Sample Paper

Agriculture

Q.No. 1 Assertion [A] : Mammary glands are apocrine glands Reason [R] : In apocrine glands, the entire gland cell disintegrates to discharge the contents

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

(B) Both [A] and [R] are true but [R] is not the correct explanation of [A]

(C) [A] is true but [R] is false

(D) [A] is false but [R] is true

Q.No. 2 The mole fractions of benzene and toluene vapours in equilibrium with the ideal solution of benzene in toluene at 300 K are 0.61 and 0.39 respectively. The total vapour pressure of the solution is 41 mm Hg. If the vapour pressures of pure benzene and toluene at 300 K are 50 and 32 mm Hg respectively. the mole fractions of benzene and toluene in solution respectively are

(A) 0.25, 0.75

(B) 0.75, 0.25

(C) 0.30, 0.70

(D) 0.50, 0.50

Q.No. 3 An earthquake generates both transverse (S) and longitudinal (p) waves in the earth with speeds 4.5 km^{-1} and 8.0 km s^{-1} respectively. A seismograph records that the first P-wave arrives 3.5 minutes earlier than the first S-wave. From the seismograph, the epicentre of the earthquake is located at a distance

(A) 1080 km

(B) 2468 km

(C) 2160 km

(D) 4320 km

Q.No. 4 In a p-type semiconductor the donor level is at 50 meV above the valence band To produce one electron, the maximum wavelength of light photon required is (Planck's constant = 6.6 x 10^{-34} J-s and speed of light in vacuum = 3 x 10 ms^{8})

(A) 0.0248 μm

(B) 0.248 μm

(C) 2.48 μm

(D) 24.8 μm

Q.No. 5 Which of the following produces testosterone?

(A) Primordial germ cells

(B) Leydig cells

(C) Prostate gland

(D) Bulbourethral gland

Q.No. 6 A particle of mass 1 kg carrying a charge of 0.01 C is able to remain at rest on a rough inclined plane of inclination 30° when a uniform horizontal electric field of $\frac{490}{\sqrt{3}} \mathrm{Vm}^{-1}$ is applied to the Coefficient of friction is (Acceleration due to gravity = 9.8 ms^{-2})

docs.aglasem.com

(A) 0.5

(B) $\frac{1}{\sqrt{3}}$

(C) $\frac{\sqrt{3}}{7}$

(D) $\frac{\sqrt{3}}{2}$

Q.No. 7 $[ML_6]^{n+}$ is an octahedral complex. Its crystal field splitting energy (Δ_0) is 1.8 eV. If same metal ion (M^{n+}) forms a tetrahedral complex with same ligands (L) then the crystal field splitting energy (Δ_t) of $[ML_6]^{n+}$ in eV is

(A) 1.8

(B) 0.8

(C) 4.05

(D) 0.9

Q.No. 8 The average translational kinetic energy of a molecule in a gas becomes equal to 0.69 eV at a temperature about [Boltzmann constant = 1 .38 x 10^{-23} J K^{-1}]

(A) 3370 °C

(B) 3388 °C

(C) 5333 °C

(D) 5060 °C

Q.No. 9 A conducting spherical bubble of radius 'a' and thickness t (t<<a) has potential V. Now the bubble collapses into a droplets. Find the potential of the droplets.

(A) V(a/3t)

(B) $V(a/3t)^{1/2}$

(C) $V(a/3t)^{1/3}$

(D) None of these

Q.No. 10 Conversion of molecular oxygen to ozone takes place only to the extent of 15%. Calculate the mass (in g) of ozone that is formed from 67.2 L of oxygen at STP

(A) 96

(B) 64.1

(C) 14.4

(D) 22.4

Q.No. 11 A solid sphere of mass 100 kg and radius 10 m moving in a space becomes a circular disc of radius 20 m in one hour. Then the rate of change of moment of inertia in the process is

(A) $\frac{40}{9}\mathrm{kgm^2s^{-1}}$

(B) $\frac{10}{9}\mathrm{kgm^2s^{-1}}$

(C) $\frac{50}{9}\mathrm{kgm^2s^{-1}}$

(D) $\frac{25}{9}\mathrm{kgm^2s^{-1}}$

Q.No. 12 Identify the correct statements from the following (i) CO is an amphoteric oxide (ii) As_2O_3 is a neutral oxide (iii) Cl_2O_7 is an acidic oxide (iv) CaO is a basic oxide

(A) i. ii iii, iv

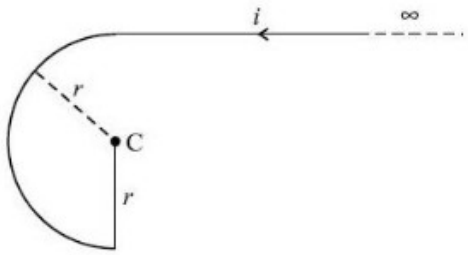
docs.aglasem.com

aglasem.com

(B) ii, ii, iv only

(C) iii, iv only

(D) iv, ii only



Q.No. 13 The magnetic field at the centre C of the arrangement shown in figure is

(A) $\frac{\mu_0 i}{2\pi r}(1+\pi)$

(B) $\frac{\mu_0 i}{4\pi r}(1+\pi)$

(C) $\frac{\mu_0 i}{\pi r}(1+\pi)$

(D) $\frac{\mu_0 i}{r}(1+\pi)$

Q.No. 14 Match the following entries related to fundamental forces and their manifestations

(a)	Nuclear force	(i)	Electromagnetic interaction
(b)	Force between sodium and chlorine ions in sodium chloride	(ii)	Gravitational interaction
(c)	Energy from the sun	(iii)	Strong interaction
(d)	Oscillations of a simple pendulum	(iv)	Weak interaction

The correct answer is

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

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

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

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

Q.No. 15 Match the following:

	List - I		List - II
(a)	Charles Darwin	(i)	Systema Naturae
(b)	John Ray	(ii)	Natural History
(c)	Buffon	(iii)	Historia Generalis plantarum
(d)	Linnaeus	(iv)	The origin of species

(A)

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

(B)

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

docs.aglasem.com

aglasem.com

(C)

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

(D)

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

Q.No. 16 Identify the correct set of monosaccharides present in sucrose (X) lactose (Y) and maltose (Z).

(A) X- glucose,fructose, Y- galactose,glucose, Z- glucose,fructose

(B) X- glucose,fructose, Y- galactose,glucose, Z- glucose,glucose

(C) X- glucose,glucose, Y- galactose,glucose, Z- glucose,glucose

(D) X- galactose,glucose, Y- glucose,fructose, Z- glucose,glucose

Q.No. 17 Study the following statements I. Karyotype of Klinefelter's syndrome is AA + XO II. Tumer's syndrome is an example for trisomy III. AA + XX + 21 st chromosome is the karyotype of Down's syndrome IV. Individual with Klinefelter syndrome is Barr body positive Among the above , correct statements are

(A) I,II

(B) II,III

(C) III,IV

(D) I,IV

Q.No. 18 The emf of the following cell is 1.229V at 298 K. $\mathrm{Pt}, \mathrm{H}_2(1 \mathrm{atm})\left|\mathrm{H}^{+}(1 \mathrm{M})\right| \mathrm{O}_2(\text{ latm }), \mathrm{Pt}\ \mathrm{H}_2+\frac{1}{2} \mathrm{O}_2 \rightleftharpoons \mathrm{H}_2 \mathrm{O}$ The standard free energy change for the cell reaction is $\left[\mathrm{F}=9.649 \times 10^4 \mathrm{Cmol}^{-1}\right]$

(A) -212.77 k J

(B) -237.17 kJ

(C) -577.1 kJ

(D) -474.3 kJ

Q.No. 19 Match the following: List - I (a) Holandric Genes (b) Multiple effects of a single gene (c) Skin colour in man (d) A B O Blood types List - II (a) Plieotropy (b) Hypertrichosis (c) Multiple Alleles (d) Polygenic Inheritance

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

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

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

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

Q.No. 20 Assertion [A] : Entamoeba histolytica is an obligate anaerobe Reason [R] : It lacks mitochondria

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

(B) Both [A] and [R] are true but [R] is not the correct explanation of [A]

(C) [A] is true but [R] is false

(D) [A] is false but [R] is true

Q.No. 21 The two ends of a non-conducting spring of force constant 50 Nm and unstretched length of 2 cm are connected to the midpoints of two straight parallel rods each of length 4 m. When 100 A current is passed through each rod in the same direction. the work done on the spring in mJ is

(A) 0.8

docs.aglasem.com

aglasem.com

(B) 1.6

(C) 3.2

(D) 6.4

Q.No. 22 Study the following statements [I] The largest endocrine gland of man secretes adrenaline [II] T_H cells are involved in humoral and cell mediated immunity [II] Natural Killer cells are a type of lymphocytes [IV] T_c cells are involved in humoral immunity Pick up the correct statements

(A) I, II

(B) II, III

(C) III, IV

(D) I,IV

Q.No. 23 Assertion [A]: FM signal is less susceptible to noise than AM signal. Reason[R]: FM has a small operating frequency range.

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

(B) Both [A] and [R] are correct but [R] is not the correct explanation of [A]

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

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

	List - I Organism		List - II Number of Flagella
(a)	Trypanosoma	(i)	Many
(b)	Euglena	(ii)	2
(c)	Giardia	(iii)	1
(d)	Trichonympha	(iv)	8

Q.No. 24 Match the following:

(A)

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

(B)

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

(C)

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

(D)

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

Q.No. 25 Which hormone is sprayed to increase the length of stem in sugarcane crop?

