NEET TEST PAPER

TEST CODE : PNEETT08

PHYSICS, CHEMISTRY & BIOLOGY

**[TIME : 3 HRS]**   **[MARKS : 720]**

Instructions

1. *The test paper consists of 180 questions . The maximum marks are 720.*

2. *Each question is allotted 4 (four) marks for each correct response.*

3. *¼ (one fourth) marks will be deducted for indicating incorrect response of each questions.No deduction from the total score will be made if no response is indicated for an item in the answer sheet.*

4. *There is only one correct response for each question. Filling up more than one response in any question will treated as wrong response and marks for wrong response will be deducted accordingly as per given instruction.*

PHYSICS

Q.1   The mass of a spaceship is 1000 kg. It is $-mgR$ to be launched from the earth's surface out into free space.The calue of g and R (radius of earth) are 10 m/s^2 and 6400 km respectively. The required energy for this work will be

(a) 6.4×10^{11}J   (b) 6.4×10^8J   (c) 6.4×10^9J   (d) 6.4×10^{10}J

Q.2   A radar has a power of 1 kW and is operating at a frequency of 10 GHz. It is located on a mountain top of height 500 m. The maximum distance upto which it can detect object

located on the surface of the earth (Radius of earth $= 6.4 \times 10^6$m) is

(a) 80 km   (b) 16 km   (c) 40 km   (d) 64 km

Q.3   A boy can throw a stone upto a maximum height of 10 m. The maximum horizontal distance that the boy can throw the same stone up to will be

(a) $20\sqrt{2}$ m   (b) 10 m   (c) $10\sqrt{2}$ m   (d) 20 m

Q.4   The figure shows an experimental plot discharging of a capacitor in an R-C circuit. The time constant τ of this circuit lies between
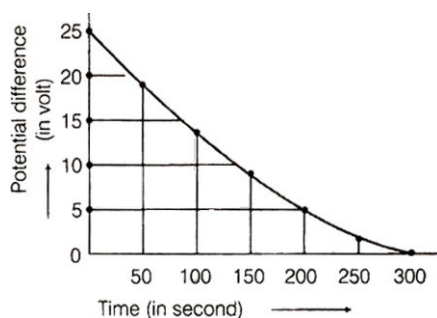
(a) 150 s and 200s   (b) 0 and 50s
(c) 50 s and 100s   (d) 100 s and 150s

Q.5 A fully charged capacitor C with initial charge q_o is connected to a coil of self inductance L at t = 0. The time at which the energy is stored equally between the electric and the magnetic fields is

(a) $\dfrac{\pi}{4}\sqrt{LC}$ (b) $2\pi\sqrt{LC}$ (c) $\sqrt{LC}$ (d) $\pi\sqrt{LC}$

Q.6 A car is fitted with a convex side-view mirror of focal length 20 cm. A second car 2.8 m behind the first car is overtaking the first car at a relative speed of 15m/s. The speed of the image of the second car as seen in the mirror of the first one is

(a) $\dfrac{1}{15}$ m/s (b) 10 m/s (c) 15 m/s (d) $\dfrac{1}{10}$ m/s

Q.7 If a wire is stretched to make it 0.1% longer, its resistance will
(a) increse by 0.2% (b) decrease by 0.2%
(c) decrease by 0.05% (d) increase by 0.05%

Q.8 A screw gauge gives the following reading when used to measure the diameter of a wire.
Main scale reading : 0 mm, Circular scale reading : 52 divisions
Given that 1 mm in main scale corresponds to 100 divisions of the circular scale.
The diameter of wire from the above data is
(a) 0.052 cm (b) 0.026 cm (c) 0.005 cm (d) 0.52 cm

Q.9 A thin horizontal circular disc is rotating about a vertical axis passing through its centre. An insect is at rest at a point near the rim of the disc. The insect now moves along a diameter of the disc to reach its other end. During the journey of the insect, the angular speed of the disc.
(a) continuously decreases
(b) continuously increases
(c) first increases and then decreases
(d) remains unchanged.
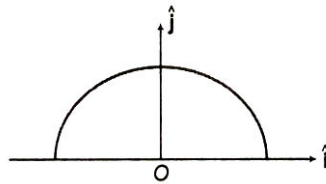
Q.10 The combination of gates shown below yields
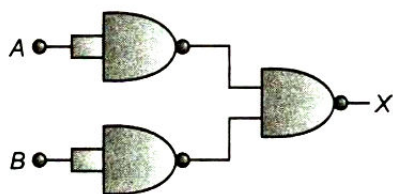
(a) OR gate (b) NOT gate (c) XOR gate (d) NAND gate

Q.11 Two fixed frictionless inclined plane making an angle 30° and 60° with the vertical are shown in the figure. Two block A and B are placed on the two planes. What is the relative vertical acceleration of A with respect to B ?
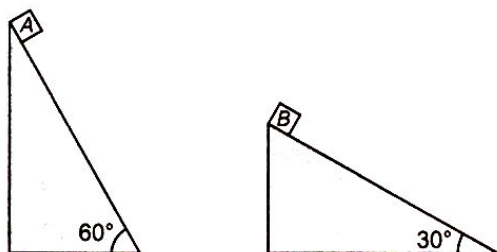
(a) 4.9 ms^{-2} in horizontal direction
(b) 9.8 ms^{-2} in vertical direction
(c) Zero
(d) 4.9 ms^{-2} in vertical direction

Q.12 As the beam enters the medium, it will
(a) diverage
(b) converage
(c) diverage near the axis and converge near the periphery
(d) travel as a cylindrical beam

Q.13 A diatomic ideal gas is used in a car engine as the working substance. If during the adiabatic expansion part of the cycle, volume of the gas increases from V to 32 V, the efficiency of the engine is
(a) 0.5   (b) 0.75   (c) 0.99   (d) 0.25

Q.14 The speed of light in the medium is
(a) minimum on the axis of the beam
(b) the same everywhere in the beam
(c) directly proportional to the intensity
(d) maximum on the axis of the beam

Q.15 A thin semi-circular ring of radius r has a positive charge q distributed uniformly over it. The net field E at the centre O is

(a) $\dfrac{q}{4\pi^2\varepsilon_o r^2}\,\hat{j}$ (b) $-\dfrac{q}{4\pi^2\varepsilon_o r^2}\,\hat{j}$ (c) $-\dfrac{q}{2\pi^2\varepsilon_o r^2}\,\hat{j}$ (d) $\dfrac{q}{2\pi^2\varepsilon_o r^2}\,\hat{j}$

Q.16 The transverse displacement $y(x, t)$ of a wave on string is given by

$y(x,t) = e^{-\left(ax^2 + bt^2 + 2\sqrt{ab}\,xt\right)}$ This represents a

(a) wave moving in - x direction with speed $\sqrt{\dfrac{b}{a}}$

(b) standing wave of frequency $\sqrt{b}$

(c) standing wave of frequency $\dfrac{1}{\sqrt{b}}$

(d) wave moving in + X direction with speed $\sqrt{\dfrac{a}{b}}$

Q.17 Energy required for the electron excitation in Li^{2+} from the first to the third Bohr orbit is
(a) 36.3 eV   (b) 108.8 eV   (c) 122.4 eV   (d) 12.1 eV

Q.18 Two identical charged supheres suspended from a common point by two massless strings of length l are initially a distance $d(d << l)$ apart because of their mutual repulsion. The charge beings to leak from both the spheres at a constant rate. As a result charges at a constant rate. As a result charges approch each other with a velocity v. Then, as a function of distance x between them,
(a) $v = x^{-1}$ (b) $v \propto x^{1/2}$ (c) $v \propto x$ (d) $v \propto x^{-1/2}$

Q.19 Energy required for the electron excitation in Li^{2+} from the first to the third Bohr orbit is
(a) 36.3 eV   (b) 108.8 eV   (c) 122.4 eV   (d) 12.1 eV

