate from the base of the stem are

[4 Marks]

(A) Lateral roots

(B) Fibrous roots

(C) Prop roots

(D) Primary roots

Question 117.

In gel electrophoresis, separated DNA fragments can be visualized with the help of

[4 Marks]

(A) Acetocarmine in bright blue light

(B) Ethidium bromide in infrared radiation

(C) Acetocarmine in UV radiation

(D) Ethidium bromide in UV radiation

Question 118.

Which of the following hormone levels will cause release of ovum (ovulation) from the graafian follicle?

[4 Marks]

(A) Low concentration of LH

(B) High concentration of Progesterone

(C) Low concentration of FSH (d) High concentration of Estrogen

(D) High concentration of Estrogen

Question 119.

Goblet cells of alimentary canal are modified from

[4 Marks]

(A) Squamous epithelial cells

(B) Compound epithelial cells

(C) Columnar epithelial cells

(D) Chondrocytes

Question 120.

Snow-blindness in Antarctic region is due to

[4 Marks]

(A) High reflection of light from snow

(B) Inflammation of cornea due to high dose of UV-B radiation

(C) Damage to retina caused by infra-red rays

(D) Freezing of fluids in the eye by low temperature

Question 121.

Match the following concerning essential elements and their functions in plants

Select the correct option

[4 Marks]

(A) Iron	(i) Photolysis of water
(B) Zinc	(ii) Pollen germination
(C) Boron	(iii) Required for chlorophyll biosynthesis
(D) Manganese biosynthesis	(iv) IAA

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

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

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

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

Question 122.

Bt cotton variety that was developed by the introduction of toxin gene of *Bacillus thuringiensis* (Bt) is resistant to

[4 Marks]

(A) Fungal diseases

(B) Insect pests

(C) Insect predators

(D) Plant nematodes

Question 123.

Ray florets have

[4 Marks]

(A) Inferior ovary

(B) Half inferior ovary

(C) Hypogynous ovary

(D) Superior ovary

Question 124.

Montreal protocol was signed in 1987 for control of

[4 Marks]

(A) Emission of ozone depleting substances

(B) Release of Green House gases

(C) Transport of Genetically modified organisms from one country to another

(D) Disposal of e-wastes

Question 125.

Identify the wrong statement with regard to Restriction Enzymes.

[4 Marks]

(A) Each restriction enzyme functions by inspecting the length of a DNA sequence.

(B) Sticky ends can be joined by using DNA ligases.

(C) They are useful in genetic engineering.

(D) They cut the strand of DNA at palindromic sites.

Question 126.

The infectious stage of *Plasmodium* that enters the human body is

[4 Marks]

(A) Sporozoites

(B) Female gametocytes

(C) Trophozoites

(D) Male gametocytes

Question 127.

Meiotic division of the secondary oocyte is completed

[4 Marks]

(A) Prior to ovulation

(B) At the time of fusion of a sperm with an ovum

(C) After zygote formation

(D) At the time of copulation

Question 128.

The oxygenation activity of RuBisCO enzyme in photorespiration leads to the formation of

[4 Marks]

(A) 1 molecule of 6-C compound

(B) 1 molecule of 3-C compound

(C) 1 molecule of 4-C compound and 1 molecule of 2-C compound

(D) 2 molecules of 3-C compound

Question 129.

Which of the following statements are true for the phylum-Chordata?

(i) In Urochordata notochord extends from head to tail and it is present throughout their life.

(ii) In Vertebrata notochord is present during the embryonic period only.

(iii) Central nervous system is dorsal and hollow.

(iv) Chordata is divided into 3 subphyla : Hemichordata, Tunicata and Cephalochordata.

[4 Marks]

(A) (iii) and (i)

(B) (iii) and (iv)

(C) (ii) and (iii)

(D) (i) and (ii)

Question 130.

Match the following columns and select the correct option.

[4 Marks]

Column-I	Column-II
(A) *Clostridium butylicum*	(i) Cyclosporin-A
(B) *Trichoderma polysporum*	(ii) Butyric Acid
(C) *Monascus purpureus*	(iii) Citric Acid
(D) *Aspergillus niger*	(iv) Blood cholesterol lowering agent

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

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

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

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

Question 131.

Which of the following pairs is of unicellular algae?

[4 Marks]

(A) Laminaria and Sargassum

(B) Chlorella and Spirulina

(C) Anabaena and Volvox

(D) Gelidium and Gracilaria

Question 132.