(A) Ethylene

(B) Cytokinin

docs.aglasem.com

aglasem.com

(C) Gibberellin

(D) Methylene

Q.No. 26 Choose the collect statements [A] Early detection of pathogen presence can be done by PCR [B] Biochemical products produced by bacteria are inferior to products produced in transgenic plants [C] Validity of the GM Research will be controlled by Genetic Engineering Approval Committee [D] Use of bio resources by multinational companies with proper authorization is not possible

(A) B,C

(B) A,B

(C) B,D

(D) A,C

Q.No. 27 In the first order thermal decomposition of $C_2H_5I_{2(g)} \rightarrow C_2H_{4(g)} + HI_{(g)}$ the reactant in the beginning exerts a pressure of 2 bar in a closed vessel at 600 K. If the partial pressure of the reactant is 0.1 bar after 1000 minutes at the same temperature the rate constant in min^{-1} is (log 2 = 0.30)

(A) 6×10^{-4}

(B) 6×10^{-2}

(C) 6×10^{-3}

(D) 6×10^{4}

Q.No. 28 Which one of the following theories contradicts Lamark 's theory?

(A) Theory of Natural Selection

(B) Germplasm theory

(C) Mutation theory

(D) Theory of biogenesis

Q.No. 29 Renal portal system is absent in

(A) Fishes and Amphibians

(B) Cyclostomes and Fishes

(C) Reptiles and Birds

(D) Cyclostomes and Mammals

Q.No. 30 A series LCR circuit with R = 43 Q and L = 0.5 H has a leading phase angle of 45° at a frequency of 50 Hz. The capacitance used in the circuit is

(A) $15.9\mu F$

(B) $20.2\mu F$

(C) $27.9\mu F$

(D) $12.3\mu F$

Q.No. 31 When an inductor of inductance $\frac{6}{\pi}H$ a capacitor of capacitance $\frac{50}{\pi}\mu F$ and resistor of resistance R are connected in series with an ac supply of rms voltage 220 V and frequency 50 Hz, the rms current through the circuit is 440 mA. Match the

docs.aglasem.com

aglasem.com

inductive reactance (X_L). the capacitive reactance (X_c), the resistance (R) and the impedance (Z) of the circuit given in list- I

List - I జాబితా-I		List - II జాబితా-II	
A)	X_L	I)	200 Ω
B)	X_C	II)	300 Ω
C)	R	III)	500 Ω
D)	Z	IV)	600 Ω

with the corresponding values given in list-II.

(A) A-IV, B-II, C-I, D-III

(B) A-IV, B-III, C-I, D-II

(C) A-IV, B-I, C-II, D-III

(D) A-I, B-IV, C-III, D-II

Q.No. 32 A coil having 200 tums is placed in a magnetic field of $60e^{-200t}T$ with its plane perpendicular to the magnetic field. The cross sectional area of the coil is $5e^2cm^2$. The ends of the coil are connected to 100 Ω resistance. The current in the coil at t= 0.01 second is

(A) 6 A

(B) 12 A

(C) 18 A

(D) 24 A

Q.No. 33 A solid conducting sphere of radius 20 cm is enclosed by a thin metallic shell of radius 40 cm. A charge of 40 μC is given to the inner sphere. If the metallic shell is earthed, then the heat generated in the process is

(A) 18 J

(B) 9 J

(C) 36 J

(D) 1.8 J

Q.No. 34 Antihistamines generally do not affect the secretion of acid in stomach, as

(A) Antihistamines are anti allergic

(B) Antihistamines are amino compounds

(C) Antihistamines are acidic compounds

(D) Antihistamines work on different receptors

Q.No. 35 2 moles of an mono atomic ideal gas at $25^\circ C$ heated reversibly at constant pressure of 2 atm to a final temperature of $125^\circ C$. Calculate the ΔH $\left(C_v = \frac{3}{2}R\right)$

(A) $500R$

(B) $-500R$

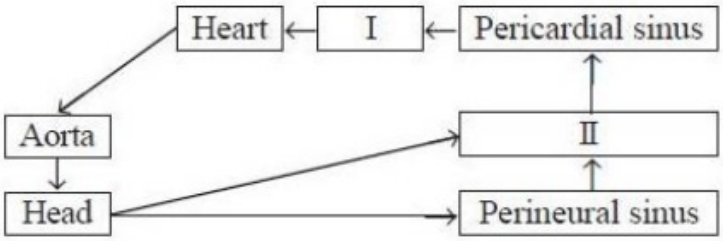
(C) $250R$

(D) $-250R$

docs.aglasem.com

aglasem.com

Q.No. 36 Study the following regarding blood circulation in cockroach and identify I and II



(A) I-Ostia II-Perivisceral sinus

(B) I-Haemocoel II-Ostia

(C) I-Perivisceral sinus II- Ostia

(D) I-Atria II- Perivisceral sinus

Q.No. 37 Study the following

S. No.	Group	Characters	Examples
I	Urochordata	Tunicin, ventral heart with reverse flow of blood, bisexual, tadpole larva	*Doliolum*
II	Cephalochordata	Solenocytes, ciliary feeding, presence of atrium, closed circulation without heart, gonads with gonoducts	*Branchiostoma*
III	Vertebrata	Paired fins/limbs, ventral heart, kidneys, hepatic portal system	*Bufo*

From the above, the correct combination are

(A) I,II

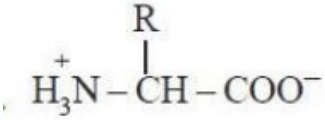
(B) I,III

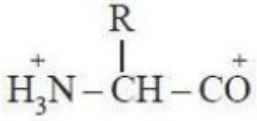
(C) II,III

(D) II,only

Q.No. 38 Among the following, identify the Zwitterionic form

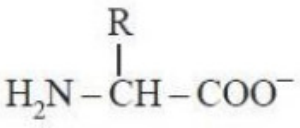
(A) 

(B) 

(C) 

docs.aglasem.com

aglasem.com

(D) 

Q.No. 39 Statement (S) : Urea-excretion animals require much less water than the ammonotelic animals. Reason(R) : Some amount of urea retained in the medullary fluid of kidneys help in the maintenance of desired osmolality.

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

(B) Both (S) and (R) are true, but (R) is not the correct explanation of (S)

(C) (S) is true, but (R) is false

(D) (S) is false, but (R) is true

Q.No. 40 Surrogate mother is

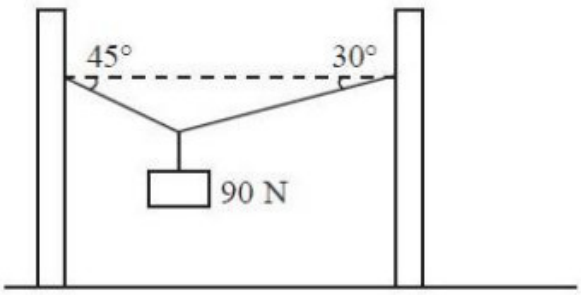
(A) The female that develops the offspring of another one in its womb.

(B) The male that donates the sperm to fertilize an egg

(C) The female that donates the egg for fertilization

(D) Introduction of in vitro fertilized ovum into the same female

Q.No. 41 A 90 N mass is hung on a rope tied between two poles as shown in the figure. The tension T_1 and T_2 in the two parts



of the rope are (in N)

(A) $\frac{180}{\sqrt{3}+1} \cdot \frac{\sqrt{6}}{2}, \frac{180}{\sqrt{3}+1}$

(B) $\frac{90}{\sqrt{3}+1} \cdot \frac{\sqrt{6}}{2}, \frac{180}{\sqrt{3}}$

(C) $\frac{180}{\sqrt{3}+1} \cdot \frac{\sqrt{3}}{2}, \frac{90}{\sqrt{3}+1}$

(D) $\frac{90}{\sqrt{3}+1} \cdot \frac{\sqrt{3}}{2}, \frac{90}{\sqrt{3}}$

Q.No. 42 Which of the following compounds has zero dipole moment $(\mu = 0)$?

(A) $\text{trans}-\text{But}-2-\text{ene}$

(B) $\text{cis}-\text{But}-2-\text{ene}$

(C) $2-Methylpropene$

(D) 3 - Methylbut $-$ 1ene

Q.No. 43 Choose the wrong statement :

(A) In hydrophilly the pollen pains are covered by mucilaginous layer and in water hyacinth pollination takes place by insects

(B) Nector and pollen are the rewards for animals in pollination but not in Yucca and Amorphopha//us

(C) Autogamy can be prevented by helkogamy and cliestogamous flowers

docs.aglasem.com

aglasem.com

(D) Wind pollinated flowers will have multi ovule condition for more seed production

Q.No. 44 Ozonolysis of alkene X gives acetone. X is

(A) 2-3- dimethyl but- 2 -ene

(B) 2-methylpropene

(C) but-2-ene

(D) 2-Methyl but - 2-ene

Q.No. 45 A man standing far from a hill. fires a gun and hears its echo after 4 s. Later he moves 320 m from his initial position away from the hill and fires the gun again and now he hears the echo after 6 s. Then the velocity of the sound in air is

(A) 330 ms^{-1}

(B) 340 ms^{-1}

(C) 320 ms^{-1}

(D) 336 ms^{-1}

Q.No. 46 Two of the following statements are correctly defined. Identify the correct combination i) Conversion of hnRNA to mRNA - processing ii) Removal of introns and joining of exons - splicing iii) Addition of adenylate residues to 3 '-end in a template dependent manner - Tailing iv) Methyl adenosine triphosphate is added to 5 '-end of hnRNA - capping

(A) ii & iii

(B) i & ii

(C) i & iv

(D) iii & iv

Q.No. 47 Identify the correct percentage of A, B and C formed in the following reaction Aniline $\xrightarrow[288K]{HNO_3+H_2SO_4}$ o-Nitroaniline + p-Nitroaniline + m-nitroaniline

(A) A-51, B-2, C- 17

(B) A- 2 , B- 51 , C- 47

(C) A- 2 , B-47, C- 51

(D) A-47 ,B-51 ,C-2

Q.No. 48 Assertion (A) : Bamboo species is a perennial plant and exhibit unusual flowering phenomenon. Reason (R) : Bamboo plant flowers only once, i.e. at the end of the life after 50-100 years.