Q.20 An object, moving with a speed of 6.25 m/s, is decelerated at a rate given by $\dfrac{dv}{dt} = -2.5\sqrt{v}$,

where v is the instantaneous speed. The time taken by the object, to come to rest, would be
(a) 2 S   (b) 4 S   (c) 8 S   (d) 1 S

Q.21 A pulley of radius 2 m is rotated about its axis by a force $F = (20t - 5t^2)$ N (where, t is measured in second) applied tangentially. If the moment of inertia of the pulley about its axis of rotation is 10 kg-m², the number of rotations made by the pulley before its direction of motion if reserved, is
(a) more than 3 but less than 6   (b) more than 6 but less than 9
(c) more than 9   (d) less than 3

Q.22 The initial shape of the wavefront of the beam is
(a) convex
(b) concave
(c) convex near the axis and concave near the periphery
(d) planar

Q.23 A particle is moving with velocity $v = k(y\hat{i} + x\hat{j})$, where k is a constant. The general equation for its path is
(a) $y = x^2 +$ constant   (b) $y^2 = x +$ constant
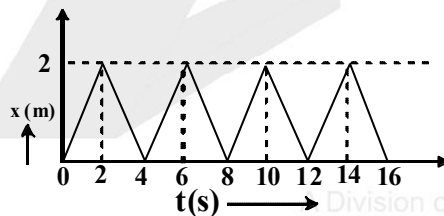(c) $xy =$ constant   (d) $y^2 = x^2 +$ constant

Q.24 The equation of a wave on a string of linear mass density 0.04 kg m^{-1} is given by

$$y = 0.02(m)\sin\left[2\pi\left(\frac{t}{0.04(s)} - \frac{x}{0.50(m)}\right)\right].$$ the tension in the string is

(a) 4.0 N   (b) 12.5 N   (c) 0.5 N   (d) 6.25 N

Q.25 The figure shows tha position-time (x - t) graph of one-dimensional motion of a body of mass 0.4 kg. The magnitude of each impulse is


(a) 0.4 Ns   (b) 0.8 Ns   (c) 1.6 Ns   (d) 0.2 Ns

Q.26 A point P moves in counter - clockwise direction on a circular path as shown in the figure. The movement of P is such that it sweeps out a length $s = t^3 + 5$, where s is in metre and t is in second. The radius of the path is 20 m. The acceleration of P when t = 2 s is nearly.
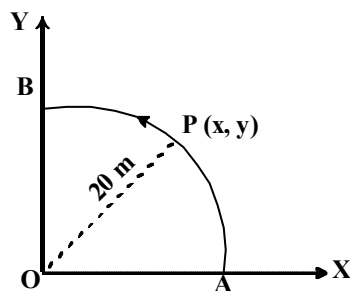
(a) 13 ms⁻²   (b) 12 ms⁻²   (c) 7.2 ms⁻²   (d) 14 ms⁻²

Q.27 A particle of mass m is at rest at the origin at time $t = 0$. It is subjected to a force $F(t) = F_0 e^{-bt}$ in the X direction. Its speed v(t) is depicted by which of the following curves ?

(a) $\frac{F_0}{mb}$, $v(t)$, t (b) $\frac{F_0}{mb}$, $v(t)$, t (c) $\frac{F_0}{mb}$, $v(t)$, t (d) $\frac{F_0}{mb}$, $v(t)$, t
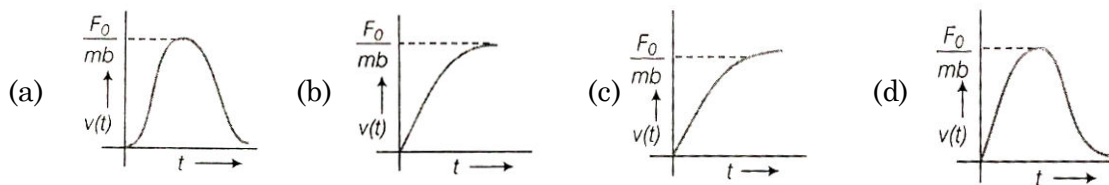
Q.28 A carnot engine, whose efficiency is 40%, takes in heat from a source maintained at a temeperature of 500 K. It is desired to have an engine of efficiency 60%. Then the intake temperature for the same exhaust (sink) temperature must be
(a) Efficiency of Carnot engine cannot be made larger than 50%
(b) 1200 K
(c) 750 K
(d) 600 K

Q.29 A cylindrical tube, open at both ends has a fundamental frequency f in air. The tube is dipped vertically in water so that half of it is in water. The fundamental frequency of the air-column is now

(a) f (b) $\dfrac{f}{2}$ (c) $\dfrac{3t}{4}$ (d) $2f$

Q.30 A liquid in a beaker has temperature $\theta(t)$ at time t and θ_o is temperature of surroundings, then according to Newton's law of cooling, the correct graph between $\log_e (\theta - \theta_o)$ and t is

(a)   (b)   (c)   (d)
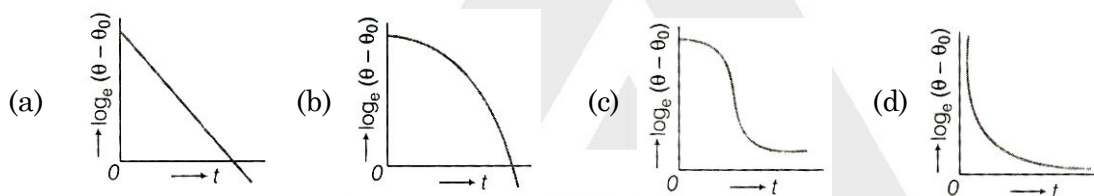
Q.31 In a uniformly charged sphere of total charge Q and radius R, the electric field E is plotted as function of distance from the centre. The graph which would correspond to the above will be

(a)   (b)

(c)   (d)

Q.32 A mass M, attached to a horizontal spring executes SHM with amplitude A_1. When the mass M passes through its mean position, then a smaller mass m is placed over it and both of them move together with amplitude A_2. The ratio of $\left(\dfrac{A_1}{A_2}\right)$ is

(a) $\dfrac{M+m}{M}$ (b) $\left(\dfrac{M}{M+m}\right)^{1/2}$ (c) $\left(\dfrac{M+m}{M}\right)^{1/2}$ (d) $\dfrac{M}{M+m}$

Q.33 The half life of a radioactive substance is 20 min. The approximate time interval

$(t_2 - t_1)$ between the time t_2 when $\dfrac{2}{3}$ of it had decayed is

(a) 14 min   (b) 20 min   (c) 28 min   (d) 7 min

Q.34 A mass m hangs with the help of a string wrapped around a pulley on a frictionless bearing. The pulley has mass m and radius R. Assuming pulley to be a parfect uniform circular disc, the acceleration of the mass m, if the string does not slip on the pulley is,

(a) g (b) $\dfrac{2}{3}g$ (c) $\dfrac{g}{3}$ (d) $\dfrac{3}{2}g$

Q.35 Water is flowing continuously from a tap having an internal diameter $8 \times 10^{-3}\,\text{m}$. The water velocity as it leaves the tap is 0.4 ms^{-1}. The diameter of the water stream at a distance $2 \times 10^{-1}\,\text{m}$ below the tap is close to

(a) $7.5 \times 10^{-3}\,\text{m}$ (b) $9.6 \times 10^{-3}\,\text{m}$ (c) $3.6 \times 10^{-3}\,\text{m}$ (d) $5.0 \times 10^{-3}\,\text{m}$

Q.36 A water fountain on the ground sprinkles water all around it. if the speed of water coming out of the fountain is v, the total area around the fountain that gets wet is

(a) $\pi\,\dfrac{v^4}{g^2}$ (b) $\dfrac{\pi}{2}\,\dfrac{v^4}{g^2}$ (c) $\pi\,\dfrac{v^2}{g^2}$ (d) $\pi\,\dfrac{v^2}{g}$

