PHYSICS

being charged such that the surface charge density on its plates is increasing at a constant rate with time. The magnetic field arising due to displacement current is:

1.non-zero everywhere with maximum at the imaginary cylindrical surface connecting peripheries of the plates

- 2.zero between the plates and non-zero outside
- 3.zero at all places
- 4.constant between the plates and zero outside the plates

The kinetic energies of two similar cars A

A parallel plate capacitor made of circular plates is 0 J and 225 J respectively. On applying breaks, car A stops after 1000 m and car B stops after 1500 m. If FA and FB are the forces applied by the breaks on cars A and B,

respective	ely, then the ra	atio <i>FA/FB</i> is:	1
1. 1	⁷ 3	۷.	2
	3		2
3.	2	4.	3

Thecurrent passing through the battery in the given

An electric dipole with dipole moment $5\times10-6$ cm is

aligned with the direction of a uniform electric field of magnitude 4×105 N/C. The dipole is then rotated through an angle of 60° with respect to the electric field. The change in the potential energy of the dipole is:

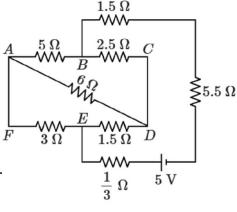
- 1.1.2 J
- 2. 1.5 J
- 3.0.8 J
- 4. 1.0 J

A ball of mass 0.5 kg is dropped from a height of 40 m.

The ball hits the ground and rises to a height of 10 m. The impulse imparted to the ball during its collision with the ground is:

(take
$$g=9.8 \text{ m/s}^2$$
)
1. 0

- 2.84 N-s
- 3. 21 N-s
- 4. 7 N-s



Three identical heat conducting rods are connected The intensity of transmitted light when a polaroid sheet, as shown in the figure. The rods on the sides have

1. 2.5 A

2. 1.5 A 3. 2.0 A

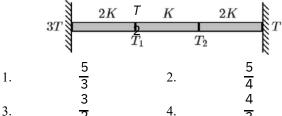
4. 0.5 A

placed between two crossed polaroids at 22.5° from the polarization axis of one of the polaroids, is (10 is the intensity of polarised light after passing through the first polaroid):

- 8
- 16
- 3.

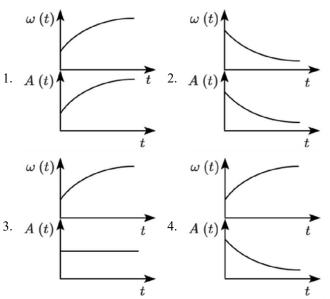
thermal conductivity 2K while that in the middle has thermal conductivity K. The left end of the combination is maintained at temperature 3T and the right end at T. The rods are thermally insulated from outside. In the steady state, temperature at the left junction is T1 and that at the right

junction is T2. The ratio $\frac{T}{1}$ is:

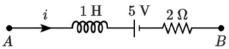


In an oscillating spring mass system, a spring is connected to a box filled with the sand. As the box oscillates,

connected to a box filled with the sand. As the box oscillates, sand leaks slowly out of the box vertically so that the average frequency ω (t) and average amplitude A (t) of the system changes with time t. Which of the following options systemically depicts these changes correctly?



AB is a part of an electrical circuit (see figur potential difference "VA-VB," at the instant when current i=2 A and is increasing at a rate of 1 amp/second is:



- 1. 9 volts
- 2. 10 volts
- 3. 5 volts
- 4. 6 volts

A model for the quantized motion of an electron

uniform magnetic field B states that the flux passing through the orbit of the electron is n(h/e) where n is an integer, h is

Planck's constant and e is the magnitude of the electron's charge. According to the model, the magnetic moment of an electron is its lowest energy state will be (m is the mass of the electron):

- 1. $\frac{heB}{\pi m}$
- 2. <u>heB</u> 2πm
- 3. $\frac{he}{\pi m}$
- $\frac{he}{2\pi m}$

A microscope has an objective of focal length 2 cm, eyepiece of focal length 4 cm and the tube length of 40 cm. If the distance of distinct vision of eye is 25 cm, the magnification in the microscope is:

- 1.150
- 2.250
- 3.100
- 4. 125

There are two inclined surfaces of equal length (L)

same angle of inclination 45° with the horizontal. One of them is rough and the other is perfectly smooth. A given body $\frac{1}{2} \frac{1}{2} \frac{1}$

- 1.0.5
- 2.0.75
- 3. 0.25
- 4.0.40

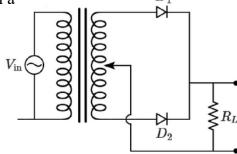
A full wave rectifier circuit with diodes (D1) and (A)

is shown in the figure. If input supply voltage $Vin=220\sin(100\pi t)$ volt, then at t=15 ms:

A particle of mass m is moving around the origin with a

constant force F pulling it towards the origin. If Bohr model is used to describe its motion, the radius r of the nth orbit and the particle's speed v in the orbit depend on n as:

- 1. $r \propto n^2/3; v \propto n^2/3$
- 2. $r \propto n4/3; v \propto n-1/3$
- 3. $r \propto n1/3; v \propto n1/3$
- 4. $r \propto n1/3; v \propto n2/3$



In some appropriate units, time (t) and position $(x)_D$

relation of a moving particle is given by $t = x_2+x$. The acceleration of the particle is:

- 1. $+\frac{2}{(x+1)^3}$
- 2. $+\frac{2}{(2x+1)}$
- 3. $-\frac{2}{(x+2)3}$
- 4. $-\frac{2}{(2x+1)3}$

 $^{(X)}D$ and D2 both are forward biased and

- 2. 1 D2 both are reverse biased is forward
- 3. D biased, D2 is reverse biased is reverse
- 4. 1 biased, D2 is forward biased
 - D 1
 - 1 D
 - 1

A uniform rod of mass 20 kg and length 5 m leans De-Broglie wavelength of an electron orbiting in

against a smooth vertical wall making an angle of 60° with it. The other end rests on a rough horizontal floor. The friction

force that the floor exerts on the rod is: (take g=10m/s)

- 1.200 N
- 2. 200√3 N
- 3.100 N
- 4. 100√3 N

Two identical charged conducting spheres A

and B have

their centres separated by a certain distance. Charge on each sphere is q and the force of repulsion between them is F. A third identical uncharged conducting sphere is brought in contact with sphere A first and then with B and finally removed from both. New force of repulsion between spheres A and B (Radii of A and B are negligible compared to the distance of separation so that for calculating force between them they can be considered as point charges) is best given

as: 1. 3.

Two cities X and Y are connected by a regular bush

service with a bus leaving in either direction every T min. A girl is driving scooty with a speed of 60 km/h in the direction X to Y notices that a bus goes past her every 30 minutes in the direction of her motion, and every 10 minutes in the opposite direction. Choose the correct option for the period Tof the bus service and the speed (assumed constant) of the buses.