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

(B) Both (A) and (R) are true. but (R) is not the correct explanation of (A)

(C) (A) is true. but (R) is false

(D) (A) is false, but (R) is true

Q.No. 49 The number of moles of solute present in the solutions of l, II and III is respectively. [1] 500 mL of 0.2 M NaOH [2] 200mL of 0.1 N H_2S0_4 [3] 6 g of urea in 1 kg of water

(A) 0.1, 0.02, 0.1

(B) 0.1, 0.02, 0.3

(C) 0.2, 0.01, 0.1

(D) 0.1, 0.01, 0.2

docs.aglasem.com

aglasem.com

Q.No. 50 The speed of a projectile at its maximum height is $\frac{\sqrt{3}}{2}$ times its initial speed. If the range of a projectile is 'p' times the maximum height attained by it, then the value of 'p' is

(A) 2√3

(B) 3√2

(C) √3

(D) 4√3

Q.No. 51 A standing wave pattern can be represented by an equation like

(A) $y(x,t) = 2A\sin(kx - \omega t)$

(B) $y(x,t) = A\sin(kx - \omega x) + A\cos(kx - \omega t)$

(C) $y(x,t) = A\sin kx\cos\omega t$

(D) $y(x,t) = A\sin(kx + \omega t) + A\cos(kx - \omega t)$

Q.No. 52 Epidermal hairs of shoot system I. Unicellular or Multicellular II. Multicellular, branched or unbranched III. Secretary in function IV. Absorbs water V. Prevent transpiratory water loss

(A) II, III, V

(B) I, III, V

(C) II, III, IV

(D) I, IV, V

Q.No. 53 A solid 'X' on reaction with dil HCl liberates a gas 'Y' , which decolourises acidified $KMnO_4$ X, Y respectively are

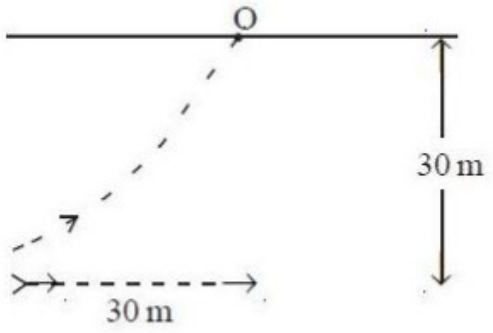
(A) Na_2S, SO_2

(B) Na_2SO_3, SO_2

(C) Na_2SO_4, SO_2

(D) Na_2SO_3, H_2S

Q.No. 54 A diver. 30 m below water surface is trying to shine a torch light towards the point O which is horizontally 30 m away The amount and direction in which diver has to swim (in the figure) so that the light can not travel outside the surface of water is



(Refractive index of water = 4/3)

(A) 4 m to the left

(B) 4 m to the right

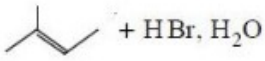
(C) 3.5 m to the right

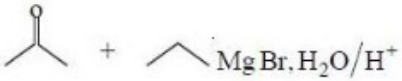
(D) 3.5 m to the left

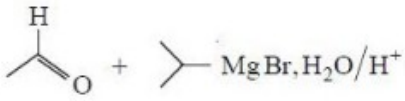
Q.No. 55 2-Methyl-2-butene on hydration gave an alcohol X. Isomer of X. Isomer of X could be prepared from which of the following ?

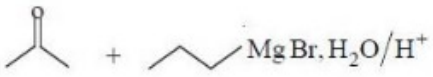
docs.aglasem.com

aglasem.com

(A) 

(B) 

(C) 

(D) 

Q.No. 56 The wavelength of a microscopic particle of mass 9.1×10^{-31} kg is 182 nm, its kinetic energy in J is ($h = 6.625 \times 10^{-34}$ Js)

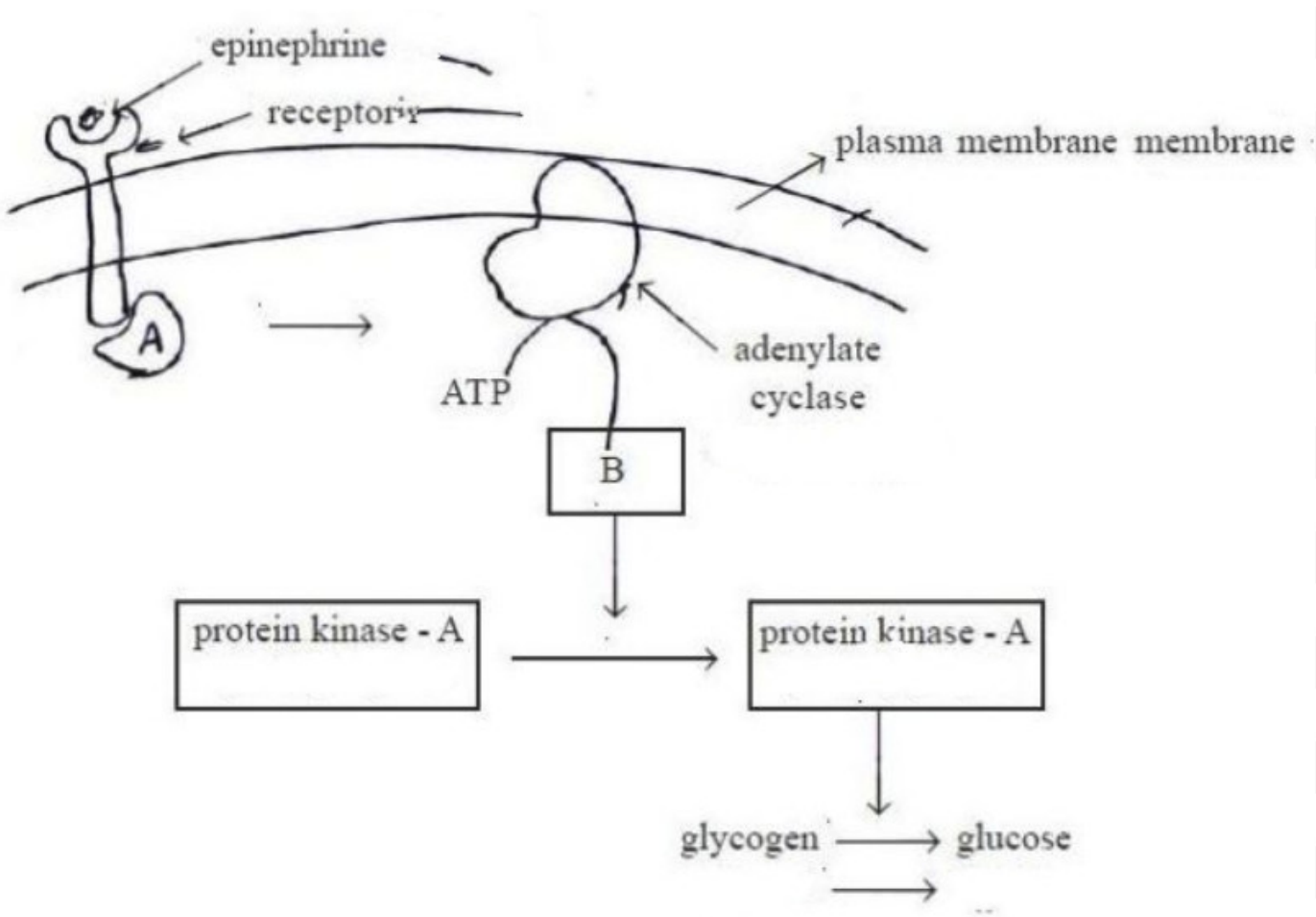
(A) 7.28×10^{-23}

(B) 7.28×10^{-24}

(C) 3.64×10^{-23}

(D) 3.64×10^{-24}

Q.No. 57 In the following hormone response signal transduction pathway, recognize A and B



docs.aglasem.com
aglasem.com

(A) A - Epinephrine Receptor. B - GTP

(B) A - Epinephrine receptor subunit, B - cAMP

(C) A - G protein. B - GTP

(D) A - G protein. B - cGMP

Q.No. 58 Object moves uniformly with a constant speed v to reach object B. while B in tum moves rectilinearly with a uniform velocity of u < v. At the initial moment v is perpendicular to u and the positions are separated by a distance l. The object A meets the object B at time t. The value of 't' is

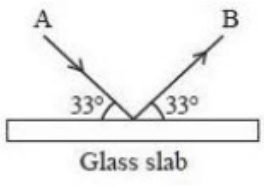
(A) $\frac{vl}{(u^2-v^2)}$

(B) $\frac{ul}{(u^2-v^2)}$

(C) $\frac{ul}{(v^2-u^2)}$

(D) $\frac{\mathrm{v}l}{\mathrm{v}^2-u^2}$

Q.No. 59 A beam of light is incident on a glass slab of refractive index 1.54 in a direction as as shown in the figure. The



reflected light is analysed by a polaroid prism. On rotating the polaroid (tan 57° = 1.54)