Q.37 Two long parallel wires are at a distance $2d$ apart. They carry steady equal current flowing out of the plane of the paper as shown. The variation of the magnetic field along the line XX' is given by
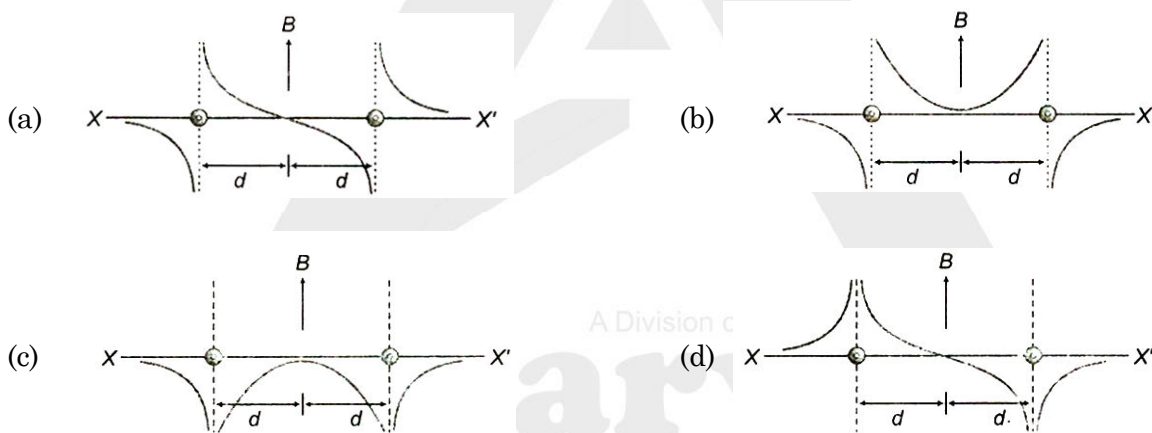

Q.38 If a source of power 4 kW produces 10^{20} photons/second, the radiation belong to a part of the spectrum called
(a) X- rays   (b) ultraviolet rays
(c) microwaves   (d) γ -rays

Q.39 In a series L-C-R circuit, $R = 200\,\Omega$ and the voltage and the frequency of the main supply is 220 V and 50 Hz respectively. On taking out the capacitance from the circuit the current lags behind the voltage by 30°. On taking out the inductor from the circuit, the current leads the voltage by 30°. The power dissipated in the
L - C - R circuit is
(a) 305 W   (b) 210 W   (c) zero   (d) 242 W

Q.40 The speed of daughter nuclei is

(a) $c\,\dfrac{\Delta m}{M + \Delta m}$ (b) $c\,\sqrt{\dfrac{2\Delta m}{M}}$ (c) $c\,\sqrt{\dfrac{\Delta m}{M}}$ (d) $c\,\sqrt{\dfrac{\Delta m}{M + \Delta m}}$

Q.41 Two identical charged spheres are suspended by strings of equal lengths. The strings make an angle of 30° with each other. When suspended in a liquid of density $0.8\,\mathrm{g\,cm^{-3}}$, the angle remains the same. If density of the material of the sphere is $16\,\mathrm{g\,cm^{-3}}$, the dielectric constant of the liquid is
(a) 4   (b) 3   (c) 2   (d) 1

Q.42 A rectangular loop has a sliding connector PQ of length l and resistance $R\,\Omega$ and it is moving with a speed v as shown. The set-up is placed in a uniform magnetic field going into the plane of the paper. The three currents I_2, I_2 and I are
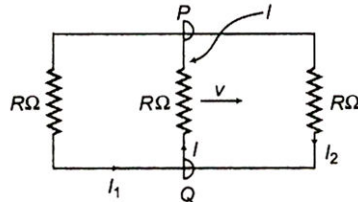

(a) $I_1 = -I_2 = \dfrac{Blv}{R}, I = \dfrac{2Blv}{R}$ (b) $I_1 = l_2 = \dfrac{Blv}{3R}, I = \dfrac{2Blv}{3R}$

(c) $I_1 = I_2 = I = \dfrac{Blv}{R}$ (d) $I_1 = I_2 = \dfrac{Blv}{6R}, I = \dfrac{Blv}{3R}$

Q.43 If a simple pendulum has significant amplitude (upto a factor of 1/e of original) only in the period between $t = 0\,s$ to $t = \tau\,s$, then τ may be called the average life of the pendulum. When the spherical bob of the pendulum suffers a retardation (due to viscous drag) proportional to its velocity with b as the constant of proportionality, the average life time of the pendulum is (assuming damping is small) in seconds

(a) $\dfrac{0.693}{b}$ (b) b   (c) $\dfrac{1}{b}$ (d) $\dfrac{2}{b}$

Q.44 A wooden wheel of radius R is made of two semi-circular parts (see figure). The two parts are held together by a ring made of a metal strip of cross-sectional area S and length L, L is slightly less than $2\pi R$. To fit the ring on the wheel, it is heated so that its temperature rises by ΔT and it just steps over the wheel. As it cools down to surrounding temperature, it presses the semicircular parts together. If the coefficient of linear expansion of the metal is α and its Young's modulus is Y, the force that one part of the wheel applies on the other part is
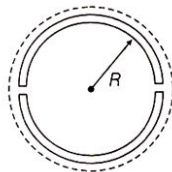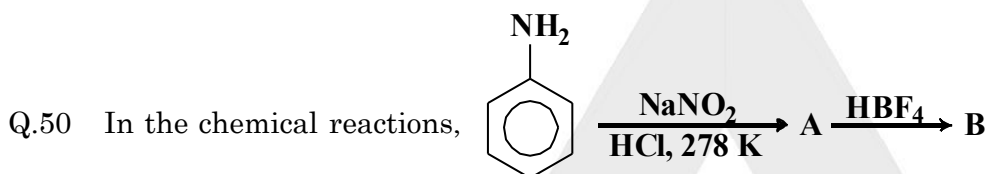

(a) $2\pi SY\alpha\Delta T$ (b) $SY\alpha\Delta T$ (c) $\pi SY\alpha\Delta T$ (d) $2SY\alpha\Delta T$

Q.45 A spectrometer gives the following reading when used to measure the angle of a prism.
Main scale reading : 58.5 degree
Vernier scale reading : 09 divisions
Given that 1 division on main scale corresponds to 0.5 degree. Total division on the vernier scale is 30 and match with 29 divisions of the main scale. The angle of the prism from the above data is
(a) 58.59 degree   (b) 58.77 degree   (c) 58.65 degree   (d) 59 degree

CHEMISTRY

Q.46 One mole of a ymmetrical alkene on ozonolysis gives two mole of an aldehyde having a molecular mass of 44 u. The alkene is
(a) Propene   (b) 1-butene   (c) 2-butene   (d) ethene

Q.47 Percentage of free space in cubic close packed structure and in body centred packed structure are respectively
(a) 30% and 26%   (b) 26% and 32%   (c) 32% and 48%   (d) 48 %and 26%

Q.48 The edge length of a face centered cubic cell of an ionic susbtance is 508 pm. If the radius of the cation is 110 pm, the radius of the anion is
(a) 288 pm   (b) 398 pm   (c) 618 pm   (d) 144 pm

Q.49 The time for half-life period of a certain reaction $A \rightarrow$ products is 1 h. When the initial concentration of the reactant 'A' is 2.0 mol L^{-1}, how much time does it take for its concentration to come from 0.50 to 0.25 mol L^{-1}, if it is a zero order reaction ?
(a) 4 h   (b) 0.5 h   (c) 0.25 h   (d) 1 h

Q.50 In the chemical reactions,

$$\text{Ph-NH}_2 \xrightarrow[\text{HCl, 278 K}]{\text{NaNO}_2} A \xrightarrow{\text{HBF}_4} B$$

the compounds 'A' and 'B' respectively are
(a) nitrobenzene and fluorobenzene
(b) phenol and benzene
(c) benzene diozonium chloride and fluorobenzene
(d) nitrobenzene and chlorobenzene