- 1. 10 min, 90 km/h
- 2. 15 min, 120 km/h
- 3. 9 min, 40 km/h
- 3. 25 min, 100 km/h

A container has two chambers of volumes V1=23 it (R) only 4.

and V2=3 litres separated by a partition made of a thermal insulator. The chambers contains n1=5 and n2=4 moles of ideal gas at pressures p1=1 atm and p2=2 atm, respectively. When the partition is removed, the mixture attains an equilibrium pressure of:

- 1. 1.4 atm
- 2. 1.8 atm
- 3. 1.3 atm
- 4. 1.6 atm

n=2 state of hydrogen atom is close to: (Given: Bohr radius

- =0.052 nm)
- 1. 1.67 nm
- 2. 2.67 nm 3. 0.067 nm
- 4. 0.67 nm

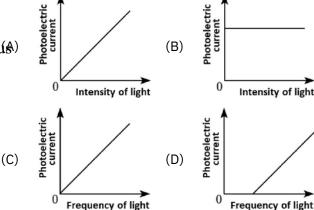
To an AC power supply of 220 V at 50 Hz, a resisto

 20Ω , a capacitor of reactance 25Ω and an inductor of reactance 45 Ω are connected in series. The corresponding current in the circuit and the phase angle between the current and the voltage is, respectively:

- 1. 15.6 A and 30°
- 2. 15.6 A and 450
- 3. 7.8 A and 30°
- 4. 7.8 A and 450

Which of the following options represents the varia

of photoelectric current with the property of light shown on the x-axis?



- 1. (A) and (D)
- 2..(B) and (D)
- (A) and (C)

A pipe open at both ends has a fundamental frequen

in air. The pipe is now dipped vertically in a water drum to half of its length. The fundamental of the air column is now equal to:

- 1.

2

- 2*f*

- 3.
- 4.
- f

Two identical point masses P and Q, suspended from gases A and B are filled at the same pressure

two separate massless springs of spring constant k1 and k2, respectively, oscillate vertically. If their maximum speeds are Q) of the amplitude AQ of mass Q

the same, the ratio

to the amplitude AP of mass P is:



$$\begin{array}{ccc}
\sqrt{} & \sqrt{} \\
2. & k1k \\
k21
\end{array}$$

3.
$$\frac{k}{1}$$

4.
$$-\frac{k}{2}$$

separate cylinders with movable pistons of radius rA and rB, respectively. On supplying an equal amount of heat to both the systems reversibly under constant pressure, the pistons of gas A and B are displaced by 16 cm and 9 cm, respectively. If the change in their internal energy is the same, then the ratio rA/rB is equal to:

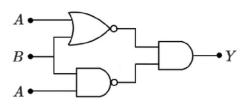
1.
$$\frac{2}{\sqrt{3}}$$

$$\frac{\sqrt{3}}{2}$$

3.
$$\frac{4}{3}$$

4.
$$\frac{3}{4}$$

The output Y of the given logic implementation is A balloon is made of a material of surface tension S similar to the output of which gate?



1. OR 2. NOR 3.

AND 4. **NAND**

its inflation outlet (from where gas is filled in it) has small area A. It is filled with a gas of density ρ and takes a spherical shape of radius R. When the gas is allowed to flow freely out of it, its radius changes from R to ($z\Theta$ ro) in time T. If the speed v(r) of gas coming out of the balloon depends

on
$$r$$
 as ra and $\tau \propto S^{\alpha} A^{\beta} \rho^{\gamma} R \delta$ then:
1. $\alpha = -\frac{1}{2}$, $\alpha = -\frac{1}{2}$, $\beta = -1$, $\gamma = \frac{1}{2}$, $\delta = \frac{7}{2}$

2.
$$\alpha = \frac{1}{1}$$
, $\alpha = \frac{1}{2}$, $\beta = \frac{1}{2}$, $\gamma = \frac{1}{2}$, $\delta = \frac{2}{3}$
3. $\alpha = \frac{1}{2}$, $\alpha = \frac{2}{2}$, $\beta = \frac{1}{2}$

3.
$$\alpha = \frac{2}{-}, \ \alpha = \frac{2}{2}, \ \beta$$
 $\gamma = +1, \ \delta = \frac{2}{-}$

4.
$$\alpha$$
 $\frac{1}{2}$, $\alpha = -\frac{1}{2}$, $\beta = -1$, $\gamma = -\frac{1}{2}$, $\delta = \frac{5}{2}$

An oxygen cylinder of volume 30 litre has 18.20 moles

of oxygen. After some oxygen is withdrawn from the cylinder, its gauge pressure drops to 11 atmospheric pressure at temperature 27°C. The mass of the oxygen withdrawn from the cylinder is nearly equal to:

[Given, $R = \frac{100}{12}$ mol⁻¹ K-1, and molecular mass of =1.01×10 N/m] $O_{\overline{2}}32$, atmlpressure

1. 0.116 kg

2. 0.156 kg

3. 0.125 kg

4. 0.144 kg

A bob of heavy mass is suspended by a light string of

length l. The bob is given a horizontal velocity v0 as shown in figure. If the string gets slack at some point P making an angle θ from the horizontal, the ratio of the speed v of the bob at point P to its initial speed v0 is:

In a certain camera, a combination of four similar thin

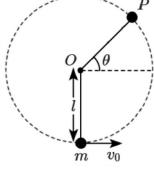
convex lenses are arranged axially in contact. Then the power of the combination and the total magnification in comparison to the power (p) and magnification (m) for each lens will be, respectively -

1. 4p and m4

2. *p*4 and *m*4

3. 4*p* and 4*m*

4. p4 and 4m



1.
$$\frac{(2+3\sin\theta)}{(\sin\theta)1/2\theta}$$
) $^{-1/2}$

2.
$$\left(\frac{\sin\theta}{2+3\sin\theta}\right)^{1/2}$$

4.
$$\frac{1}{2+3\sin\theta}$$

A physical quantity P is related to four observations

a,b,cand das follows:

$$P = \frac{a3b2}{c\sqrt{e}}$$

The percentage errors of measurement in a,b,c and d are 1%, 3%, 2% and 4% respectively. The percentage error in the quantity P is:

- 1.13%
- 2.15%
- 3.10%
- 4. 2%

The sun rotates around its centre once in 27 days. What

will be the period of revolution if the sun were to expand to twice its present radius without any external influence? Assume the sun to be a sphere of uniform density.

- 1. 115 days
- 2. 108 days
- 3. 100 days
- 4. 105 days

4 times the radius of the orbit of mercury. The Martian year is 687 earth days. Then which of the following is the length of 1 year on mercury?

- 1. 172 earth days
- 2. 124 earth days
- 3. 88 earth days
- 4. 225 earth days

A wire of resistance R is cut into 8 equal pieces. Expression properties and its magnitude is $\frac{3}{2}$ is perpendicular to $B \rightarrow$ and its magnitude is

these pieces two equivalent resistance are made by adding four of these together in parallel. Then these two sets are added in series. The net effective resistance of the combination is:

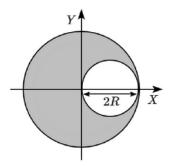
- 1.
- 3.