(A) The intensity remains unchanged

(B) The intensity is reduced to zero and remains at zero

(C) The intensity gradually reduces to zero and then increases

(D) The intensity increases gradually

Q.No. 60 Identify the set of species having same bond order

(A) $\mathrm{B}_2, \mathrm{N}_2, \mathrm{O}_2^-$

(B) $\mathrm{N}_2, \mathrm{N}_2^+, \mathrm{F}_2$

(C) $\mathrm{O}_2^{2-}, \mathrm{B}_2, \mathrm{F}_2$

(D) $\mathrm{O}_2^{2-}, \mathrm{B}_2, \mathrm{N}_2^+$

Q.No. 61 The cells which form blood brain barrier in the central nervous system are

(A) Oligodendrocytes

(B) Astrocytes

(C) Ependymal cells

(D) Schwann cells

Q.No. 62 Choose the correct statement [A] Difference between C^4 and CAM patlnvay is the CO^2 fixation and Calvin cycle are separated in space and time respectively [B] Aldolase combines two 3-carbon compounds as well as one 4-carbon and one 7-carbon compound [C] Based on the labelled carbon studies CO_2 fixation products were identified [D] Stroma lamella and Grana lamella are identical in the distribution of the photosystems

(A) A,C

(B) B,C

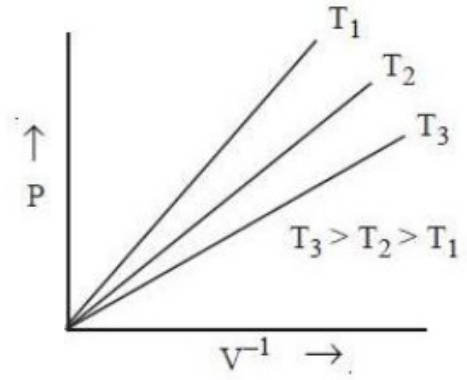
docs.aglasem.com

aglasem.com

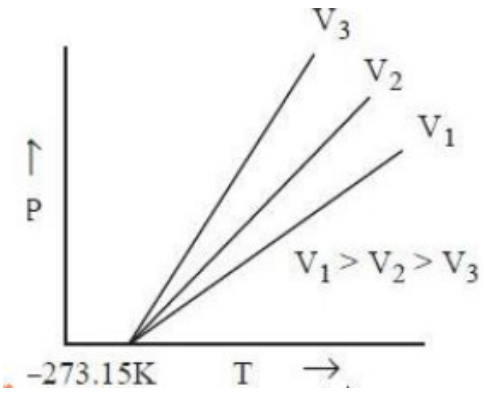
(C) A,D

(D) B,D

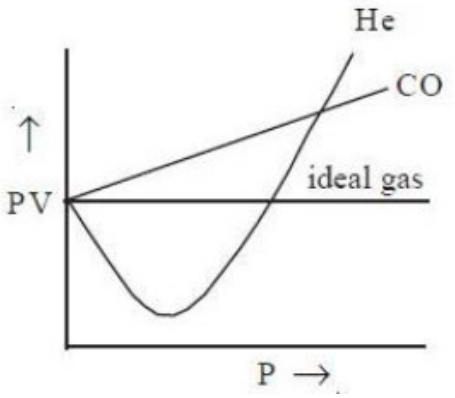
Q.No. 63 Which one of the following plots is correct for the behaviour of ideal and real gases?



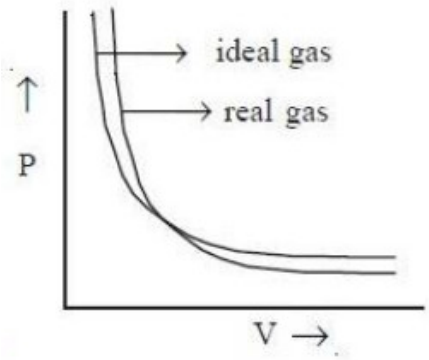
(A)



(B)



(C)



(D)

Q.No. 64 6 g of graphite is burnt in a bomb calorimeter at 25 °C and 1 atm pressure. The temperature of water increased from 25 °C to 31 °C. If ΔH of this reaction is -248 kJ mol^{-1} find out C_v(in kJ mol^{-1}) of the bomb calorimeter.

(A) 20.667

docs.aglasem.com

(B) 41.33

(C) 1488

(D) 0.145

Q.No. 65 Identify the set of acidic oxides.

(A) Na_2O, CaO, BaO

(B) ZnO, PbO, BeO

(C) CO, NO, N_2O

(D) Mn_2O_7, CrO_3, V_2O_5

Q.No. 66 Assertion [A] : Species is an evolutionary unit R Reason [R] : Individuals of a species have similar structure and characteristics

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

(B) Both [A] and [R] are true but [R] is not the correct explanation of [A]

(C) [A] is true but [R] is false

(D) [A] is false but [R] is true

Q.No. 67 Acidity of urethra of man is neutralised by the secretion of

(A) Prostate gland

(B) Cowper's gland

(C) Seminal vesicles

(D) Skene glands

Q.No. 68 Assertion (A) : Transgenic Golden Rice is rich in Vitamin A and prevents blindness. Reason (R) : It is obtained from "Taiwan". Which of the following is true?

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

(B) Both (A) and (R) are true, but (R) is not the correct explanation of (A)

(C) (A) is true, but (R) is false

(D) A is false but R is true

Q.No. 69 The non-biodegradable waste fonned in fertilizer industries is

(A) fly ash

(B) carbon monoxide

(C) gypsum

(D) lead

Q.No. 70 In the oxidative decarboxylation reaction of citric acid cycle following products are observed when a-ketoglutaric acid is oxidized.

(A) Fumaric acid $+FADH_2 + CO_2$

(B) Oxalosuccinic acid $+NADH + CO_2$

(C) Succinyl CoA $+NADH + CO_2$

(D) Malic acid $+CO_2$

Q.No. 71 Statement (S) : Mechanical vector merely transfers the infective stage of a parasite. Reason (R) : In this vector a part of development of parasite takes place before it gets transferred to another host. Which of the following is true?

docs.aglasem.com

aglasem.com

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

(B) Both (S) and (R) are true, but (R) is not the correct explanation of (S)

(C) (S) is true, but (R) is false

(D) (S) is false, but (R) is true

Q.No. 72 Choose the correct statements [A] Acid soluble fractions have more than one thousand daltons [B] Common acid used in the living cell compound analysis is Hydrochloric acid [C] Number of carbons in Arachidonic acid is 20 [D] Serine is the hydroxy methyl group amino acid The correct answer is

(A) A,B

(B) B,C

(C) C,D

(D) A,D

Q.No. 73 A colour blind man married a woman who is a daughter of a colour blind father and nonnal homozygous mother. what are the chances of their daughters to become colour blind?

(A) 25 %

(B) 75 %

(C) 100 %

(D) 50 %

Q.No. 74 Who is the 'Cro-Magnon man' ?

(A) Homo erectus

(B) Homo sapiens

(C) Homo neanderthalensis

(D) Homo habilis

Q.No. 75 A whistle of frequency 540 Hz rotates along a circle of radius 2 m at an angular speed of 1 rad s^{-1}. The difference in maximum and minimum frequencies heard by a listener at some distance and at rest with respect to the centre of the circle, is (Speed of sound in air = 330 ms-l)

(A) 99 Hz

(B) 59 Hz

(C) 49 Hz

(D) 109 Hz

Q.No. 76 Theory of Biogenesis was proposed by

(A) George Cuvier

(B) Louis Pasteur

(C) J.B.S.Haldane

(D) Von Helmont

Q.No. 77 Which of the following are the characteristic features of phloem? i) Gymnosperms have albuminous cells and sieve cells ii) Presence of tracheids iii) They store food materials in the form of starch or fat. iv) They have sieve tube elements that are long, tube-like structure v) Their end walls are perforated in a sieve like manner.

(A) ii, iii, iv and i

(B) ii, iii and i

docs.aglasem.com

aglasem.com

(C) i, iv and v

(D) v, ii, iv and iii

Q.No. 78 Partial pressures of O_2 and CO_2 in systemic vein carrying deoxygenated blood are

(A) 95 & 40 mm Hg

(B) 40 & 45 mm Hg

(C) 104 & 40 mm Hg

(D) 120 & SO Hg

Q.No. 79 In an oscillating LC circuit. the maximum charge on the capacitor is Q The charge on the capacitor when the energy is stored equally between the electric and magnetic fields is

(A) Q/2

(B) $\frac{Q}{\sqrt{3}}$

(C) Q

(D) $\frac{Q}{\sqrt{2}}$

Q.No. 80 Which one of the following methods is used to make gold sol?