Q.51 A. 5.2 molal aqueous solution of methyl alcohol, CH_3OH, is supplied. What is the mole fraction of methyl alcohol in the solution ?
(a) 0.100   (b) 0.90   (c) 0.086   (d) 0.050

Q.52 Sodium ethoxide has reacted with ethanoyl chloride. The compound that is produced in the above reaction is
(a) diethyl ether   (b) 2-butanone
(c) ethyl chloride   (d) ethyl ethanoate

Q.53 Which of the following facts about the complex $[Cr(NH_3)_6] Cl_3$ is wrong ?
(a) The complex involves d^2sp^3 hybridization and is octahedral in shape
(b) The complex is paramagnetic
(c) The complex is an outer orbital complex
(d) The complex gives white precipitate with silver nitrate solution

Q.54 The presence or absence of hydroxy group on which carbon atom of sugar differenetiates RNA and DNA ?
(a) 1st   (b) 2nd   (c) 3rd   (d) 4th

Q.55 Identify the compound that exhibits tautomerism
(a) 2-butene   (b) lactic acid   (c) 2-pentanone   (d) phenol

Q.56 Which among the following will be named as dibromidobis (ethylenediamine) chromium (III) bromide ?
(a) $[Cr (en)_3]Br_3$ (b) $[Cr(en)_2Br_2]Br$

(c) $\left[Cr(en)Br_4\right]$ (d) $[Cr (en)Br_2]Br$

Q.57 Which branched chain isomer of the hydrocarbon with molecular mass 72 u gives only one isomer of mono substituted alkyl halide ?
(a) Tertiary buty chloride
(b) Neopentane
(c) Isohexane
(d) Neohexane

Q.58 Iodoform can be prepared from all except
(a) ethyl methyl ketone
(b) isopropyl alcohol
(c) 3-methyl-2-butanone
(d) isobutyl alcohol

Q.59 The species which can best serve as an initiator for the cationic polymerisation is
(a) $LiAlH_4$
(b) HNO_3
(c) $AlCl_3$
(d) BaLi

Q.60 Which one of the following statement is correct ?
(a) All amino acids except lysine are optically active
(b) All amino acids are optically active
(c) All amino acids except glycine are optically active
(d) All amino acids except glutamic acid are optically active.

Q.61 The standard enthalpy of formation of NH_3 is -46.0 kj mol^{-1} if the enthalpy of formation of H_2 from its atoms is $-436\,kJ\,mol^{-1}$ and that of N_2 is $-712\,kJ\,mol^{-1}$, the average bond enthalpy of $N-H$ bond in NH_3 is
(a) $-964\,kJ\,mol^{-1}$
(b) $+352\,kJ\,mol^{-1}$
(c) $+1056\,kJ\,mol^{-1}$
(d) $-1102\,kJ\,mol^{-1}$

Q.62 29.5 mg of an organic compound containing nitrogen was digested according to Kjeldahl's method and the evolved ammonia was absorbed in 20 mL of 0.2 M HCl solution. The excess of the acid required 15 mL of 0.1 M NaOH solution fr complete neutralisation. The percentage of nitrogen in the compound is
(a) 59.0
(b) 47.4
(c) 23.7
(d) 29.5

Q.63 On mixing, heptane and octane form an ideal solution. At 373 K, the vapour pressures of the two liquid components (heptane and octane) are 105 kPa and 45 kPa respectively. Vapour pressure of the solution obtained by mixing 25 g of heptane and 35 g of octane will be (molar mass heptane $=100$ g mol^{-1} and of
octane $=114$ g mol^{-1}).
(a) 72.0 kPa
(b) 36.1 kPa
(c) 96.2 kPa
(d) 144.5 kPa

Q.64 The correct order of $E^o_{M^{2+}+\,M}$ values with negative sign for the four successive elements Cr, Mn Fe and Co is
(a) Mn > Cr > Fe > Co
(b) Cr > Fe > Mn > Co
(c) Fe > Mn > Cr > Co
(d) Cr > Mn > Fe > Co

Q.65 For a particular reversible reaction at temperature T, ΔH and ΔS were found to be both + ve. If T_e is the temperature at equilibrium, the reaction would be spontaneous when
(a) $T_e > T$
(b) $T > T_e$
(c) T_e is 5 times T
(d) $T = T_e$

Q.66 Which of the following statement is wrong ?
(a) The stability of hydrides increases from NH_3 to BiH_3 in group. 15 of the periodic table
(b) Nitrogen can't form $d\pi - p\pi$ bond
(c) Single N - N bond is weaker thant the single P - P bond
(d) N_2O_4 has two resonance structure

Q.67 In a face centred cubic lattice, atom A occupies the corner positions and atom B occupies the face centre positions. If one atom of B is missing from one of the face centred points, the formula of the compound is
(a) A_2B
(b) AB_2
(c) A_2B_2
(d) A_2B_5

Q.68 The entropy change involved in the isothermal reversible expansion of 2 moles of an ideal gas from a volume of 10 dm^3 to a volume of 100 dm^3 at 27°C is

(a) 38.3 J mol^{-1} K^{-1} (b) 35.8 J mol^{-1} K^{-1} (c) 32.3 J mol^{-1} K^{-1} (d) 42.3 J mol^{-1} K^{-1}

Q.69 In the context of the lanthanoids, which of the following statements is not correct ?
(a) There is a gradual decrease in the radii of the members with increasing atomic number in the series
(b) All the members exhibit +3 oxidation state
(c) Because of similar properties the separation of lanthanoids is not easy
(d) Availability of 4f electrons results in the formation compounds in +4 state for all the members of the series.

Q.70 Which of the following reagents may be used to distinguish between phenol and benzoic acid ?
(a) Aqueous NaOH   (b) Tollen's reagent
(c) Molisch reagent   (d) Neutral $FeCl_3$

Q.71 Lithium forms body-centred cubic structure. The length of the side of its unit cell is 351 pm. Atomc radius of the lithium will be
(a) 75 pm   (b) 300 pm   (c) 240 pm   (d) 152 pm

Q.72 Aspirin is known as
(a) acetyl salicylic acid   (b) phenyl salicylate
(c) acetyl salicaylate   (d) methyl salicylic acid

Q.73 In which of the following pairs, the two species are not isostructural ?

(a) CO_3^{2-} and NO_3^- (b) PCl_4^+ and $SiCl_4$

(c) PF_5 and BrF_5 (d) AlF_6^{3-} and SF_6

Q.74 The density of a solution prepared by dissolving 120 g of urea (mol. mass = 60 u) in 1000 g of water is 1.15 g/mL. The molarity of his solution is
(a) 0.50 M   (b) 1.78 M   (c) 1.02 M   (d) 2.02 M

Q.75 What is DDT among the following
(a) Green house gas   (b) A fertiliser
(c) Biodegradable pollutant   (d) Non-biodegradable pollutant

Q.76 Consider the reaction $Cl_2(aq) + H_2S(aq) \longrightarrow S(s) + 2H^+(aq) + 2Cl^-(aq)$

The rate equation for this reaction is $rate = k[Cl_2][H_2S]$

Which of these mechanisms is/are consistant with this rate equation ?