A photon and an electron (mass 2n) have the same photon/\(\lambda\) electron) of their de Broglie energy E. The ratio (λ

wavelengths is: (ds the speed of light)

- 1.
- $\sqrt{E2m}$ 3.
- 4. cv2mE

A sphere of radius R is cut from a larger solid spher radius 2R as shown in the figure. The ratio of the moment of inertia of the smaller sphere to that of the rest part of the sphere about the *Y*-axis is:



1. 2. 3.

electron (mass 9×10^{-31} kg and $1.6\times10-19$ C) moving with speed c /100 (c=speed of light) The radius of Martian orbit around the sun is about $\frac{1}{18}$ injected into a magnetic field $B \rightarrow$ of magnitude $9 \times 10-4$ T perpendicular to its direction of motion. We wish to apply an uniform electric field $E \rightarrow$ together with the magnetic field so that the electron does not deflect from its path. Then (speed of light $c=3\times108$ ms-1)

- 1. $E \rightarrow$ is parallel to $B \rightarrow$ and its magnitude 1 × 102 V m₋₁
- 2. $E \rightarrow$ is parallel to $B \rightarrow$ and its magnitud 27s 104 V m

 $E \rightarrow$ is perpendicular to $B \rightarrow$ and its magnitude is

4. 27×102 V m-1

The electric field in a plane electromagnetic way $E_{7}=60\cos(5 \times + 1.5 \times 10^{2}) \text{ V/m}.$

expression for the corresponding magnetic field is (here subscripts denote the direction of the field):

 $B_{\Xi}60\cos(5 \times +1.5 \times 109 t) T$

- $B_{\overline{\tau}}60\sin(5 + 1.5 \times 109 t)$ T
- 3. $B_{\overline{v}}2\times10-7\cos(5 \times +1.5\times190t)$ T
- 4. $Bx=2\times10^{-7}\cos(5x+1.5\times10t)^{9}T$

A body weight 48 N on the surface of the earth.

gravitational force experienced by the body due to the Earth at a height equal to one-third the radius of the Earth from its surface is:

- 1.32 N
- 2.36 N
- 3.16 N
- 4.27 N

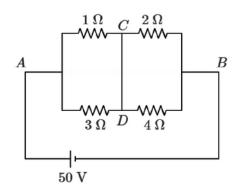
An unpolarized light beam travelling in air is incidentsider the diameter of a spherical object being

a medium of refractive index 1.73 at Brewster's angle. Then:

both reflected and transmitted light are perfectly 1.polarized with angles of reflection and refraction close to 60° and 30°, respectively.

- 2.transmitted light is completely polarized with angle of refraction close to 30°
- 3.reflected light is completely polarized and the angle of reflection is close to 60°
- 4.reflected light is partially polarized and the angle of reflection is close to 30°

Aconstant voltage of 50 V is maintained between the points A and B of the circuit shown in the figure. The current through the branch CD of the circuit is:



- 1. 2. A
- 2.5
- 3. 3. *A*
- 4. 0 A

1.

⁵The plates of a parallel plate capacitor are separated by 2.

 \vec{Ql} . Twoslabs of different dielectric constant K1 and K2 with

thickness $\frac{3}{2}d$ and $\frac{9}{2}d$, respectively are inserted in the

capacitor. Due to this, the capacitance become two times larger than when there is nothing between the plates.

If K1=1.25 K2, the value of K1 is:

- 1.1.60
- 2.1.33
- 3.2.66
- 4.2.33

measured with the help of a Vernier callipers. Suppose its 10 Vernier Scale Divisions (V.S.D.) are equal to its 9 Main Scale Divisions (M.S.D.). The least division in the M.S. is 0.1 cm and the zero of V.S. is at x=0.1 cm when the jaws of Vernier callipers are closed. If the main scale reading for the diameter is M=5 cm and the number of coinciding vernier division is 8, the measured diameter after zero error

1. 4.98 cm

correction, is:

- 2. 5.00 cm
- 3. 5.18 cm
- 4. 5.08 cm

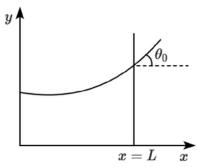
A 2 amp current is flowing through two different si

circular copper coils having radii ratio 1:2. The ratio of their respective magnetic moments will be:

- 1.2:1
- 2.4:1
- 3.1:4
- 4. 1:2

Consider a water tank shown in the figure. It has

wall at x=L and can be taken to be very wide in the z direction. When filled with a liquid of surface tension S and density ρ , the liquid, surface makes angle $\theta 0(\theta 0 \ll 1)$ with the x-axis at x=L. If y(x) is the height of the surface then the equation for y(x) is:



(take
$$\theta(x) = \sin(\theta x \tan \theta(x)) = \begin{cases} \frac{d}{y}, g & \text{is the acceleration due to gravity} \end{cases}$$

acceleration due to gravity)

1.
$$\frac{dz}{y} = \frac{\sqrt{\rho g}}{S}$$

2.
$$\frac{dy}{dx} = \sqrt[V]{\frac{pg}{S}}$$

3.
$$\frac{dx}{2} = \frac{\rho g^{x}}{S}$$

4.
$$\frac{d2y}{dx^2} = \frac{\rho g}{S} y$$

dx

CHEMISTRY

Identify the suitable reagent for the following conversion

CHO

- 1. (i) NaBH 4, (ii) H/H2O
- 2. H2/Pd-BaSO4
- 3. (i) LiAlH 4, (ii) H/H2O
- 4. (i)*AlH*(*iBu*)2(ii) *H2O*

The correct order of decreasing acidity of the fortesting I is True but Statement II is False. aliphatic acids is:

HCOOH > CH3COOH > (CH3) 2 CHCOOH

- > (CH3)3 CCOOH
- 2. HCOOH>(CH3)3CCOOH>(CH3)2CHCOOH > CH3COOH
- (CH3 BCCOOH > (CH3)2CHCOOH > CH3COOH
- CH3COOH > (CH3) 2CHCOOH > (CH3)3CCOOH
 - > HCOOH

If the rate constant of a reaction is 0.03s-1 how r

7.2molL ⁻¹ concentration of the time does it take for reactant to get reduced to 0.9 mol L-1

(Given: $\log 2 = 0.301$)

1.210 s

2. 21.0 s

3. 69.3 s

4. 23.1 s

Given below are two statements:

Statement I:A hypothetical diatomic molecule with bond order zero is quite stable.

Statement II: As bond order increases, the bond length increases.

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

- Statement I is False but Statement II is True.
- 3.Both Statement I and Statement II are True.
- 4.Both Statement I and Statement II are False.

Out of the following complex compounds, which o

compounds will be having the minimum conductance in solution?