(A) Ultra filtration method

(B) Peptization method

(C) Electrical disintegration method

(D) Dialysis method

Q.No. 81 Match the following

	List - I		List - II
A)	Carcinoma	I)	Cancer of connective tissue
B)	Sarcoma	II)	Cancer of muscular tissue
C)	Leukemia	III)	Cancer of lymphatic system
D)	Lymphoma	IV)	Cancer of epithelial tissues
		V)	Cancer of bone marrow

The correct answer is

(A) A-IV B-I C-II D- III

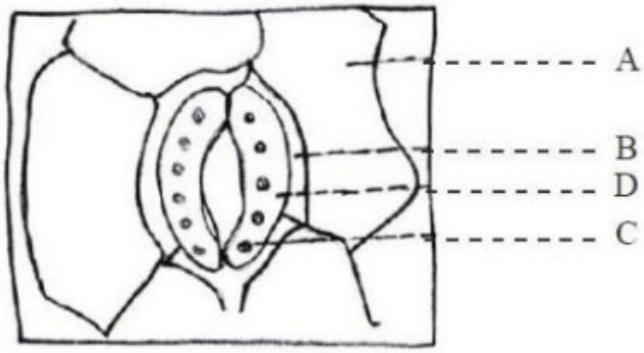
(B) A-IV B-I C-V D-III

(C) A-IV B-II C-V D-III

(D) A-III B-V C-I D-IV

docs.aglasem.com

aglasem.com



Q.No. 82 Study the diagram and the list given below i) Chloroplast ii) Epidermal cell iii) Guard cell iv) Subsidiary cell v) Stomatal pore

(A)

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

(B)

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

(C)

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

(D)

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

Q.No. 83 Match the following:

List - I	List - II
(a) Cytozoic parasite	(i) Lives with in the cavities of hosts body
(b) Coelozoic parasite	(ii) Lives between the cells of the tissue and organs of the host
(c) Histozoic parasite	(iii) Lives within the hosts cells
(d) Hyper parasite	(iv) A parasite lives in/on the body of another parasite

(A)

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

(B)

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

(C)

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

docs.aglasem.com

aglasem.com

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

(D)

Q.No. 84 Arrange the sequences in enzyme action [A] Product releases and free enzyme again binds to another substrate molecule [B] Enzyme to alter its shape [C] Substrate binds to active site of enzyme [D] Fits in to the active site [E] Formation of enzyme product complex The correct answer is

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

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

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

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

Q.No. 85 The ratio of heats generated through shunt and galvanometer is 7:5 when they are connected to make an ammeter. If the resistance of the galvanometer is 112 Ω then the resistance of the shunt is

(A) 80 Ω

(B) 8 Ω

(C) 15.6 Ω

(D) 1.56 Ω

Q.No. 86

Study the following statements [I] Camels are partial regulators or partial conformers [II] In the limnetic zone of a lake. decomposers are almost absent [III] Ten percent law for the transfer of energy from one trophic level to the next was proposed by Elton [IV] The natural reservoir of phosphorus is sea [V] In case of parasitic food chain. the pyramid of number is inverted.

Among the above, the incorrect statements are:

(A) III,V

(B) II,III

(C) III,IV

(D) IV,V

Q.No. 87 A steady current is passing through a cylindrical conductor of radius 'r' placed in vacuum. Assuming Stefan's law of radiation, steady temperature will be proportional to

(A) r^{-3}

(B) $r^{-3/4}$

(C) $r^{-2/3}$

(D) $r^{-3/5}$

Q.No. 88 The radius (in pm) of the 3rd orbit of He is Li^{2+} is respectively

(A) $476.1, 158.7$

(B) $238.05, 158.7$

(C) $0.529, 17.63$

(D) $17.63, 176.3$

Q.No. 89 Sclerenchyma gives mechanical support in

(A) Seed coat of Legume, Fruit pulp of Guava Leaf of Tea

docs.aglasem.com

aglasem.com

(B) Seed Coat of Sapota, Leaf of Guava, Pulp of Legume

(C) Seed Coat of Guava, Leaf of Legumes Fruit pulp of Tea

(D) Leaf of Pear, Seed coat

Q.No. 90 Arrange the path of electrons from water to the phycocyanin in the light reaction. i) Plastoquinone ii) Excited P680* iii) Cytf vi) Fe-S v) Pheophytin vi) Quinone The correct sequence is

(A) Iii. v, vi, i. ii, iv

(B) ii, v, vi, i, iv, iii

(C) iv, i, iii, vi, v

(D) vi, iv, v, iii, ii, i

Q.No. 91 Sodium acetate was electrolysed by Kolbe's method to form two gases A and B at anode. C and D are formed when B is heated with regulated supply of O_2 or air in the presence of $(CH_3COO)_2$ Mn C reacts with NaOH to form a salt. A and D are respectively.

(A) CO_2, CH_3 COOH

(B) CO_2, H_2O

(C) C_2H_6, H_2O

(D) CO_2, H_2O_2

Q.No. 92 A long cylindrical glass vessel has a pin hole of diameter 0.2 nun at its bottom. The depth to which the vessel can be lowered vertically in a deep water bath without the water entering into the vessel is (Surface tension of water = 0.07 Nm^{-1} , Acceleration due to gravity = 10 ms^{-2})

(A) 14 cm

(B) 7 cm

(C) 21 cm

(D) 28 cm

Q.No. 93 Match the following

	List - I		List - II		List -III
A)	*Acacia*	i)	Node of stem	I)	Mericarp
B)	Dichasial cyme	ii)	False septum	II)	Lamiaceae
C)	Lateral out growth	iii)	Monochasial cyme	III)	Photosynthesis
D)	*Argemone*	iv)	Phyllode	IV)	Parietal placentation

The correct answer is

(A) A-iv,I B-iii,II C-i,III D-ii,IV

(B) A-iii,I B-ii,II C-i,IV D-iv,III

(C) A-iv,I B-ii,II C-iii,III D-i,IV

(D) A-iv,II B-ii,I C-i,IV D-iii,III

Q.No. 94 A thin bar magnet oscillates with a time period T. If it is cut into two equal pieces ‘ons its axis, time period of oscillation of each piece is

(A) T

(B) 2 T

(C) T/2

docs.aglasem.com

aglasem.com

(D) T/4

Q.No. 95 Match the following:

List - I	List - II
(a) Ovaprim	(i) Anti cancer drug
(b) $\alpha-1-$ antitrypsin	(ii) Used in the treatment of inflammation and superficial burns
(c) Taxoid	(iii) Inactivated exotoxin used as vaccine against tetanus
(d) Propolis	(iv) Used in the treatment of emphysema
	(v) Used in induced breeding of fish

The correct answer is

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

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

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

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

Q.No. 96 A soccer ball is travelling at a velocity 20 ms^{-1} due south. At the end of its travel. it moves with a velocity 2 ms^{-1} due south. If the change in the linear momentum of the ball is is 18 $kgms^{-1}$ due north. then the mass of the ball is

(A) 3.0 kg

(B) 0.81 kg

(C) 1.0 kg

(D) 0.5 kg

Q.No. 97 A fuel cell generates electricity by using methanol as the fuel and O_2 as the oxidant. Calculate the equivalent weight of methanol.

(A) 16.0

(B) 8.0

(C) 6.4

(D) 5.33

Q.No. 98 The molecule/ion having diamagnetic nature and a bond order of 1.0 is

(A) He_2^+

(B) Al_2^+

(C) K_2

(D) Mn_2

Q.No. 99 What is the approximate volume (in L) of 0.02 M $KMnO_4$, solution required to completely react with 0.5 L of 10 vol H_2O_2 solution in acid medium?

(A) 89.29

(B) 44.64

(C) 4.464

(D) 8.929

docs.aglasem.com

aglasem.com

Q.No. 100 A signal of frequency 10 kHz and peak voltage 10 V is used to amplitude a carrier of frequency 1 MHz and peak voltage 20 V. The side band frequencies in kHz are

(A) 1010, 990

(B) 910, 1090

(C) 10, 11

(D) 1.01, 0.99

Q.No. 101 A hollow sphere of radius R is suspended from a thin rod. If the sphere is twisted by a small angle about the wire axis and released. simple harmonic oscillation (SHM) will ensure with a period of 11. Now. if the hollow sphere is replaced by a solid sphere of radius and mass equal to that of hollow sphere, the SHM will have a period τ_2. The ratio of time periods (τ_1/τ_2) is

(A) 5/3

(B) 5/2

(C) $\sqrt{\frac{5}{3}}$

(D) $\sqrt{\frac{3}{5}}$

Q.No. 102 Assertion [A] : Long neck for Giraffes is due to directional selection Reason [R] : It works constantly removing the individuals from one end and constantly shifting the average value to the other end.

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

(B) Both [A] and [R] are true but [R] is not the correct explanation of [A]

(C) [A] is true but [R] is false

(D) [A] is false but [R] is true

Q.No. 103 Find out where transketolase and epimerase reactions occur among the following : i) G-3-P+DHAPFructose-1-6-bisphosphate ii) Sedoheptulose-7-Phosphate+G-3-PXylulose-5-P+Ribose-5-Phosphate iii) Ribose-5-PhosphateRibulose-5-Phosphate iv) Xylulose-5-PhosphateRibulose-5-Phosphate v) Fructose-6-Phosphate+G-3-PXylulose-5-Phosphate+Erythrose-4-Phosphate The correct combination is

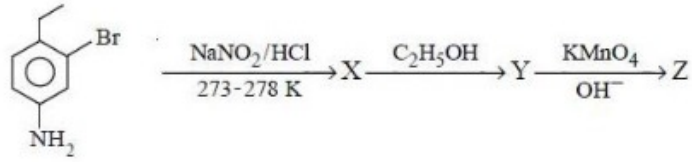
(A) ii. iii & iv

(B) ii, i, iii & v

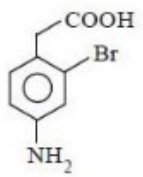
(C) ii, v & iv

(D) v, ii & i

Q.No. 104 Identify Z in the following sequence of reactions.