I. $Cl_2 + H_2S \longrightarrow H^+ + Cl^- + Cl^+ + HS^-$ (slow)

    $Cl^+ + HS^- \longrightarrow H^+ + Cl^- + S$ (fast)

II. $H_2S \rightleftharpoons H^+ + HS^-$ (fast, equilibrium)

    $Cl_2 + HS^- \longrightarrow 2Cl^- + H^+ + S$ (slow)

(a) (II) Only   (b) Both (I) and (II)
(c) Neither (I) or (II)   (d) (I) only

Q.77 Consider the following bromides

(I) Me⌒⌒Br   (II) ⟋⟍Me/Br   (III) Me⌒Me/Br
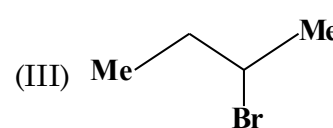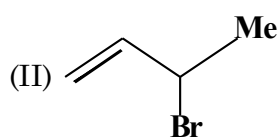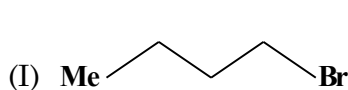
The correct order of S_N1 reactivity is
(a) (II) > (III) > (I)   (b) (II) > (I) > (III)
(c) (III) > (II) > (I)   (d) (I) > (II) > (III)

Q.78 The correct squence which shows decreasing order of the ionic radii of the elements is
(a) $Al^{3+} > Mg^{2+} > Na^+ > F^- > O^{2-}$
(b) $Na^+ > Mg^{2+} > Al^{3+} > O^{2-} > F^-$
(c) $Na^+ > F^- > Mg^{2+} > O^{2-} > Al^{3+}$
(d) $O^{2-} > F^- > Na^+ > Mg^{2+} > Al^{3+}$

Q.79 Which one of the following has an optical isomer ? [en = ethylenediamine]
(a) $[Zn(en)(NH_3)_2]^{2+}$
(b) $[Co(en)_3]^{3+}$
(c) $[Co(H_2O)_4 (en)]^{3+}$
(d) $[Zn(en)_2]^{2+}$

Q.80 The Gibbs energy for the decomposition of Al_2O_3 at 500° C is as follows

$\frac{2}{3} Al_2O_3 \longrightarrow \frac{4}{3} Al + O_2, \Delta_r G = +966 \, k \, J \, mol^{-1}$ The potential difference needed for

electrolytic reduction of Al_2O_3 at 500° C is atleast
(a) 4.5 V   (b) 3.0 V   (c) 2.5 V   (d) 5.0 V

Q.81 Ethylene glycol is used as an antifreeze in a cold climate. Mass of ethylene glycol which should be added to 4 kg of water to prevent it from freezing at -6°C will be
(K_f, for water $=1.86$ K kg mol^{-1} and molar mass of ethylene glycol = 62 g mol^{-1})
(a) 804.32 g   (b) 204.30 g   (c) 400.00 g   (d) 304.60 g

Q.82 a and b are van der Waal's constants for gases. Chlorine is more easily liquefield than ethane because
(a) a and b for $Cl_2 > a$ and b for C_2H_6
(b) a and b for $Cl_2 < a$ and b for C_2H_6
(c) a for $Cl_2 < a$ for C_2H_6 but b for $Cl_2 > b$ for C_2H_6
(d) a for $Cl_2 > a$ for C_2H_6 but b for $Cl_2 > b$ for C_2H_6

Q.83 A gas absorbs photon of 355 nm and emits at two wavelengths. If one of the emission is at 680 nm, the other is at
(a) 1035 nm   (b) 325 nm   (c) 743 nm   (d) 518 nm

Q.84 The rate of chemical reaction doubles for every 10°C rise of temperature. If the temperature is raisedby 50°C, the rate of the reaction increases by about
(a) 10 times   (b) 24 times   (c) 32 times   (d) 64 times

Q.85 The degree of dissociation (α) of a week electrolyte, $A_x B_y$ is related to van't Hoff factor (i) by the expression

(a) $\alpha = \dfrac{i-1}{(x+y-1)}$ (b) $\alpha = \dfrac{i-1}{(x+y+1)}$ (c) $\alpha = \dfrac{x+y-1}{i-1}$ (d) $\alpha = \dfrac{x+y+1}{i-1}$

Q.86 The equilibrium constant (K_c) for the reaction, $N_2(g) + O_2(g) \longrightarrow 2NO(g)$ ate

temperature T is 4×10^{-1}. The value of K_c for the reaction

$NO(g) \longrightarrow \frac{1}{2} N_2(g) + \frac{1}{2} O_2 (g)$ at the same temperature is

(a) 0.02   (b) 2.5×10^2 (c) 4×10^{-4} (d) 50.0

Q.87 Ortho-nitrophenol is less soluble in water than p and m-nitrophenol because
(a) o-nitrophenol is more volatile steam than those of m and p-isomers.
(b) o-nitorphenol shows intramolecular H-bonding
(c) o-nitorphenol shows intermolecular H-bonding
(d) melting point of o-nitrophenol is lower than those of m and p-isomers

Q.88 2-hexyne gives trans-2-hexene on treatment with
(a) Pt/H_2 (b) Li/NH_3 (c) $Pd/BaSO_4$ (d) $LiAlH_4$

Q.89 The standard reduction potentials for $Zn^{2+} / Zn, \quad Ni^{2+} / Ni$ and Fe^{2+} / Fe are

$-0.76, -0.23$ and $-0.44 \, V$ respectively. The reaction $X + Y^{2+} \longrightarrow X^{2+} + Y$ will be

spontaneous when

(a) $X = Ni, Y = Fe$ (b) $X = Ni, Y = Zn$ (c) $X = Fe, Y = Zn$ (d) $X = Zn, Y = Ni$

Q.90   In the given transformation, which of the following is the most appropriat reagent ?
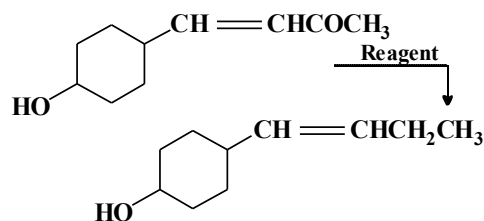
(a) NH_2NH_2, $\overset{\ominus}{O}H$ (b) Zn - Hg/ HCl   (c) Na, Liq, NH_3 (d) $NaBH_4$

BIOLOGY

Q.91   Species are considered as
(a) real units of classifcation devised by taxonomists
(b) real basic units of classification
(c) the lowest units of classification
(d) artificial concepts of human mind which cannot be defined in absolute terms

Q.92   Which one of the following is not a correct statement ?
(a) Botanical gardens have collection of living plants for reference.
(b) A museum has collection of photographs of plants and animals
(c) Key is toxonomic aid for identification of specimens
(d) Herbarium houses dried, pressed and preserved plant specimens.

Q.93   What is common about *Trypanosoma*, *Noctiluca*, *Monocystic* and *Giardia* ?
(a) They have flagella   (b) They produce spores
(c) These are all parasites   (d) These are all unicellular protists

Q.94   What is true for cyanobacteria ?
(a) Oxygenic with nitrogenase   (b) Oxygenic without nitrogenase
(c) Non- oxygenic with nitrogen   (d) Non-oxygenic without nitrogenase

Q.95   Which one of the following is wrongly matched ?
(a) *Nostoc*-Water blooms   (b) *Spirogyra*-Motile gametes
(c) *Sargassum*-Chlorophyll c   (d) Basidiomycetes-Puffballs

Q.96   Read the following Five statement (A to E) and select the option with all correct statement :
(A) Mosses and Lichens are the first organisms to colonise a bare rock.
(B) Selaginella is a homosporous pteridophyte
(C) Coralloid roots in Cycas have VAM
(D) Main plant body in bryophytes is gametophytic, whereas in pteriodophytes it is sporophytic
(E) In gymnosperms, male and femle gametophytes are presents within sporangia located on sporophyte
(a) (B), (C), and (D)   (b) (A), (D), and (E)
(c) (B), (C) and (E)   (d) (A), (C), and (D)

Q.97   Which of the following characteristics is mainly responsible for diversification of insects on land ?
(a) Bilateral symmetry   (b) Exoskeleton
(c) Eyes   (d) Segmentation

Q.98 Sharks and dogfishes differ from skates and rays by
(a) Their pectoral fins distinctly marked off from cyclindrical bodies
(b) Gill slits are ventrally placed
(c) Head and trunk are widened considerably
(d) Distinct demarcation between body and tail

Q.99 Velaman is found in
(a) roots of Screwpine
(b) aerial and terrestrial roots of orchids
(c) leaves of Ficus elastica
(d) aerial roots of orchids

Q.100 In china rose the flowers are :
(a) Actinomorphic, epigynous with valvate aestivation
(b) Zygomorphic, hypogynous with imricate aestivation
(c) Zygomorphic, epigynous with twisted aestivation
(d) Actinomorphic, hypogynous with twisted aestivation.