1. [Co(NH3)6]Cl3

2. [Co(NH3)5Cl]Cl

3. [Co(NH3)3Cl3]

4. [Co(NH3)4Cl2]

Which of the following aqueous solution will ex

Which one of the following reactions does not helpen gotong point?

"Lassaigne's test"?

- 1. Na+X → +NaX
- 2CuO+C-→2Cu+CO2
- Na+C+N-→NaCN
- 2Na+S-→Na2 S

- 1. 0.01M Na2SO4
- 2. 0.015M C6H12O6
- 3. 0.01M Urea
- 4. 0.01M KNO3

Given below are two statements: one is labelledium below are two statements:

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

Assertion (A): undergoes $S_N 2$ reaction faster than

Reason (R): Iodine is a better leaving group because of its larger size.

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

1.(A) is True but (R) is False

2.(A) is False but (R) is True

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

4.Both (A) and (R) are True but (R) is not the correct explanation of (A)

Consider the following compounds:

-K-O2,H2-O-2 and H2S-O4

The oxidation states of the underlined elements in them are, respectively:

1. +1, -2 and +4

2. +4, -4 and +6

3. +1, -1 and +6

4. +2, -2 and +6

Match List-I with List-II

List-I	List-II			
A.Haber process	 Fe catalyst 			
B.Wacker oxidation	II. PdCl2			
C.Wilkinson catalyst	III.[PPh3)3RhCl]			
D.Ziegler catalyst	IV. TiCl4 with Al(CH3)3			
C1 1	0 .1 .1 .1 .1 .1			

Choose the correct answer from the options given below:

1. A-I, B-II, C-III, D-IV

2. A-I, B-IV, C-III, P-II

3. A-I, B-II, C-IV, D-III

4. A-II, B-III, C-I, D-IV

Statement I:Like nitrogen that can form ammonia, arsenic can form arsine.

Statement II: Antimony cannot form antimony pentoxide. In the light of the above statements, choose the most appropriate answer from the options given below:

1. Statement I is correct but Statement II is incorrect

2. Statement I is incorrect but Statement II is correct

3.Both Statement I and Statement II are correct

4. Both Statement I and Statement II are incorrect

Given below are two statements:

Statement I:Ferromagnetism is considered as an extreme form of paramagnetism.

The number of unpaired electrons in a Cr2+

Statement II: ion (Z=24) is the same as that of a Nd3+ ion (Z=60)

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

1. Statement I is True but Statement II is False.

2. Statement I is False but Statement II is True.

3.Both Statement I and Statement II are True.

4.Both Statement I and Statement II are False.

Which one of the following reactions does not gbenzene as the product?

1.
$$H-C \equiv C-H$$
 Red hot Iron Tube

At 873 K

2. $\bigoplus_{N} \oplus N \oplus \bigoplus_{Cl} \bigoplus_{Warm}$

3. $\bigoplus_{N-\text{hexane}} \bigoplus_{N} \bigoplus_{$

Match List-II with List-II

	List-I		List-II
A.	XeO₃	I.	sp d; linear
B.	XeO^2	II.	s3; pyramidal
C.	XeOF ₄	III.	sp3d3distorted octahedral
D.	XeF ₆	IV	s\$3d2square pyramidal

Choose the correct answer from the options given below:

1. A-IV, B-II, C-III, D-I

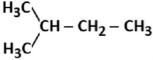
2. A-IV, B-II, C-I, D-III

3. A-II, B-I, C-IV, D-III

4. A-II, B-I, C-III, D-IV

How many products (including stereoisomers) are $C(\frac{1}{2} + 2 H^2(\frac{1}{2}) \rightarrow CH^4(\frac{1}{2}); \Delta H = -74.8 \text{ kJ mol}^1$

expected from monochlorination of the following compound?



- 1. 5
- 2.6
- 3. 2
- 4. 3

Which of the following statements are true?

- **A.**Unlike Ga that has a very high melting point, Cs has a very low melting point.
- **B.**On Pauling scale, the electronegativity values of N and Cl are not the same.
- C. Ar,K+,Cl-,Ca2+ and S2- are all isoelectronic species.
- **D.**The correct order of the first ionization enthalpies of Na, Mg, Al, and Si is Si > Al > Mg > Na
- E. The atomic radius of Cs is greater than that of Li and Rb

Choose the correct answer from the options given below:

- 1. C and D only
- 2. A, C and E only
- 3. A, B and E only
- 4. C and E only

The standard heat of formation, in kcal/mol of Ba2+ is:

[Given: standard heat of formation of SO2-

= -216 kcal/mol, standard heat of crystallisation of

Baso(4) = -4.5 kcal/mol, standard heat of formation of

BaSO(4) = -349 kcal/mol

- 1.
- +133.0
- 2.
- +220.5

D.

-128/stch List-I with List-II

4. -133.0 List-I (Example)			List-II (Type of solution)	
A.	Humidity	I.	Solid in solid	
B.	Alloys	II.	Liquid in gas	
C.	Amalgans	III.	Solid in gas	

IV

Choose the correct answer from the options given below:

Liquid in solid

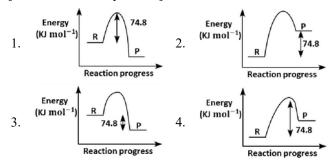
1. A-III, B-I, C-IV, D-II

Smoke

- 2. A-III, B-II, C-I, D-IV
- 3. A-II, B-IV, C-I, D-III
- 4. A-II, B-I, C-IV, D-III

Which of the following diagrams gives an accurate representation of the above reaction?

 $[R \rightarrow reactants; P \rightarrow products]$



Sugar 'X'

- A. is found in honey.
- B. is a keto sugar.
- C. exists in α and β anomeric forms.
- D. is laevorotatory.
- ' X ' is:
- 1. Maltose
- 2. Sucrose
- 3. D-Glucose
- 4. D-Fructose

The total number of possible isomers (both structur

well as stereoisomers) of cyclic ethers of molecular formula C4H8O is:

- 1.10
- 3.6
- 4.8

For the reaction $A(g) \rightleftharpoons 2B(g)$, the backward reaction

rate constant is higher than the forward reaction rate constant by a factor of 2500, at 1000 K

[Given: R = 0.0831L atmmol-1 K-1]

Kp for the reaction at 1000 K is

- 1.0.033
- 2. 0.021
- 3.83.1
- 4. 2.077×105

The ratio of the wavelengths of the light absorbed

Hydrogen atom when it undergoes $n=2 \rightarrow n=3$ and

 $n = 4 \rightarrow n = 6$

transitions, respectively, is

1 1. 9 3.

If the molar conductivitym) of a 0.050 mol L solution of a monobasic weak acid is 90 S cm²mol⁻¹, its extent (degree) of dissociation will be [Assume $\Lambda Q=3$ 49.6 S cm² mol¹ and $\Lambda^2=50.4$ S cm²mol⁻¹.] 1. 0.225 2. 0.215 3. 0.115 4. 0.125

Which of the following are paramagnetic?