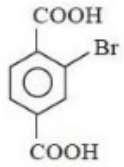


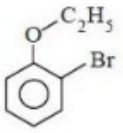
(A)

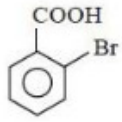


docs.aglasem.com

aglasem.com

(B) 

(C) 

(D) 

Q.No. 105 A beaker contains oil upto a height of 28 mm and water upto height of 26 mm. Find the apparent shift in position of the bottom of the beaker when viewed from the top $(n_{\text{water}} = 1.33, n_{\text{oil}} = 1.4)$

(A) 54 mm

(B) 32 mm

(C) 28 mm

(D) 14 mm

	List - I		List - II
A)	Isogamy	I)	*Plasmodium*
B)	Anisogamy	II)	*Vorticella*
C)	Hologamy	III)	*Astasia*
D)	Conjugation	IV)	*Monocystis*
		V)	*Trichonympha*

Q.No. 106 Match the following

(A) A-IV B-I C-III D-II

(B) A-IV B-I C-V D-II

(C) A-II B-III C-I D-IV

(D) A-II B-III C-I D-IV

	List - I		List - II
(a)	Crab	(i)	Green glands
(b)	Dugesia	(ii)	Malpighian tubules
(c)	Wuchereria	(iii)	Renette glands
(d)	Scolopendra	(iv)	Flame cells

Q.No. 107 Match the following:

(A)

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

docs.aglasem.com

aglasem.com

(B)

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

(C)

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

(D)

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

Q.No. 108 Statement (S) : Cerebrospinal fluid serves as shock absorbing medium Reason (R) : Cerebrospinal fluid is recycled 4 times per day in order to clear out metabolites and toxins

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

(B) Both (S) and (R) are true but (R) is not the correct explanation of (S)

(C) (S) is true, but (R) is false

(D) (S) is false, but (R) is true

Q.No. 109 Match the following:

List - I		List - II
(a)	Asymmetry	(i) Cnidaria
(b)	Radial symmetry	(ii) Platyhelmenthes
(c)	Bilateral symmetry and Enterocoelom	(iii) Porifera
(d)	Bilateral symmetry without body cavity	(iv) Hemichordata

(A)

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

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

(C)

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

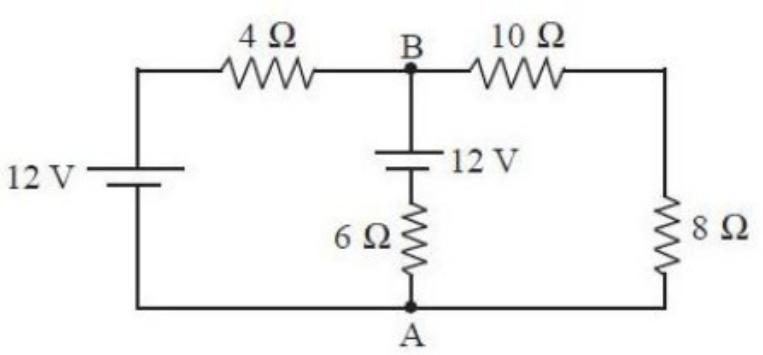
(D)

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

docs.aglasem.com

aglasem.com

Q.No. 110 The current passing tln•ough the AB branch of the circuit shown in the figure is



(A) $\frac{10}{17}$A

(B) $\frac{4}{17}$A

(C) $\frac{16}{17}$A

(D) $\frac{6}{17}$A

Q.No. 111 A hypothetical radioactive element has a half-life of 20 years. The time it takes for 80% of the substance to decay is (ln 5 = 1.6, In 2=0.7)

(A) 30.6 years

(B) 45.7 years

(C) 60.3 years

(D) 80 years

Q.No. 112 Assertion (A) : A single gene maybe occasionally related to more than one character. Reason (R) : The-above phenomenon cannot be called as pleiotropy since a single gene cannot be related to more than one trait.

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

(B) Both (A) and (R) are true, but (R) is not the correct explanation of (A)

(C) (A) is true, but (R) is false

(D) A is false but R is true

Q.No. 113 Assertion (A) : Euglenoids have a flexible body. Reason (R) : They have a protein rich layer called pellicle. which makes their body flexible. Which of the following is true?

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

(B) Both (A) and (R) are true. but (R) is not the correct explanation of (A)

(C) (A) is true, but (R) is false

(D) (A) is false, but (R) is true

Q.No. 114 1 μW of light at 600 nm falls on a metal whose work function is 2 eV The maximum number of electrons that can come out of the metal is

(A) 3.0×10^{12}

(B) 5.5×10^{14}

(C) 2.5×10^{10}

(D) 9×10^{19}

docs.aglasem.com

aglasem.com

Match the following

List - I	List - II
(a) Chlorine	(i) Helps to maintain an anion - cation balance and is involved in protein synthesis
(b) Sulphur	(ii) Helps in determining the solute concentration.
(c) Potassium	(iii) It is the main constituent of several coenzymes and vitamins
(d) Nickel	(iv) Found to induce disease resistance in some plants.
	(v) Structural component of Cytochrome 'C' oxidase

Q.No. 115

(A)

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

(B)

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

(C)

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

(D)

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

Q.No. 116 Fill up the blanks with suitable words The ability of the pistil to recognise pollen is dependent on _____ guide the entry of pollen tube. This study leads to help _____ in getting _____ even in _____. [A] Chemicals [B] Plant breeders [C] hybrids [D] Incompatible pollination [E] Synergids

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

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

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

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

Q.No. 117 In a nuclear reactor the activity of a radioactive substance is 2000/s- If the mean life of the products is 50 minutes, then in the steady power generation, the number of radio nuclides is

(A) 12×10^5

(B) 60×10^5

(C) 90×10^5

(D) 15×10^5

Q.No. 118 The ratio of packing efficiency in fcc, bcc and simple cubic structure respectively. with respect to that of fcc is

(A) 1 : 0.92 : 0.71

(B) 1 : 0.81 : 0.67

docs.aglasem.com

aglasem.com

(C) 1 : 0.71 : 0.58

(D) 1 : 0.65 : 0.55

Q.No. 119 In which of the following, the solubility of AgCl will be minimum?

(A) 0.1 M KNO_3

(B) 0.1 M KCl

(C) 0.2 M KNO_3

(D) Water

Q.No. 120 The gas produced when Zn metal is heated with aqueous NaOH is

(A) $H_2O_{(g)}$

(B) O_3

(C) O_2

(D) H_2

Q.No. 121 Match the following

	List - I		List - II		List - III
A)	*Chara*	i)	*Selaginella*	I)	Having long and dwarf branches
B)	Algin	ii)	Pyrenoid	II)	*Sargassum*
C)	Microphylls	iii)	Living fossil	III)	Heterosporous
D)	*Ginkgo*	iv)	Water holding substances	IV)	Cellulose and pectins

The correct answer is

(A) A-ii,IV B-i,III C-iv,II D-iii,I

(B) A-ii,II B-iv,I C-iii,IV D-i,III

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

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

Q.No. 122 In which of the following the electron gain enthalpy of elements is correctly arranged?

(A) S > Se > Te > 0

(B) F > Cl > Br > I

(C) Na > Li > K > Rb

(D) O > S > Se > Te

Q.No. 123 The focal length of a spherical mirror made of steel is 150 cm. If the temperature of the mirror increases by 200 K, its focal length becomes (coefficient of linear expansion of steel = 12 x 10^{-6} $°C^1$)

(A) 186.3 cm

(B) 153.6 cm

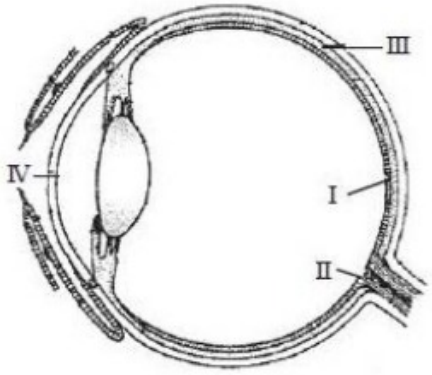
(C) 150.036 cm

(D) 150.36 cm

docs.aglasem.com

aglasem.com

Q.No. 124 Observe the following diagram of V.S. of eye and identify the parts I, II, Ill and IV



(A) I- Blind spot II-Fovea III-Choroid IV-Cornea

(B) I-Fovea II-Blind spot III-Choroid IV-Cornea

(C) I-Yellow spot II-Fovea III-Conjunctiva IV-Choroid

(D) I-Blind Spot II-Yellow spot III-Pupil IV-Cornea

Q.No. 125 Assenion(A) : Plants association with symbiotic species show benefits such as resistance to root-borne pathogens, tolerance to drought. Reason (R) : Fungal symbionts in plant-fungal symbiotic associations facilitate absorption of phosphorus by the plant from the soil. Which of the following is true?