In light reaction, plastoquinone facilitates the transfer of electrons from

[4 Marks]

(A) PS-II to Cyt b_6f complex

(B) PS-I to ATP synthase

(C) PS-I to $NADP^+$

(D) Cyt b_6f complex to PS-I

Question 133.

Presence of which of the following conditions in urine are indicative of Diabetes Mellitus?

[4 Marks]

(A) Uremia and Ketonuria

(B) Renal calculi and Hyperglycaemia

(C) Uremia and Renal Calculi

(D) Ketonuria and Glycosuria

Question 134.

Secondary metabolites such as nicotine, strychnine and caffeine are produced by plants for their

[4 Marks]

(A) Nutritive value

(B) Effect on reproduction

(C) Growth response

(D) Defence action

Question 135.

Which of the following would help in prevention of diuresis?

[4 Marks]

(A) Reabsorption of Na^+ and water from renal tubules due to aldosterone

(B) Atrial natriuretic factor causes vasoconstriction

(C) Decrease in secretion of renin by JG cells

(D) More water reabsorption due to undersecretion of ADH

Question 136.

Select the correct match

[4 Marks]

(A) Haemophilia — Y linked

(B) Thalassemia — X linked

(C) Sickle cell anaemia — Autosomal recessive trait, chromosome-11

(D) Phenylketonuria — Autosomal dominant trait

Question 137.

Which of the following is not an attribute of a population?

[4 Marks]

(A) Sex ratio

(B) Mortality

(C) Species interaction

(D) Natality

Question 138.

Which of the following statements about inclusion bodies is incorrect?

[4 Marks]

(A) They are not bound by any membrane

(B) These represent reserve material in cytoplasm

(C) They lie free in the cytoplasm

(D) These are involved in ingestion of food particles

Question 139.

The transverse section of a plant shows followinganatomical features:

(i) Large number of scattered vascular bundles surrounded by bundle sheath

(ii) Large conspicuous parenchymatous ground tissue

(iii) Vascular bundles conjoint and closed

(iv) Phloem parenchyma absent

Identify the category of plant and its part :

[4 Marks]

(A) Monocotyledonous stem

(B) Dicotyledonous root

(C) Dicotyledonous stem

(D) Monocotyledonous root

Question 140.

In relation to Gross primary productivity and Net primary productivity of an ecosystem, which one of the following statements is correct?

[4 Marks]

(A) Gross primary productivity is always more than net primary productivity

(B) Gross primary productivity and Net primary productivity are one and same

(C) There is no relationship between Gross primary productivity and Net primary productivity

(D) Gross primary productivity is always less than net primary productivity

Question 141.

In water hyacinth and water lily, pollination takes place by:

[4 Marks]

(A) Insects or wind

(B) Wind and water

(C) Insects and water

(D) Water currents only

Question 142.

Which of the following is put into Anaerobic sludge digester for further sewage treatment?

[4 Marks]

(A) Activated sludge

(B) Primary sludge

(C) Effluents of primary treatment

(D) Floating debris

Question 143.

The process responsible for facilitating loss of water in liquid form from the tip of grass blades at night and in early morning is

[4 Marks]

(A) Root pressure

(B) Imbibition

(C) Plasmolysis

(D) Transpiration

Question 144.

Cuboidal epithelium with brush border of microvilli is found in

[4 Marks]

(A) Eustachian tube

(B) Lining of intestine

(C) Ducts of salivary gland

(D) Proximal convoluted tubule of nephron

Question 145.

Select the correct statement.

[4 Marks]

(A) Insulin is associated with hyperglycaemia.

(B) Glucocorticoids stimulate gluconeogenesis.

(C) Glucagon is associated with hypoglycaemia.

(D) Insulin acts on pancreatic cells and adipocytes.

Question 146.

Which of the following is not an inhibitory substance governing seed dormancy?

[4 Marks]

(A) Gibberellic acid

(B) Para-ascorbic acid

(C) Phenolic acid

(D) Abscisic acid

Question 147.

According to Robert May, the global species diversity is about

[4 Marks]

(A) 1.5 million

(B) 20 million

(C) 50 million

(D) 7 million

Question 148.

Match the trophic levels with their correct species examples in grassland ecosystem.

Select the correct option

[4 Marks]

(A) Fourth trophic level	(i) Crow
(B) Second trophic level	(ii) Vulture
(C) First trophic level	(iii) Rabbit
(D) Third trophic level	(iv) Grass

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

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

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

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

Question 149.