- A. [NiCl4]2-
- B. Ni(CO)4
- C. [Ni(CN4)2-
- D. $[Ni(H2O) 6]^{2+}$
- E. Ni(PPh3)4

5 moles of liquid X and 10 moles of liquid Y

solution having a vapour pressure of 70 torr. The vapour pressures of pure X and Y are 63 torr and 78 torr respectively. Which of the following is true regarding the described solution?

- 1. The solution is ideal.
- 2. The solution has volume greater than the sum of individual volumes.
- 3. The solution shows positive deviation.
- 4. The solution shows negative deviation.

Choose the correct answer from the options given below:

- make a 1. A and D only
- 2. A, D and E only
- 3. A and C only
- 4. B and E only

If the half-life (t1/2) for a first order reaction is 1 m

, then the time required for 99.9% completion of the reaction

- is closest to:
- 1. 5 minutes
- 2. 10 minutes
- 3. 2 minutes
- 4. 4 minutes

Among the following, choose the ones with equal

number of atoms

A.212 g of Na2CO3(s)[molar mass=106 g]

- **B.** 248g of Na2O(s)[molar mass=62 g]
- C.240g of NaOH(s) [molar mass=40 g
- **D.**12g of H2(g)[molar mass=2g].
- E. 220g of CO2(g)[molar mass = 44 g]

Choose the correct answer from the options given below:

- 1. B, C, and D only
- 2. B, D, and E only
- 3. A, B, and C only
- 4. **A**, **,B** and **D** only

Energy and radius of the first Bohr of bit of Li2+ are

[Given RH=2.18×10
$$^{-18}$$
 J,a0=52.9pm]
E(Li2+)=-19.62×10-16 J;

$$rn (He+) = 26.4pm$$

$$En(Li2+)=-8.72\times10-16 J;$$

2.

$$En(He+)=-19.62\times10-16 J;$$

$$rn (He+) = 17.6pm$$

$$En(Li2+)=-19.62\times10-18 J$$

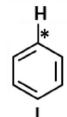
$$rn (He+) = 26.4pm$$

$$En(Li2+)=-8.72\times10-18 J$$

$$E(nHe) = -19.62 \times 10 - 18 J;$$

Among the given compounds I-III, the correct ord bond dissociation energy of *C*–*H* bond marked with * is :

I.



II.

III.

1.
$$III > II > I$$

2.
$$II > III > I$$

3.
$$II > I > III$$

Dalton's Atomic theory could not explain which o

following?

1. Law of multiple proportion

- 2. Law of gaseous volume
- 3. Law of conservation of mass
- 4. Law of constant proportion

Identify the correct orders against the property

mentioned

A.H2O>NH3>CHCl3- dipole moment

B.XeF4>XeO3>XeF2- number of lone pairs on central atom

C.O-H>C-H>N-O- bond length

D.N2>O2>H2 – bond enthalpy

Choose the correct answer from the options given below:

- 1. A and C only
- 2. **B** and **C** only
- 3. **A** and **D** only
- 4. **B** and **D** only

Match List-I with List-II.

List-I List-II (Name of Vitamin) (Deficiency disease)

A.Vitamin B12

B.Vitamin D

II. Cheilosis

III. Convulsions

C.Vitamin B2

III.Rickets

D.Vitamin *B*6 IV. Pernicious anaemia Choose the correct answer from the options given below:

1. A-II, B-III, C-I, D-IV 2. A-IV, B-III, C-II, D-I

3. A-I,B-III,C-II, D-IV 4. A-IV, B-III, C-I, D-II

The correct order of decreasing basic strength of the given amines is:

- 1.N-ethylethanamine > ethanamine > N -methylaniline > benzenamine
- 2.benzenamine > ethanamine > N -methylaniline >N-ethylethanamine
- 3.N -methylaniline > benzenamine > ethanamine > N-ethylethanamine
- 4.N-ethylethanamine > ethanamine > benzenamine > N-methylaniline

The correct order of the wavelength of light absorbed by water the following complexes is.

Choose the corre

A. $[Co(NH3)_6]^{3+}$

B. [Co(CN) 6³

 $C \int_{C} Cu(H2O)_4^{-3/2}$

D. [Ti(H2O)⁶]3+

Choose the correct answer from the options given below:

- 1. C<D<A<B
- 2. C<A<D<B
- 3. B<D<A<C
- 4. B<A<D<C

Predict the major producthe following sequence

of reactions -

1. CH₃ 2. CH₃

of the CH_3 4. CH_2NH_2

Match List-II with List-II

List-I (Mixture)

- A. CHCl3+C6H5NH2
- B.Crude oil in petroleum industry
- C.Glycerol from spent-lye

List-II (Method of Separation)

- I. Distillation under reduced pressure
- II.Steam distillation
 III.Fractional distillation
- Iv.Simple distillation

Choose the correct answer from the option given below:

- 1. A-III, B-IV, C-I, D-II
- 2. A-III, B-IV, C-II, D-I
- 3. A-IV, B-III, C-I, D-II
- 4. A-IV, B-III, C-II, D-I

Which among the following electronic configurations

belong to main group elements?

- \mathbf{A} . [Ne]3 1 s
- **B.** $[Ar]30^{3} 4s^{2}$
- C. $[Kr4d^{\frac{1}{2}}s5p^{\frac{2}{3}}5$
- **D.** [Ar] $3q_0$ $4s^{\frac{1}{5}}$

Which one of the following compounds does not. [Rn]506d27s2

decolourize bromine water?

1. CH = CH₂ 2. NH₂

3.

4. **OH**

Choose the correct answer from the option given below:

- 1. D and Eonly
- 2. **A**, **C** and **D** only
- 3. **B** and **E** only
- 4. A and C only

Which one of the following compounds can exist delighter yield of NO in N2(g)+O2(g) ⇌2NO(g) can

trans isomers?

1. 1, 1-Dimethycyclopropane

2. 1, 2-Dimethylcyclohexane

3. Pent-1-ene

4. 2-Methylhex-2-ene

be obtained at

 $[\Delta H \text{ of the reaction} = +180.7 \text{ kJ mol}^{-1}]$

A. higher temperature

B. lower temperature

1. B, C, D only

2. A, C, D only

3. A, D only

C. higher concentration of N2

D. higher concentration of O2

Phosphoric acid ionizes in three steps, with their choose the correct answer from the options given below:

ionization constant values $Ka1_2Ka$ and K, respectively, while K is the overall ionization constant. Which of the following statements are true?