Q.101 In a longitudinal section of a root, starting from the tip upward, the four zones occurs in the following order.
(a) Root cap, cell division, cell enlargement, cell maturation
(b) Root cap, cell division, cell maturation, cell enlargement
(c) Cell division, cell enlargement, cell maturation, root cap
(d) Cell division, cell maturation, cell enlargement, root cap.

Q.102 You are given a fairly old piece of dicot stem and a dicot root. Which of the following anatomical structures will you use to distinguish between the two ?
(a) Secondary xylem   (b) Secondary phloem
(c) Protoxylem   (d) Cortical cells

Q.103 Which of the following is not exclusively supplied with involuntary muscles ?
(a) Muscular coats of blood vessels   (b) Muscles of the ducts of glands
(c) Muscles of iris   (d) Muscles of urethra

Q.104 Select the correct statement from the ones given below with respect to *Periplaneta americana.*
(a) Nervous system located dorsally consists of segmentally arranged ganglia joined by a pair of longitudinal connectives.
(b) Males bear a pair of short thread like anal styles.
(c) There are 16 very long Malpighian tubules present at the junctions of midgut and hindgut.
(d) Grinding of food is carried out only by the mouth parts.

Q.105 Angstrom $(\overset{\circ}{A})$ is equal to

(a) 0.01 µm   (b) 0.001 µm   (c) 0.0001 µm   (d) 0.00001 µm

Q.106 The figure below shows the structures of a mitochondrion with its four parts labelled (A), (B), (C), and (D)
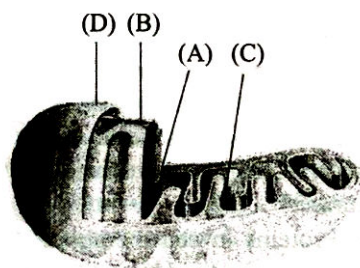
Select the part correctly matched with its function.
(a) Part (D) : Outer membrane - gives rise to inner membrane by splitting

(b) Part (B) : Inner membrane - forms infoldings called cristae

(c) Part (C) : Cristae - posses single circular DNA molecule and ribosomes

(d) Part (A) : Matrix : major site for respiratory chain enzymes

Q.107 Which one of the following biomolecules is correctly characterized ?
(a) Lecithin - A phosphorylated glyceride found in cell membrane.
(b) plamitic acid - An unsaturated fatty acid with 18 carbon atoms
(c) Adenylic acid - Adenosine with a glucose phosphate molecule
(d) Alanine amino acid - Contains an amino group and an acidic group anywhere in the molecule.

Q.108 Which of the following statements about enzymes is wrong ?
(a) Enzymes require optimum pH and temperature for maximum activity
(b) Enzymes are denatured at high temperatures
(c) Enzymes are mostly proteins but some are lipids also
(d) Enzymes are highly specific

Q.109 During which phase(s) of cell cycle. amount of DNA in a cell remains at 4C level if the initial amount is denoted as 2C?
(a) G_o & G_1 (b) G_1 & S
(c) Only G_2 (d) G_2 & M

Q.110 In meiosis crossing over is initiated at
(a) Pachytene   (b) Leptotene
(c) Zygotene   (d) Diplotene

Q.111 Two cells A and B are contiguous. Cell A has osmotic pressure 10 atm, turgor pressure 7 atm and diffusion pressure deficit 3 atm. Cell B has osmotic pressure 8 atm, turgor pressure 3 atm and diffusion pressure deficit 5 atm. The result will
(a) no movement of water   (b) equilibrium between the two
(c) movement of water from cell A to B   (d) movement of water from cell B to A.

Q.112 Transpiration and root pressure cause water to rise in plants by :
(a) Pulling and pushing it, respectively   (b) Pushing it upward
(c) Pushing and pullling it, respectively   (d) Pushing it upward

Q.113 Minerals known to be required in large amounts for plant growth include :
(a) calcium, magnesium, manganese, copper
(b) potassium, phosphorus, selenium, boron
(c) magnesium, sulphur, iron, zinc
(d) phosphorus, potassium, sulphur, calcium

Q.114 Which one of the following is wrong statement ?
(a) Anabaena and Nostoc are capable of fixing nitrogen in free living state also.
(b) Root nodule forming nitrogen fixers live as aerobes under free-living conditions
(c) Phosphorus is a constituent of cell membranes, certain nucleic acids and cell proteins
(d) Nitrosomonas and Nitrobacter are chemoautotrophs

Q.115 Cytochromes are found in :
(a) Outer wall of mitochondria   (b) Cristae of mitochondria
(c) Lysosomes   (d) Matrix of mitochondria

Q.116 $NADP^+$ is reduced to NADPH in
(a) PS I
(b) PS II
(c) Calvin Cycle
(d) Noncyclic photophoshorylation

Q.117 Out of 36 ATP molecules produced per glucose molecule during respiration
(a) 2 are produced outside glycolysis and 34 during respiratory chain
(b) 2 are produced outside mitochondria and 34 inside mitochondria

(c) 2 during glycolysis and 34 during Krebs cycle

(d) All are formed inside mitochondria

Q.118 R.Q. is ratio of

(a) CO_2 produced to substrate consumed (b) CO_2 produced to O_2 conusumed

(c) oxygen consumed to water produced (d) oxygen consumed to CO_2 produced

Q.119 Movement of leaves of Sensitive Plant, *Mimos pudica* are due to

(a) thermonasty   (b) seismonasty   (c) hydrotropism   (d) chemonasty

Q.120 Dr. F. Went noted that if coleoptile tips were removed and placed on agar for one hour, the agar would produce a bending when placed on one side of freshly-cut coleoptile stumps. Of what significance is this experiment ?

(a) It made possible the isolation and exact identification of auxin.

(b) It is the basis for quantitative determination of small amounts of grwoth promoting substances.

(c) It supports the hypothesis that IAA is auxin

(d) It demonstrated polar movement of auxins.

Q.121 An adolescent human below 17 years of age normally has dental formula as

(a) $\dfrac{3}{3}, \dfrac{1}{1}, \dfrac{3}{2}, \dfrac{1}{1}$ (b) $\dfrac{2}{2}, \dfrac{1}{1}, \dfrac{2}{2}, \dfrac{3}{3}$ (c) $\dfrac{2}{2}, \dfrac{1}{1}, \dfrac{3}{3}, \dfrac{2}{2}$ (d) $\dfrac{2}{2}, \dfrac{1}{1}, \dfrac{2}{2}, \dfrac{2}{2}$

Q.122 A dental disease characterized by motting of teeth is due to the presence of a certain chemical element in drinking water. Which of the following is that element ?

(a) mercury   (b) chlorine   (c) fluorine   (d) boron

Q.123 Figure shown schematic plane of blood circulation in human with labels A to D. Identify the label and give its function's
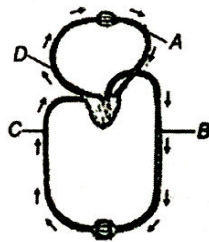
(a) B - Pulmonary artery-takes blood form heart to lung, $PO_2 = 90$ mm Hg

(b) C - Vena Cava - takes blood from body parts to right auricle, $PCO_2 = 45$ mm Hg

(c) D - Dorsal aorta -takes blood from Heart to body Part $PO_2 = 95$ mm Hg

(d) A - Pulmonary vein - takes impure blood from body parts, $PO_2 = 60$ mm Hg

Q.124 Name the chronic respiratory disorder caused mainly by cigarette smoking

(a) emphysema   (b) asthma

(c) respiratory acidosis   (d) respiratory alkalosis

Q.125 Which one of the following is correct ?