The first phase of translation is

[4 Marks]

(A) Recognition of an anti-codon

(B) Aminoacylation of tRNA

(C) Recognition of DNA molecule

(D) Binding of mRNA to ribosome

Question 150.

Strobili or cones are found in

[4 Marks]

(A) Pteris

(B) Marchantia

(C) Salvinia

(D) Equisetum

Question 151.

Match the following columns and select the correct option.

[4 Marks]

Column-I	Column-II
(A) 6-15 pairs of *gill slits*	(i) *Trygon*
(B) Heterocercal caudal fin	(ii) Cyclostomes
(C) Air Bladder	(iii) Chondrichthyes
(D) Poison sting	(iv) Osteichthyes

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

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

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

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

Question 152.

Some dividing cells exit the cell cycle and enter vegetative inactive stage. This is called quiescent stage (G_0). This process occurs at the end of

[4 Marks]

(A) G_1 phase

(B) S phase

(C) G_2 phase

(D) M phase

Question 153.

Identify the correct statement with reference to human digestive system.

[4 Marks]

(A) Ileum opens into small intestine

(B) Vermiform appendix arises from duodenum

(C) Ileum is a highly coiled part

(D) Serosa is the innermost layer of the alimentary canal

Question 154.

In which of the following techniques, the embryos aretransferred to assist those females who cannot conceive?

[4 Marks]

(A) ZIFT and IUT

(B) GIFT and ICSI

(C) ICSI and ZIFT

(D) GIFT and ZIFT

Question 155.

The plant parts which consist of two generations - one within the other

(i) Pollen grains inside the anther

(ii) Germinated pollen grain with two male gametes

(iii) Seed inside the fruit

(iv) Embryo sac inside the ovule

[4 Marks]

(A) (i), (ii) and (iii)

(B) (iii) and (iv)

(C) (i) and (iv)

(D) (i) only

Question 156.

Dissolution of the synaptonemal complex occurs during

[4 Marks]

(A) Zygotene

(B) Diplotene

(C) Leptotene

(D) Pachytene

Question 157.

Match the following columns and select the correct option.

[4 Marks]

Column-I	Column-II
(A) Organ of Corti	(i) Connects middle ear and pharynx
(B) Cochlea	(ii) Coiled part of the labyrinth
(C) Eustachian tube	(iii) Attached to the oval window
(D) Stapes	(iv) Located on the basilar membrane

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

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

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

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

Question 158.

The ovary is half inferior in :

[4 Marks]

(A) Plum

(B) Brinjal

(C) Sunflower

(D) Mustard

Question 159.

Identify the basic amino acid from the following.

[4 Marks]

(A) Tyrosine

(B) Valine

(C) Lysine

(D) GlutamicAcid

Question 160.

Match the following columns and select the correct option.

[4 Marks]

Column-I	Column-II
(A) Eosinophils	(i) Immune response
(B) Basophils	(ii) Phagocytosis
(C) Neutrophils	(iii) Release histaminase, destructive enzymes
(D) Lymphocytes	(iv) Release granules containing histamine

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

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

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

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

Question 161.

Match the following

Choose the correct option from the following

[4 Marks]

(A) Inhibitor of catalytic activity	(i) Ricin
(B) Possess peptide bonds	(ii) Malonate
(C) Cell wall material in fungi	(iii) Chitin
(D) Secondary metabolite	(iv) Collagen

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

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

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

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

Question 162.

Identify the correct statement with regard to G_1 phase (Gap 1) of interphase.

[4 Marks]

(A) Reorganisation of all cell components takes place.

(B) Cell is metabolically active, grows but does not replicate its DNA.

(C) DNA synthesis or replication takes place.

(D) Nuclear Division takes place.

Question 163.

Name the plant growth regulator which upon spraying on sugarcane crop, increases the length of stem, thus increasing the yield of sugarcane crop.

[4 Marks]

(A) Abscisic acid

(B) Cytokinin

(C) Ethylene

(D) Gibberellin

Question 164.

Identify the wrong statement with reference to the gene 'I' that controls ABO blood groups.

[4 Marks]

(A) The gene (I) has three alleles.

(B) Allele 'i' does not produce any sugar.

(C) When I^A and I^B are present together, they express same type of sugar.

(D) A person will have only two of the three alleles.

Question 165.

Identify the wrong statement with reference to immunity.

[4 Marks]

(A) When exposed to antigen (living or dead) antibodies are produced in the host's body. It is called "Active immunity".