A. logK=logK a1 +logK a2 +logKa3

B. HPO is a stronger acid than HPQ- $_4$ and HPO $_4$ -.

C. Ka1 > Ka > 2KD. $A_{a_1} = \frac{Ka3 + Ka2}{2}$

Choose the correct answer from the options given below:

1. B, C and D only

2. A, B and C only

3. A and B only

4. A and C only

Match List-I with List-II

List-I (Ion)		List-II (Group Number in Cation Analysis)
A. Co2+	I.	Group-I
B. <i>Mg</i> 2+ I	I.	Group-
C. Pb2+	III.	III
D. <i>Al</i> 3+	IV.	Group-

Choose the **correct** answerIfvom the options given below:

1. A-III, B-II, C-IV, D-I Group-VI

2. A-III, B-II, C-I, D-IV

3. A-III, B-IV, C-II, D-I

4. A-III, B-IV, C-I, D-II

4. B, C only

Given below are two statements:

Benzenediazonium salt is prepared by the **Statement I:**reaction of aniline with nitrous acid at

273-278 K. It decomposes easily in the dry

state

Insertion of iodine into the benzene ring is

Statement II:difficult and hence iodobenzene is prepared through the reaction of benzenediazonium

salt with KI.

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

1. Statement I is correct; Statement II is incorrect

2. Statement I is incorrect; Statement II is correct

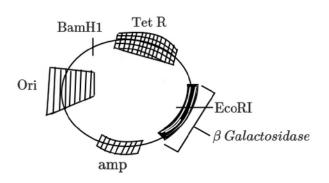
3.Both Statement I and Statement II are correct

4.Both Statement I and Statement II are incorrect

The major product of the following reaction is:

$$CH_3$$
 OH CN

BIOLOGY



In the above represented plasmid an alien piece of DNA is inserted at EcoRI site. Which of the following strategies will be chosen to select the recombinant colonies?

- 1. White color colonies will be selected.
- 2.Blue color colonies grown on ampicillin plates can be selected.
- 3. Using ampicillin & tetracyclin containing medium plate.
- 4.Blue color colonies will be selected.

The protein portion of an enzyme is called:

- 1. Apoenzyme
- 2. Prosthetic group
- 3. Cofactor
- 4. Coenzyme

Given below are two statements:

Statement I: The primary source of energy in an ecosystem is solar energy.

The rate of production of organic matter

Statement II:photosynthesis in an ecosystem is called net primary productivity (NPP).

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

- 1.Statement I is correct but statement II is incorrect
- 2.Statement I is incorrect but statement II is correct
- 3.Both statement I and statement II are correct 4.Both statement I and statement II are incorrect

Given below are two statements: One is labelle

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

Assertion (A): A typical unfertilised, angiosperm embryo sac at maturity is 8-nucleate and 7-celled.

Reason (R): The egg apparatus has 2 polar nuclei.

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

- 1.(A) is True but (R) is False.
- 2.(A) is False but (R) is True. 3.Both (A) and (R) are True

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

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

Neoplastic characteristics of cells refer to:

A.A mass of proliferating cell

B.Rapid growth of cells

C.Invasion and damage to the surrounding tissue

D.Those confined to original location

Choose the correct answer from the options given below.

- 1. **A, B, D** only
- 2. **B, C, D** only
- 3. **A, B** only
- 4. **A, B, C** only

Which one of the following is the characteristic fe

of gymnosperms?

- 1. Seeds are absent.
- 2. Gymnosperms have flowers for reproduction.
- 3. Seeds are enclosed in fruits.
- 4. Seeds are naked.

Match List-II with List-II.

B-II, C-I, D-III 4. A-IV, B-II, C-III, D-I

List-I	List-II
A.Progesterone	I. Pars intermedia
B. Relaxin	II. Ovary
C.Melanocyte stimulating hormor	neIII.Adrenal Medulla
D.Catecholamines	IV.Corpus luteum
Choose the correct answer from the	e options given below.
1. A-II, B-IV, C-I, D-III 2. A-III, I	B-II, C-IV, D-I 3. A-IV,

Which chromosome in the human genome has the

highest number of genes?

- 1. Chromosome 1
- 2. Chromosome 10
- 3. Chromosome X
- 4. Chromosome Y

A.Alfred

Hershey

and 1

Which of the following statements about RuBisC @aish List-I with List-II:

2.It catalyzes	the carboxylation of RuBP,		Martha Chase	1.	
	only in the dark. r affinity for oxygen than carbon dioxide.	B.E	Suchromation	II.D	Densely packed and dark- stained
The fir	rst menstruation is called:	C.F	rederick Griffith	III.I	Loosely packed and light- stained
 Diapause Ovulation 		D.F	Ieterochromatin	IV.	DNA as genetic material confirmation
3. Menopause		Cho	ose the correct answer	r from the	e options given below:
4. Menarche		1. A-IV, B-III, C-I, D-II			
		2. A	-III, B-II, C-IV, D-I		
Which	of the following genetically engineer	ed ³ . A	-II, B-IV, C-I, D-III		
	s used by Eli Lilly to prepare human insulin?	4. A	-IV, B-II, C-I, D-III		
 Virus Phage 			Match List-I with I	List-II:	
3. Bacterium			List-I		List-II
4. Yeast		A.	Adenosine	I.	Nitrogen base
		В.	Adenylic acid	II.	Nucleotide
Given below are two statements: one is la		abell	ed as _{nine}	III.	Nucleoside
Assertion (A) and the other is labelled as Reason (R).		D.	Alanine	IV.	Amino acid
Assertion (A)	chordates are not vertebrate. The members of subphylum vertebrata possess notochord during the embryonic	1. A 2. A	ose the option with all -III, B-II, C-I, D-IV -II, B-III, C-I, D-IV -III, B-IV, C-II, D-I	l correct 1	matches.
Reason (R):	period, the notochord is replaced by a		-III, B-II, C-IV, D-I		
(-1)•	period, the notochord is replaced by a		, , , , – -		

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

cartilaginous or bony vertebral column in

1.It is an enzyme involved in the photolysis of water.

1.(A) is True but (R) is False.

adults.

- 2.(A) is False but (R) is True.
- 3.Both (A) and (R) are True and (R) is the correct explanation of (A).
- 4.Both (A) and (R) are True but (R) is not the correct explanation of (A)

A.Transport of pre-mRNA to the cytoplasm prior to What is the main function of the spindle fibers depleting

mitosis?

true?

- 1. To repair damaged DNA
- 2. To regulate cell growth
- 3. To separate the chromosomes
- To synthesize new DNA

B.Removal of introns and joining of exons.

C.Addition of methyl group at 5' end of hnRNA.

D.Addition of adenine residues at 3' end of hnRNA.

E.Base pairing of two complementary RNAs.

Choose the correct answer from the options given below:

1. **B, C, E** only

connection that acts to link:

events in an eukaryotic cell?

2. Kidney and lower part of body

1. Kidney and intestine

3. Liver and intestine4. Liver and kidney

2. **C**, **D**, **E** only

In frog, the Renal portal system is a special ver

Which of the following are the post-transcriptional

List-II

Streptococcus

- 3. **A, B, C** only
- 4. **B, C, D** only

Polymerase chain reaction (PCR) amplifies DNA Identify the part of a bio-reactor which is used foam braker from the given figure.

following the equation.