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

(B) Both (A) and (R) are true, but (R) is not the correct explanation of (A)

(C) (A) is true, but (R) is false

(D) A is false but R is true

Q.No. 126 A 10 litre cylinder contains equal volumes of H_2 and He. If the mixture is allowed to diffuse from an opening. estimate the percent composition of the output gas. (Assume ideal behaviour of gas mixture)

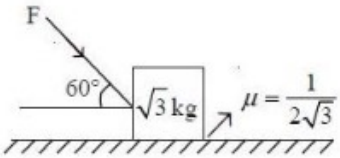
(A) $50\%H_2, 50\%He$

(B) $41\%H_2, 59\%He$

(C) $59\%H_2, 41\%He$

(D) $30\%H_2, 70\%He$

Q.No. 127 The maximum value of the applied force F such that the block as shown in the anangement does not move is



(Acceleration due to gravity = 10 ms^{-2})

(A) 20 N

(B) 15 N

(C) 25 N

(D) 10 N

Q.No. 128 The radius of a soap bubble is r and the surface tension of the soap solution is S. The electric potential to which the soap bubble be raised by charging it so that the pressure inside the bubble becomes equal to the pressure outside the bubble is (∈- permittivity of free space)

docs.aglasem.com

aglasem.com

(A) $\sqrt{\frac{Sr}{8\epsilon_0}}$

(B) $\sqrt{\frac{Sr}{4\epsilon_0}}$

(C) $\sqrt{\frac{4Sr}{\epsilon_0}}$

(D) $\sqrt{\frac{8Sr}{\epsilon_0}}$

Q.No. 129 The enthalpy and entropy changes for a reaction at 298 K are 400 kJ mol^{-1}, 400 JK^{-1} mol^{-1} respectively. If ΔH and ΔS are constant over the temperature range. the temperature at which the reaction becomes spontaneous in K is

(A) 1001

(B) 800

(C) 101

(D) 500

Q.No. 130 Dichogamy and herkogamy are the important devices or modifications to prevent one of the following:

(A) Asexual reproduction

(B) Cross pollination

(C) Autogamy

(D) Vegetative propagation

Q.No. 131 If a first order reaction is found to have a rate constant of $1.386 \times 10^{-12} s^{-1}$, the half life of the reaction in s is

(A) 6.93×10^{11}

(B) 13.86×10^{11}

(C) 5.00×10^{11}

(D) 2.00×10^{11}

Q.No. 132 Which of the following lanthanide ion has the highest number of unpaired electrons?

(A) Pm^{3+}

(B) Sm^{3+}

(C) Eu^{3+}

(D) Gd^{3+}

Q.No. 133 Match the following

Match the following

	List - I		List - II		List - III
A)	Wine	i)	Useful aerobic microbes	I)	Beverage
B)	Flocs	ii)	Without distillation	II)	Sedimented flocks
C)	Ethanol	iii)	Brewer's yeast	III)	Associated with fungal filament
D)	Activated sludge	iv)	Reduced BOD	IV)	Fermentation of Malted cereals

The correct answer is

(A) A-i,I B-ii,II C-iii,III D-iv,IV

docs.aglasem.com

aglasem.com

(B) A-iv,II B-iii,III C-ii,I D-i,IV

(C) A-ii,III B-ii,IV C-i,II D-iv,I

(D) A-ii,I B-i,III C-iii,IV D-iv,II

Q.No. 134 If the kinetic energy of O_2 gas is 4.0 kJ mol^{-1} its RMS speed in cm s^{-1} is

(A) 5.0 x 10^2

(B) 5.0 x 10^3

(C) 5.0 x 10^4

(D) 5.0 x 10^{-4}

Q.No. 135 If R. L, C, F, v, q. I and t represent resistance. inductance, capacitance, force, velocity. electric charge. electric current and time respectively, then which of the following will have the same dimensions ? [A] I^2R [B] L/Rt [C] $\frac{q^2}{RC^2}$ [D] Fv/t

(A) a & b

(B) a & c

(C) b & d

(D) a & d

Q.No. 136 The vapour pressure of a solution of glucose is 720 mm Hg at 373 K. What is the mole fraction of water in this solution?

(A) $\frac{72}{76}$

(B) $\frac{1}{76}$

(C) $\frac{740}{760}$

(D) $\frac{700}{760}$

Q.No. 137 The potential function for a two dimensional force is given by $U = 3x^3y - 7x$. The force that acts at the point (x, y) is (Take $\hat{i}$ and $\hat{j}$ as vectors along X-and Y-axes)

(A) $\left(-9x^2y + 7\right)\hat{i} + \left(-3x^3\right)\hat{j}$

(B) $\left(-9x^2y + 7\right)$

(C) $\left(3x^3\right)$

(D) $\left(9x^2y + 7\right)\hat{i} + \left(3x^3\right)\hat{j}$

Q.No. 138 Assertion [A] : Chromosomes are inactive and not transcribed to messenger RNA in phase of apparent division
Reason [R]: Cells remains metabolically active but no longer divide in quiescent stage

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

(B) Both [A] and [R] are true but [R] is not the correct explanation of [A]

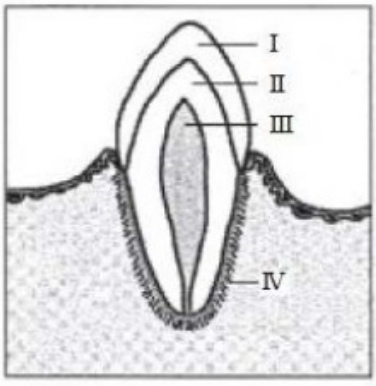
(C) [A] is true but [R] is false

(D) [A] is false but [R] is true

docs.aglasem.com

aglasem.com

Q.No. 139 Study the following diagram of V.S. of tooth and identify the parts I, II. Ill and IV



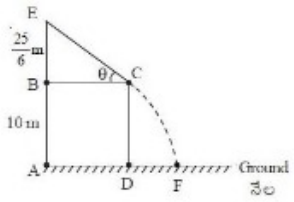
(A) I-Dentine II-Enamel III-Pulp cavity IV-Periodontal membrane

(B) I-Enamel II-Dentine III-Pulp cavity IV-Periodontal membrane

(C) I-Periodontal membrane II-Dentine III-Pulp cavity Enamel

(D) I-Enamel II-Periodontal membrane III-Dentine IV-Theca

Q.No. 140 A rough inclined plane BCE of height (25/6) is kept on a rectangular block ABCD of height 10m. As shown in the figure. A small block of kinetic friction between the block and the inclined plane. The coefficient of kinetic friction between the block and the inclined plane is ⅛ and the angle of inclination of the inclined plane is $\sin^{-1}$ (0,6) . If the small block finally



reaches the ground at point F, then DF- (Acceleration due to gravity = $10ms^{-2}$)

(A) 5/3 m

(B) 10/3 m

(C) 13/3 m

(D) 20/3 m

Q.No. 141 Which of the following statements is not correct ?

(A) From SO_2 to TeO_2

(B) The order of boiling points of hydrides of 16th group elements is $H_2S < H_2Se < H_2Te < 2O$

(C) Rhombic sulphur has S_8 molecules while monoclinic sulphur has S_6 molecules.

(D) The bond angle in Ozone molecules is 117°

Q.No. 142 Examples of fibrous (X) and globular (Y) proteins are

(A) X- insulin Y- albumin

(B) X- Keratin Y- albumin

(C) X- Keratin Y- thyroxine

(D) X- thyroxine Y- insulin

Q.No. 143 Assertion [A] : Daphnia exhibits cyclomorphosis Reason [R] : It is an adaptation for Daphnia to lead benthic life

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

docs.aglasem.com

aglasem.com

(B) Both [A] and [R] are true but [R] is not the correct explanation of [A]

(C) [A] is true but [R] is false

(D) [A] is false but [R] is true

Q.No. 144 Choose the correct combination

	List - I		List - II		List -III
A)	Radial spikes	i)	Sealing of DNA	I)	Axoneme
B)	H_1 Histone	ii)	Positive charge histone	II)	Lies outside of core
C)	Negatively charged DNA	iii)	Linkers	III)	DNA package
D)	Nucleolus	iv)	No membrane	IV)	r-RNA synthesis

The Correct answer is

(A) A,C

(B) B,D

(C) B,C

(D) A,D

Q.No. 145 Seymouria represents the evolutionary biological link between the following orgamsms

(A) fishes and amphibians

(B) amphibians and reptiles

(C) reptiles and birds

(D) reptiles and mammals

Q.No. 146 Assertion [A] : Glomerular filtrate becomes hypertonic in distal convoluted tubule of the nephron Reason [R] : In distal convoluted tubule obligatory reabsorption of water and Na^+ takes place

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

(B) Both [A] and [R] are true but [R] is not the correct explanation of [A]

(C) [A] is true but [R] is false

(D) [A] is false but [R] is true

Q.No. 147 Which of the following are broad spectrum antibiotics? I- Penicillin G II- Chloramphenicol III- Ofloxacin IV- Ampicillin

(A) I,II only

(B) I,II,III

(C) II,III,IV

(D) I,III,IV only

Q.No. 148 1g of an organic compound containing C and H. on complete combustion produced 3.04 g of CO_2 and 1.53 g of H_2O . Find the approximate percentage composition of C and H in the compound ?