(a) Serum = Blood + Fibrinogen   (b) Lymph = Plasma + RBC + WBC

(c) Blood = Plasma + RBC + WBC   (d) Plasma = Blood - Lymphocytes

Q.126 Examination of blood of a person suspected of having anemia, shows large, immature, nucleated erythrocytes without haemoglobin. Supple - menting his diet with Which of the following is likely to alleviate his symptoms ?

(a) Folic acid and cobalamine   (b) Riboflavin

(c) Iron compounds   (d) Thiamine

Q.127 Which one of the following options gives the correct categorization of six animals according to the type of nitrogenous wastes (A, B, C) they give

	A-Ammo notelic	B-Ureotelic	C-Uricotelic
(a)	Pigeon Humans	Aquatic Amphibia, Lizards	Cockroach, Frog
(b)	Frog, Lizards	Aquatic Amphibia, Humans	Cockroach, Pigeon
(c)	Aquatic Amphibia	Frog Humans	Pigeon, Lizards, Cockroach
(d)	Aquatic Amphibia	Cockroach Humans	Frog, Pigeon, Lizards

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Q.128 Which one of the following statements is correct with respect to kidney function regulation ?
(a) When someone drinks lot of water. ADH release is suppressed
(b) Exposure to cold temperature blood flow stimulates formation of Angiotensin II
(c) An increase in glomerular blood flow stimulates formation of Angiotensin II.
(d) During summer when body loses lot of water by evaporation, the release of ADH is suppressed.

Q.129 Select the correct statement with respect to locomotion in humans :
(a) Accumulation of uric acid crystals in joints causes their inflammation
(b) The vertebral column has 10 thoracic vertebrae
(c) The joint between adjacent vertebrae is a fibrous joint
(d) The decreased level of progesterone causes osteoporosis in old people

Q.130 Parathormone deficiency produces muscle ramps or tetany as a result of
(a) lowered blood Ca^{2+}
(b) enhanced blood Na^+
(c) enhanced blood glucose
(d) enhanced blood glucose Ca^{2+}

Q.131 Which of the following is an example of negative feedback loop in humans ?
(a) Secretion of tears after falling of sand particles into the eye.
(b) Salivation of mouth at the sight of delicious food.
(c) Secretion of sweat glands and constriction of skin blood vessels when it is too hot
(d) Constriction of skin blood vessels and contraction of skeletal muscles when it is too cold.

Q.132 Cornea transplant in humans is almost never rejected. This is because
(a) its cells are least penetrable by bacteria
(b) it has no blood supply
(c) it is composed of enucleated cells
(d) it is a non-living layer.

Q.133 GnRH, a hypothalamic hormone, needed in reproduction, acts on :
(a) anterior pituitary gland and stimulates secreation of LH and FSH.
(b) posterior pituitary gland and stimulates secretion of oxytocin and FSH.
(c) posterior pituitary gland and stimulates secretion of LH and relaxin.
(d) anterior pituitary gland and stimulates secretion of LH and oxytocin.

Q.134 Insulin differs from growth hormone in that it

(a) stimulates lipoprotein lipase in vicinity of fat cells
(b) increases the transport of amino acids across the cell membranes of muscles
(c) increases mRNA / ribosome activity
(d) stimulates hormone sensitive lipase in fat cells

Q.135 Monoecious plant of Chara shows occurrence of :
(a) stamen and carpel of the same plant
(b) upper antheridium and lower oogonium on the same plant
(c) upper oogonium and lower antheridium on the same plant
(d) antheridiophore and archegoniophore on the samep plant.

Q.136 Which of the following pairs is not correctly matched ?
Mode of reproduction   *Example*
(a) Rhizome   Banana
(b) Binary fission   *Sargassum*
(c) Conidia   *Penicillium*
(d) Offset   Water hyacinth

Q.137 Functional megaspore in an angiosperm develops into ?
(a) Endosperm   (b) Embryo sac   (c) Embryo   (d) Ovule

Q.138 Which one of the following represents an ovule, where the embryo sac becomes horseshoe shaped   and the funiculus and micropyle are close to each other ?
(a) Amphitropous   (b) Circinotropous   (c) Atropous   (d) Antropous

Q.139 Capacitation occurs in :
(a) Epididymis   (b) Vas deferens
(c) Female reproductive tract   (d) Rete testis

Q.140 Which one fo the following statements about morula in humans is correct ?
(a) It has almost equal quantity of cytoplasm as an uncleaved zygote but much more DNA
(b) It has far less cytoplasm as well as less DNA than in an uncleaved zygote
(c) It has more or less equal quantity of cytoplasm and DNA as in uncleaved zygote
(d) It has more cytoplasm and more DNA than an uncleaved zygote

Q.141 Which one of the following statements is correct regarding Sexually Transmitted Diseases (STD) ?
(a) The chances of a 5 year boy contacting a STD are very little
(b) A person may contact syphilis by sharing milk with one already suffering from the disease
(c) Haemophilia is one of the STD
(d) Genital herpes and sickle-cell anaemia are both STD

Q.142 One of the legal methods of birth control is :
(a) by a sbstaining from coitus from day 10 to 17 of the menstrual cycle
(b) by having coitus at the time of day break
(c) by a premature ejaculation during coitus
(d) abortion by taking an appropriate medicine

Q.143 Which one from those given below is the period for Mendel's hybridization experiments ?
(a) 1840 - 1850   (b) 1857 - 1869   (c) 1870 - 1877   (d) 1856 - 1863

Q.144 Drosophila files with XXY genotype are females but in case of humans, such individuals are abnormal males (Klinefelter's syndrome). This indicates that
(a) The Y- chromosome has no role in sex determination
(b) In Drosophila, the Y- chromosome is essential for sex determination
(c) The Y - chromosome is male determining in humans
(d) The Y - chromosome is female determining in Drosophila

Q.145 If there are 999 bases in an RNA that codes for a protein with 333 amino acids, and the base at position 901 is deleted such that the length of the RNA becomes 998 bases, how

many codons will be altered ?
(a) 11   (b) 33   (c) 333 (d) 1

Q.146 In the DNA molecule
(a) the total amount of purine nucleotides and pyrimidine nucleotides is not always equal
(b) there are two strands which run parallel in the $5' \rightarrow 3'$ direction
(c) the proportion of Adenine in relation to thymine varies with the organism
(d) there are two strands which run anti parallel one in $5' \rightarrow 3'$ direction and other in $3' \rightarrow 5'$

Q.147 One of the important consequences of geographical isolation is
(a) preventing speciation
(b) speciation through reproduction isolation
(c) random creation of new species
(d) no change in the isolated fauna.

Q.148 Darwin's theory of pangenesis shows similarity with theory of inheritance of acquired characters then what shall be correct according to it ?
(a) Useful organs become strong and developed while useless organs become extinct. These organs help in struggle for survival.
(b) Size of organs increase with ageing
(c) Development of organs is due to will power
(d) There should be come physical basis of inheritance.

Q.149 Match the following sexually transmitted diseases (Column-I) with their causative agent (Colume- II) and select the correct option :

Column- I   Column -II
(A) Gonorrhea   (i)   HIV
(B) Syphilis   (ii) Neisseria
(C) Genitial Warts   (iii) Treponema
(D) AIDS   (iv) Human papiloma- Virus

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

Q.150 ELISA is used to detect viruses, where
(a) DNA - probes are required
(b) Southern bloting is done
(c) Alkaline phosphatase is the key reagent
(d) Catalase is the key reagent

Q.151 Farmers in a particular region were concerned that pre-mature yellowing of leaves of a pulse crop might cause decrease in the yield. Which treatment could be most beneficial to obtain maximum seed yield ?
(a) Treatment of the plants with cytokinins along with a small dose of nitrogenous fertilizer
(b) Removal of all yellow leaves and spraying the remaining green leaves with 2,4,5-trichlorophenoxy acetic acid
(c) Application of iron and magnesium to promote synthesis of chlorophyll
(d) Frequent irrigation of the crop

Q.152 Which of the following enhances or induces fusion of protoplasts ?
(a) Polyethylene glycol and sodium nitrate
(b) IAA and kinetin
(c) IAA and gibberellins
(d) Sodium chloride and potassium chloride