- 1. 2n+1
- 2. 2N2
- 3. *N*2
- 4. 2n

Given below are two statements: One is labelled as

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

Both wind and water pollinated flowers are

Assertion (A):not very colourful and do not produce

The flowers produce enormous amount of

pollen grains in wind and water pollinated Reason (R):

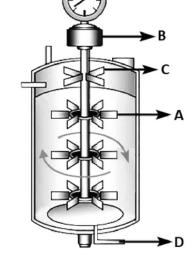
above statements, choose the correct In the light of the answer from the options given below.

- 1.(A) is True but (R) is False.
- 2.(A) is False but (R) is True.
- 3.Both (A) and (R) are True and (R) is the correct explanation of (A).
- 4.Both (A) and (R) are True but (R) is not the correct explanation of (A).

1. D

2. C

3. A 4. B



Epiphytes that are growing on the mango branch Erags respire in water by skin and buccal cavity an

explanation of which of the following

- 1. Predation
- 2. Amensalism
- 3. Commenalism
- 4. Mutualism

land by skin, buccal cavity and lungs.

Choose the correct answer from the following:

- 1. The statement is false for water but true for land
- 2. The statement is false for both the environment
- 3. The statement is true for water but false for land
- 4. The statement is true for both the environment

Find the correct statements:

A.In the human pregnancy, the major organ systems are formed at the end of 12 weeks.

B.In human pregnancy the major organ systems are formed at the end of 8 weeks.

C.In human pregnancy heart is formed after one month of gestation.

D.In human pregnancy, limbs and digits develop by the end of second month.

E.In human pregnancy the appearance of hair is usually observed in the fifth month.

Choose the correct answer from the options given below:

- 1. B, C, D and E only
- 2. A, C, D and E Only
- 3. A and E Only
- 4. B and C Only

Consider the following statements regarding fund

of adrenal medullary hormones:

- It causes pupilary constriction
- B. It is a hyperglycemic hormone
- C. It causes piloerection
- D. It increases strength of heart contraction

Choose the correct answer from the options given below.

- A, C and D only
- 2. **D** only
- C and D only
- 4. **B**, **C** and **D** only

Read the following statements on plant growth all which of the following is an example of a

development.

A.Parthenocarpy can be induced by auxins.

B.Plant growth regulators can be involved in promotion as well as inhibition of growth

C.Dedifferentiation is a pre-requisite for re-differentiation.

D.Abscisic acid is a plant growth promoter.

E.Apical dominance promotes the growth of lateral buds.

Choose the option with all correct statements

- 1. A, D, E only
- 2. B, D, E only
- 3. A, B, C only
- 4. A, C, E only

zygomorphic flower?

- 1. Pea
- 2. Chilli
- 3. Petunia
- 4. Datura

Which of the following organisms *cannot* fix nitro

- A. Azotobacter
- B. Oscillatoria
- C. Anabaena
- D. Volvox
- E. Nostoc

Choose the correct answer from the options given below:

- 1. B only
- 2. E only
- Which of the following hormones released from the
 - 4. D only

pituitary is actually synthesized in the hypothalamus?

- 1. Follicle stimulating hormone (FSH)
- 2. Adenocorticotrophic hormone (ACTH)
- 3. Luteinizing hormone (LH)
- Anti diuretic hormone (ADH)

Which one of the following is an example of ex-

conservation?

- 1. Zoos and botanical gardens
- 2. Protected areas

Which of the following is an example of a non-distribled Park 4. Wildlife Sanctuary

alcoholic beverage produced by yeast?

- 1.Beer
- 2. Rum
- 3. Whisky
- 4. Brandy

A. Head

D. Tail

C. Acrosome

Who is known as the father of Ecology in India?

- 1. Ram Udar
- 2. Birbal Sahni
- 3. S. R. Kashyap

What is the pattern of inheritance for polygenic trans? Misra

List-II

- 1. Autosomal dominant pattern
- 2. X-linked recessive inheritance pattern
- 3. Mendelian inheritance pattern
- 4. Non-Mendelian inheritance pattern

Match List-II with List-II

I.

II.

III. Energy

Enzymes

Sperm motility

Genetic materials

List-I

Given below are two statements:

In the RNA world, RNA is considered the first genetic material evolved to carry out essential life processes. RNA acts as a

genetic material and also as a catalyst for Statement I:

> some important biochemical reactions in living systems. Being reactive, RNA is

unstable.

DNA evolved from RNA and is a more

strands being complementary, resist changes

by evolving repairing mechanism.

Choose the correct answer from the options given below: 1. A-III, B-IV, C-II, D-I

Middle piece

- 2. A-III, B-II, C-I, D-IV
- 3. A-IV, B-III, C-I, D-II
- 4. A-IV, B-III, C-II, D-I

- Statement II: stable genetic material. Its double helical
- 1. Statement Is correct but Statement II is incorrect
- 2. Statement Is incorrect but Statement II is correct
 - 3.BothStatement Ind Statement II are correct
 - 4. Both Statement and Statement II are incorrect

Given below are two statements:

Statement I: Transfer RNAs and ribosomal RNA do not interact with mRNA.

RNA interference (RNAi) takes place in all

Statement II: eukaryotic organisms as a method of cellular defence.

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

- 1. Statement I is correct but Statement II is incorrect
- 2. Statement I is incorrect but Statement II is correct
- 3.Both Statement I and Statement II are correct
- 4.Both Statement I and Statement II are incorrect

Match the List-I with List-II

List-I	List-II		
A. Heart	I. Erythropoietin		
B.Kidney	II. Aldosterone		
C.Gastro - intestinal tract	III.Atrial natriuretic factor		
D.Adrenal Cortex	IV.Secretin		
Choose the correct answer from	om the options given below:		
1. A-I, B-III, C-IV, D-II			
2. A-III, B-I, C-IV, D-II			
3. A-II, B-I, C-III, D-IV			
4. A-IV, B-III, C-II, D-I			

All living members of the class Cyclostomata are:

- 1. Symbiotic
- 2. Ectoparasite
- 3. Free living
- 4. Endoparasite

Streptokinase produced by bacterium Streptococcus 18/wife necessary for being donors

used for

- 1. Liver disease treatment
- 2. Removing clots from blood vessels
- Curd production 3.
- Ethanol production

Match List-II with List-II

	List-I		List-II
A.	Pteridophyte	I.	Salvia
B.	Bryophyte	II.	Ginkgo
C.	Angiosperm	III.	Polystrichum
D.	Gymnosperm	IV.	Salvinia

Choose the option with all correct matches.

- 1. A-III, B-IV, C-I, D-II
- 2. A-IV, B-III, C-II, D-I
- 3. A-III, B-IV, C-II, D-I
- 4. A-IV, B-III, C-I, D-II

Which are correct:

- **A.**Computed tomography and magnetic resonance imaging detect cancers of internal organs.
- **B.**Chemotherapeutics drugs are used to kill non-cancerous cells.
- \mathbf{C} . α interferon activate the cancer patients' immune system and helps in destroying the tumour.
- **D.**Chemotherapeutic drugs are biological modifiers.