(A) C%=83 , H%=17

(B) C%=80 , H%=20

(C) C%=85 , H%=15

(D) C%=88 , H%=12

Q.No. 149 Which one of the following diffuses through rubber. glass and plastic?

docs.aglasem.com

aglasem.com

(A) He

(B) Ne

(C) Ar

(D) Kr

Q.No. 150 In a barometer, the mercury level is 76 cm at sea level. On a hill of height 3 km, if the ratio of density of Hg to that of air is 10^4. the atmospheric pressure on the hill is

(A) 26 cm of Hg

(B) 46 cm of Hg

(C) 36 cm of Hg

(D) 56 cm of Hg

Q.No. 151 If the charge of electron 'e' mass of electron 'm' speed of light in vacuum 'c' and Planck's constant 'h' are taken as fundamental quantities, then the permeability of vacuum 'μ_0' can be expressed as

(A) $\frac{h}{mc^2}$

(B) $\frac{h}{me^2}$

(C) $\frac{h}{ce^2}$

(D) $\frac{mc^2}{he^2}$

Q.No. 152 First reaction in electron transport of Photosynthesis

(A) Photosystem II Chl a absorb light of 680 nm and transport e^- to cytochrome

(B) Photosystem I Chl a absorb light of 700 nm and transport e^- to pheophytin

(C) Photosystem II Chl a absorb light of 680 nm and excite e^- from atomic nucleus to farther orbit

(D) Photo system I Chl a absorb light of 700 nm and transport e^- to cytochrome

Q.No. 153 Fibrous membrane in the middle of a sarcomere is

(A) A

(B) I

(C) Z

(D) M

Q.No. 154 The velocity of an object moving in a straight line as a function of time by $v = 6t - 3t^2$, where v is in ms^{-1}, t is in s. The average velocity of the object between t =0 and t =2 seconds is

(A) 0

(B) 3 ms^{-1}

(C) 2 ms^{-1}

(D) 4 ms^{-1}

Q.No. 155 Assertion [A] : DNA from Bacteriophage head passes through tail core through plasma membrane and enters bacterial cell Reason [R] : Plasma membrane of the host ceII gets dissolved due to lysozyme and releases the new virions

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

(B) Both [A] and [R] are true but [R] is not the correct explanation of [A]

docs.aglasem.com

(C) [A] is true but [R] is false

(D) [A] is false but [R] is true

Q.No. 156 Which one of the following does not possess N--N bond?

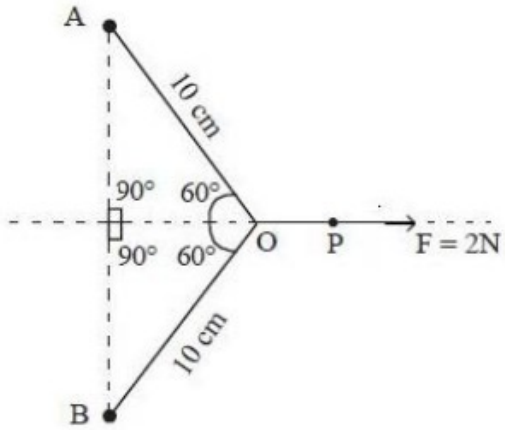
(A) N_2O_3

(B) N_2O_5

(C) N_2O

(D) N_2O_4

Q.No. 157 Two point objects A and B each of mass 3 and initially at rest are connected by massless threads as shown in the figure. A constant force 2 N acts on the system at point P along OP After the point 'O' has moved a distance 20 cm in the direction of force, the objects collide and stick together. The displacement and velocity of the centre of mass of the system



immediately after collision are respectively

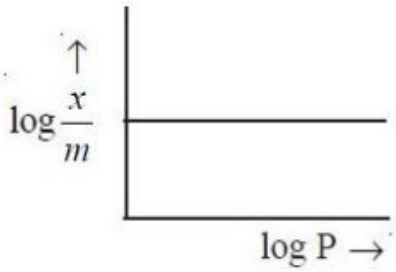
(A) 20 cm , 15 ms $^{-1}$

(B) 10 cm , 15 ms $^{-1}$

(C) 15 cm , 10 ms $^{-1}$

(D) 15 cm , 12 ms $^{-1}$

Q.No. 158 If $\frac{x}{m} = kP^{1/n}$ equation represents the Freundlich adsorption isotherm where x is mass of the gas adsorbed on mass 'm' of the adsorbent at pressure P. k and n are constants which depend on the nature of adsorbent and the gas. Which of the



following condition represents the figure?

(A) $\log k < 0, \quad \frac{1}{n} = 1$

(B) $\log k > 0, \quad \frac{1}{n} = 1$

(C) $\log k > 0, \quad \frac{1}{n} = 0$

(D) $\log k < 0, \quad \frac{1}{n} = 0$

Q.No. 159 A wire is suspended vertically from a rigid support. When loaded with a body in air. the wire extends by 6 mm and when the body is immersed completely in water, the extension is reduced to 4 mm. The relative density of material of the body is

docs.aglasem.com

(A) 3/2

(B) 3

(C) 2

(D) ⅔

Q.No. 160 Choose the correct combination

	List - I		List - II		List -III
A)	Raceme	i)	Cup shapped thallamus	I)	*Derris indica*
B)	Mathematical model	ii)	Codes	II)	Use of computers
C)	Trimerous	iii)	Species plantarum	III)	Artificial System
D)	Historia plantarum	iv)	Capsule	IV)	*Allium*

The correct answer

(A) A,D

(B) B,D

(C) A,C

(D) A,B

Answer Sheet

Q.No	Answer
Q.No. 1	(C)
Q.No. 2	(D)
Q.No. 3	(C)
Q.No. 4	(D)
Q.No. 5	(B)
Q.No. 6	(C)
Q.No. 7	(B)
Q.No. 8	(D)
Q.No. 9	(C)
Q.No. 10	(C)
Q.No. 11	(A)
Q.No. 12	(C)
Q.No. 13	(B)
Q.No. 14	(C)
Q.No. 15	(B)
Q.No. 16	(B)
Q.No. 17	(C)
Q.No. 18	(B)
Q.No. 19	(D)
Q.No. 20	(A)
Q.No. 21	(B)
Q.No. 22	(B)
Q.No. 23	(C)
Q.No. 24	(A)

docs.aglasem.com

aglasem.com

Q.No. 25	(C)
Q.No. 26	(D)
Q.No. 27	(C)
Q.No. 28	(B)
Q.No. 29	(D)
Q.No. 30	(A)
Q.No. 31	(C)
Q.No. 32	(B)
Q.No. 33	(A)
Q.No. 34	(D)
Q.No. 35	(A)
Q.No. 36	(A)
Q.No. 37	(B)
Q.No. 38	(B)
Q.No. 39	(B)
Q.No. 40	(A)
Q.No. 41	(A)
Q.No. 42	(A)
Q.No. 43	(D)
Q.No. 44	(A)
Q.No. 45	(C)
Q.No. 46	(B)
Q.No. 47	(B)
Q.No. 48	(A)
Q.No. 49	(C)
Q.No. 50	(D)
Q.No. 51	(C)
Q.No. 52	(A)
Q.No. 53	(B)
Q.No. 54	(A)
Q.No. 55	(C)
Q.No. 56	(B)
Q.No. 57	(D)
Q.No. 58	(D)
Q.No. 59	(C)
Q.No. 60	(C)
Q.No. 61	(B)
Q.No. 62	(A)
Q.No. 63	(D)
Q.No. 64	(A)
Q.No. 65	(D)
Q.No. 66	(A)
Q.No. 67	(B)
Q.No. 68	(C)
Q.No. 69	(C)

docs.aglasem.com

aglasem.com

Q.No. 70	(C)
Q.No. 71	(C)
Q.No. 72	(C)
Q.No. 73	(D)
Q.No. 74	(B)
Q.No. 75	(A)
Q.No. 76	(B)
Q.No. 77	(C)
Q.No. 78	(B)
Q.No. 79	(D)
Q.No. 80	(C)
Q.No. 81	(B)
Q.No. 82	(A)
Q.No. 83	(B)
Q.No. 84	(C)
Q.No. 85	(A)
Q.No. 86	(C)
Q.No. 87	(B)
Q.No. 88	(B)
Q.No. 89	(A)
Q.No. 90	(B)
Q.No. 91	(B)
Q.No. 92	(A)
Q.No. 93	(A)
Q.No. 94	(A)
Q.No. 95	(D)
Q.No. 96	(C)
Q.No. 97	(D)
Q.No. 98	(A)
Q.No. 99	(D)
Q.No. 100	(A)
Q.No. 101	(B)
Q.No. 102	(A)
Q.No. 103	(C)
Q.No. 104	(D)
Q.No. 105	(D)
Q.No. 106	(B)
Q.No. 107	(C)
Q.No. 108	(B)
Q.No. 109	(D)
Q.No. 110	(B)
Q.No. 111	(B)
Q.No. 112	(C)
Q.No. 113	(A)
Q.No. 114	(A)

docs.aglasem.com

aglasem.com

Q.No. 115	(B)
Q.No. 116	(B)
Q.No. 117	(B)
Q.No. 118	(A)
Q.No. 119	(B)
Q.No. 120	(D)
Q.No. 121	(D)
Q.No. 122	(A)
Q.No. 123	(D)
Q.No. 124	(B)
Q.No. 125	(B)
Q.No. 126	(C)
Q.No. 127	(A)
Q.No. 128	(D)
Q.No. 129	(A)
Q.No. 130	(C)
Q.No. 131	(C)
Q.No. 132	(D)
Q.No. 133	(D)
Q.No. 134	(C)
Q.No. 135	(B)
Q.No. 136	(A)
Q.No. 137	(A)
Q.No. 138	(B)
Q.No. 139	(B)
Q.No. 140	(D)
Q.No. 141	(C)
Q.No. 142	(B)
Q.No. 143	(C)
Q.No. 144	(B)
Q.No. 145	(B)
Q.No. 146	(C)
Q.No. 147	(C)
Q.No. 148	(A)
Q.No. 149	(A)
Q.No. 150	(B)
Q.No. 151	(C)
Q.No. 152	(C)
Q.No. 153	(D)
Q.No. 154	(C)
Q.No. 155	(B)
Q.No. 156	(B)
Q.No. 157	(C)
Q.No. 158	(C)
Q.No. 159	(B)

docs.aglasem.com

aglasem.com

Q.No. 160	(D)

docs.aglasem.com

aglasem.com