Q.153 The reason why vegetatively reproducing crop plants are best suited for maintaining hybrid vigour is that
(a) once a desired hybrid has been produced ther are few chances of losing it
(b) they have a longer life span
(c) they are more resistant to diseases
(d) they can be easily propagated

Q.154 The primitive prokaryotes responsible for the production of biogas from the dung of ruminant animals, include the
(a) Halophiles
(b) Thermoacidiophilies
(c) Methanogens
(d) Eubacteria

Q.155 Which one of the following is a wrong matching of a microbe and its industrial product, while the remaining three are correct ?
(a) Yeast - Statins
(b) *Acetobacter aceti-* acid
(c) *Clostridium butylicum* - lactic acid
(d) *Aspergillus niger* - citric acid

Q.156 The process of separation and purification of expressed protein before marketing is called :
(a) Downstream processing
(b) Bioprocessing
(c) Postproduction processing
(d) Upstream processing

Q.157 The figure below is the diagrammatic representation of the E.Coli vector pBR 322. Which one of the given options correctly identifies its certain components (s) ?
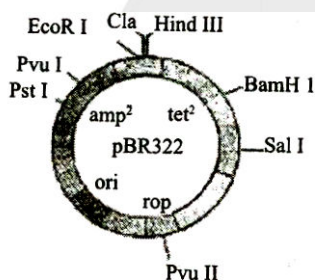
(a) ori - original restriction enzyme
(b) rop - reduced osmotic pressure
(c) Hind III, Eco RI - selectable markers
(d) amp^R, tet^R, antibiotic resistance genes

Q.158 RNA interference involves
(a) Synthesis of mRNA from DNA
(b) Synthesis of cDNA from RNA using reverse transcriptase
(c) Silencing of specific mRNA due to complementary RNA
(d) Interference of RNA in synthesis of DNA

Q.159 A transgenic food crop' which may help in solving the problem of night blindness in developing countries is
(a) Flavr Savr tomatoes
(b) Starlink maize
(c) Bt Soybean
(d) Golden rice

Q.160 The following graph depicts changes in two populations (A and B) of herbivores in a grassy field A possible reason for these changes is that :
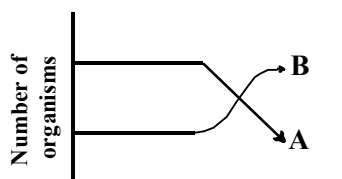

(a) Population B competed more successfully for food than population A
(b) Population A produced more offspring than population B

(c) Population A consumed the members of population B

(d) Both plant populations in this habitat decreased

Q.161 Which one is true ?

(a) Commensalism when none of the interacting population affect each other

(b) Symbiosis when the interaction is useful to both the populations

(c) Symbiosis when neither populations affects each other

(d) Comensalism when the interaction is useful to both the populations

Q.162 Given below is an imaginary pyramid of numbers. What could be one of the possibilities about certain organisms at some of the different levels ?
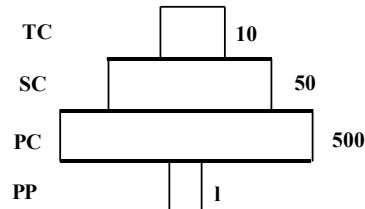
(a) Level PC is " insects" and level SC is "small insectivorous birds".

(b) Level PP is "phytoplanktons" in sea and " Whale" on top level TC

(c) Level one PP is "pipal trees" and the level SC is " sheep".

(d) Level PC is "rats" and level SC is "cats".

Q.163 If by radiation all nitrogenase enzymes are inactivated, then there will be no

(a) fixation of nitrogen in legumes

(b) fixation of atmospheric nitrogen

(c) conversion from nitrate to nitrite in legumes

(d) conversion from ammonium to nitrate in soil

Q.164 A species facing extremely high risk of extinction in the immediate future is called :

(a) Vulnerable   (b) Endemic

(c) Critically endangered   (d) Extinct

Q.165 Consider the following statements (A) - (D) each with one or two blancks.

(A) Bears go into ___(1)___during winter to _____(2)_____cold weather

(B) A conical age pyramid with a broad base represents_____(3) _____ human population

(C) A wasp pollinating a fig flower is an example of ____(4)_____

(D) An area with high levels of species richness is known as _____(5)_____

Which one of the following options give the correct fill ups for the respective blank numbers from (1) to (5) in the statements

(a) (2)- stable (4) commensalism, (5) marsh

(b) (1) - aestivation, (5) - escape, (3) - stable, (4) - mutualism

(c) (3) - expanding, (4) - commensalism, (5) biodiversity park

(d) (1) - hibernation, (2) - escape, (3) - expanding, (5) - hot spot

Q.166 Rachel Carson's famous book " Silent Spring" is related to :

(a) Noise pollution   (b) Population explosion

(c) Ecosystem management   (d) Pesticide pollution.

Q.167 Which one of the following is the correct percentage of the two (out of the total of 4) green house gases that contribute to the total global warming ?

(a) CFCs 14%, Methane 20%   (b) CO_2, 40%, CFCs 30%

(c) N_2O 6%, CO_2 86%   (d) Methane 20%, N_2O, 18%

Q.168 In case of a couple where the male is having a very low sperm count, which technique will be suitable for fertilisation ?

(a) Gamete intracytoplasmic fallopian transfer

(b) Artificial Insemination

(c) Intracytoplasmic sperm injection

(d) Intrauterine transfer

Q.169 In a cross between AABB $\times$ aabb, the ratio of F_2 genotypes between AABB, AaBB, Aabb and aabb would be
(a) $9:3:3:1$ (b) $2:1:1:2$ (c) $1:2:2:1$ (d) $7:5:3:1$

Q.170 Spliceosomes are not found in cells of ;
(a) Fungi   (b) Animals   (c) Bacteria   (d) Plants

Q.171 Which of the following had the smallest brain capacity ?
(a) *Homo sapiens*   (b) *Homo neanderthalensis*
(c) *Homo habilis*   (d) *homo erectus*

Q.172 Diptheria is caused by
(a) poisions released from dead bacterial cells into the host tissue
(b) poisons released by living bacterial cells into the host tissue
(c) excessive immune response by the host's body
(d) poisons released by virus into the host tissue

Q.173 Which of the following enhances or induces fusion of protoplasts ?
(a) Polyethylene glycol and sodium nitrate
(b) IAA and kinetin
(c) IAA and gibberellins
(d) Sodium chloride and potassium chloride

Q.174 Gobar gas contains mainly
(a) $CH_4 + CO_2$ (b) $CH_4 + O_2$ (c) $CO_2 + H_2$ (d) $CO_2 + SO_2$

Q.175 Introduction of food plants developed by genetic engineering is not desirable because
(a) economy of developing countries may suffer
(b) these products are less tasty as compared to the already existing products
(c) this method is costly
(d) there is danger of entry of viruses and toxins with introduced crop

Q.176 Which body of the Government of India regulates GM research and safety of introducing GM organisms for public services ?
(a) Indian Council Of Agricultural Research
(b) Genetic Engineering Approval Committee
(c) Research Committee on Genetic Manipulation
(d) Bio- safetry committee.

Q.177 In increasing order of organizational complexity, which one of the following is the correct sequence ?
(a) Population, species, community, ecosystem
(b) Population, variety, species, ecosystem
(c) Population, ecosystem, species, community
(d) Species, variety ecosystem, community

Q.178 Which ecosystem has the maximum biomass ?
(a) Grassland ecosystem   (b) Pond ecosystem
(c) Lake ecosystem   (d) Forest ecosystem

Q.179 Which of the following is related to Exsitu conservation of threatened animals and plants ?
(a) Biodiversity hot spots   (b) Amazon rainforest
(c) Himalayan region   (d) Wildlife safari parks

Q.180 Joint Forest Management Concept was introduced in India during
(a) 1960 s   (b) 1970 s   (c) 1980 s   (d) 1990 s

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