(B) Foetus receives some antibodies from mother, it is an example for passive immunity.

(C) Active immunity is quick and gives full response.

(D) When ready-made antibodies are directly given, it is called "Passive immunity".

Question 166.

The enzyme enterokinase helps in conversion of

[4 Marks]

(A) pepsinogen into pepsin

(B) protein into polypeptides

(C) trypsinogen into trypsin

(D) caseinogen into casein

Question 167.

The specific palindromic sequence which is recognized by *EcoRI* is

[4 Marks]

(A) 5′- GGAACC -3′ 3′- CCTTGG -5′

(B) 5′- CTTAAG -3′ 3′- GAATTC -5′

(C) 5′- GAATTC -3′ 3′- CTTAAG -5′

(D) 5′- GGATCC -3′ 3′- CCTAGG -5′

Question 168.

Which of the following graph represents the variation of resistivity (ρ) with temperature (T) for copper?

[4 Marks]

(A)



(B)



(C)



(D)



Question 169.

HCl was passed through a solution of $CaCl_2$, $MgCl_2$ and NaCl. Which of the following compound(s) crystallise(s)?

[4 Marks]

(A) Both $MgCl_2$ and $CaCl_2$

(B) Only $MgCl_2$

(C) NaCl, $MgCl_2$ and $CaCl_2$

(D) Only NaCl

Question 170.

Which of the following statements is correct?

[4 Marks]

(A) Adenine pairs with thymine through two H-bonds

(B) Adenine does not pair with thymine

(C) Adenine pairs with thymine through three H-bonds

(D) Adenine pairs with thymine through one H-bond

Question 171.

Match the following columns and select the correct option.

[4 Marks]

Column-I	Column-II
(A) Bt cotton	(i) Gene therapy
(B) Adenosine deaminase deficiency	(ii) Cellular defence
(C) RNAi	(iii) Detection of HIV infection
(D) PCR	(iv) *Bacillus thuringiensis*

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

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

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

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

Question 172.

Floridean starch has structure similar to

[4 Marks]

(A) Starch and cellulose

(B) Laminarin and cellulose

(C) Amylopectin and glycogen

(D) Mannitol and algin

Question 173.

Which of the following statements is not correct?

[4 Marks]

(A) In man insulin is synthesised as a proinsulin.

(B) Genetically engineered insulin is produced in E. coli.

(C) The functional insulin has A and B chains linked together by hydrogen bonds.

(D) The proinsulin has an extra peptide called C-peptide.

Question 174.

Flippers of Penguins and Dolphins are examples of

[4 Marks]

(A) Adaptive radiation

(B) Natural selection

(C) Industrial melanism

(D) Convergent evolution

Question 175.

Which of the following refer to correct example(s) of organisms which have evolved due to changes in environment brought about by anthropogenic action?
(a) Darwin's Finches of Galapagos islands.
(b) Herbicide resistant weeds.
(c) Drug resistant eukaryotes.
(d) Man-created breeds of domesticated animals like dogs.

[4 Marks]

(A) b, c and d

(B) a and c

(C) only d

(D) only a

Question 176.

Identify the wrong statement with reference to transport of oxygen.

[4 Marks]

(A) Low pCO_2 in alveoli favours the formation of oxyhaemoglobin.

(B) Binding of oxygen with haemoglobin is mainly related to partial pressure of O_2.

(C) Higher H^+ conc. in alveoli favours the formation of oxyhaemoglobin.

(D) Partial pressure of CO_2 can interfere with O_2 binding with haemoglobin.

Question 177.

The process of growth is maximum during

[4 Marks]

(A) Log phase

(B) Dormancy

(C) Senescence

(D) Lag phase

Question 178.

Which of the following regions of the globe exhibits highest species diversity?

[4 Marks]

(A) Himalayas

(B) Amazon forests

(C) Western Ghats of India

(D) Madagascar

Question 179.

The sequence that controls the copy number of the linked DNA in the vector, is termed

[4 Marks]

(A) Palindromic sequence

(B) Ori site

(C) Selectable marker

(D) Recognition site

Question 180.

Match the following columns and select the correct option.

[4 Marks]

Column-I	Column-II
(A) Placenta	(i) Androgens
(B) Zona pellucida	(ii) Human Chorionic Gonadotropin (hCG)
(C) Bulbo-urethral glands	(iii) Layer of the ovum
(D) Leydig cells	(iv) Lubrication of the Penis

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

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

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

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