E.In the case of leukaemia blood cell counts are decreased. Choose the correct answer from the options given below:

- C and D only
- A and C only
- **B** and **D** only
- **D** and **E** only

What are the potential drawbacks in adoption of

IVF method?

- A.High fatality risk to mother
- **B.**Expensive instruments and reagents

- **D.**Less adoption of orphans
- E.Not available in India

F.Possibility that the early embryo does not survive

Choose the correct answer from the options given below:

- 1. **A, B, C, D** only
- 2. **A, B, C, E, F** only
- 3. **B**, **D**, **F** only
- 4. **A, C, D, F** only

Role of the water vascular system in Echinoderms is:

- A. Respiration and Locomotion
- В. **Excretion and Locomotion**
- C. Capture and transport of food
- D. Digestion and Respiration
- Digestion and Excretion

Choose the correct answer from the options given below:

- B and C only
- 2. **B, D** and **E** only
- A and B only
- 4. A and C only

Consider the following:

reductive division for the human female A.gametogenesis starts earlier than that of the male gametogenesis.

The gap between the first meiotic division and the B.second meiotic division is much shorter for males

compared to females.

- C.The first polar body is associated with the formation of the primary oocyte.
- **D.**Luteinizing Hormone (LH) surge leads to disintegration of the endometrium and onset of menstrual bleeding.

Choose the correct answer from the options given below:

- 1. B and D are true
- 2. **B** and **C** are true
- 3. **A** and **B** are true
- 4. A and C are true

In bryophytes, the gemmae help in which on of the spleen

following?

- 1. Nutrient absorption
- 2. Gaseous exchange
- 3. Sexual reproduction
- 4. Asexual reproduction

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

The primary function of the Golgi apparatus

Assertion (A): is to package the materials made by the endoplasmic reticulum and deliver it to intracellular targets and outside the cell.

Vesicles containing materials made by the endoplasmic reticulum fuse with the cis face

Redso G (R): apparatus, and they are modified and released from the trans face of

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

1.(A) is True but (R) is False.

the Golgi apparatus.

- 2.(A) is False but (R) is True.
- 3.Both (A) and (R) are True and (R) is the correct explanation of (A).
- 4.Both (A) and (R) are True but (R) is not the correct explanation of (A).

Which one of the following statements refers to

Reductionist Biology?

- 1. Chemical approach to study and understand living organisms
- 2. Behavioural approach to study and understand living organisms
- 3. Physico-chemical approach to study and understand living organisms
- 4. Physiological approach to study and understand living organisms

After maturation, in primary lymphoid organs, the

lymphocytes migrate for interaction with antigens to secondary lymphoid organ(s) / tissue(s) like:

thymus

bone marrow

lymph nodes

Е. Peyer's patches

Choose the correct answer from the options given below:

1. **E**, **A**, **B** only

2. C, D, E only

4. A, B, C only

Match List-I with List-II:

List-I List-II A.The Evil Quartet Cryopreservation B.Ex situ II. Alien species invasion C.Lantana camara III.Causes of biodiversity losses

D. Dodo IV. Extinction

Choose the options with all correct matches.

1. A-III, B-IV, C-II, D-I

2. A-III, B-II, C-IV, D-I

3. A-III, B-II, C-I, D-IV

4. A-III, B-I, C-II, D-IV

How many meiotic and mitotic divisions need to o

for the development of a mature female gametophyte from the megaspore mother cell in an angiosperm plant?

- 1. 1 Meiosis and 3 Mitosis
- 2. No Meiosis and 2 Mitosis
- 3. 2 Meiosis and 3 Mitosis
- 4. 1 Meiosis and 2 Mitosis

Which of the following type of immunity is present that the statements given below choose the con

the time of birth and is a non-specific type of defence in the human body?

- 1. Cell-mediated Immunity
- 2. Humoral Immunity
- 3. Acquired Immunity
- 4. Innate Immunity

Given below are two statements:

StatementFig fruit is a non-vegetarian fruit as it has

enclosed fig wasps in it. Fig wasp and fig tree exhibit mutual

Statementrelationship as fig wasp completes its life cycle in fig fruit and fig fruit gets pollinated by fig II:

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

- 1. Statement I is correct but Statement II is incorrect
- 2. Statement I is incorrect but Statement II is correct
- 3.Both Statement I and Statement II are correct
- 4.Both Statement I and Statement II are incorrect

option:

- A.The eukaryotic ribosomes are 80S and prokaryotic ribosomes are 70S.
- **B.**Each ribosome has two sub-units.
- C.The two sub-units of 80S ribosomes are 60S and 40S while that of 70S are 50S and 30S
- D.The two sub-units of 80S ribosomes are 60S and 20S and that of 70S are 50S and 20S
- E.The two sub-units of 80S are 60S and 30S and that of 70S are 50S and 30S.
- 1. A, B and E are true
- 2. **B**, **D** and **E** are true
- 3. A, B and C are true
- 4. A, B and D are true

Which one of the following enzymes contains 'H

as the prosthetic group?

- 1. Succinate dehydrogenase
- 3. RuBisCo
- 4. Carbonic anhydrase

2. Catalase

Given below are two statements: One is labelled as What is the name of the blood vessel that carries Assertion (A) and the other is labelled as Reason (R).

possess

Cells of the tapetum

Assertion (A):cytoplasm and generally have more the one nucleus.

Presence of more than one nucleus in the **ta**fpetum increases the efficiency

migrospinge the Reason (R): developing

mother cells.

deoxygenated blood from the body to the heart in a frog?

- 1. Pulmonary vein
- 2. Vena cava
- 3. Aorta
- 4. Pulmonary artery

Given below are the stages in the life cycle of pteridophytes. Arrange the following stages in the correct

sequence.

- A.Prothallus stage
- **B.**Meiosis in spore mother cells
- C. Fertilisation
- **D.**Formation of archegonia and antheridia in gametophyte.

E.Transfer of antherozoids to the archegonia in presence of water.

Choose the correct answer from the options given below.

- 1. **D**, **E**, **C**, **A** and **B**
- 2. E, D, C, B and A
- 3. **B**, **A**, **D**, **E** and **C**
- 4. **B**, **A**, **E**, **C** and **D**

In light of theabove statement, choose the most appropriate answer from theoptions given below:

- 1.(A) is Truebut(R) is False.
- 2.(A) is Falsebut(R) is True.
- 3.Both (A) and (R) are True and (R) is the correct explanation of (A).
- 4.Both (A) and (R) are True but (R) is not the correct explanation of (A).

The blue and white selectable markers have been While trying to find out the characteristic of a ne

developed which differentiate recombinant colonies from non-recombinant colonies on the basis of their ability to produce colour in the presence of a chromogenic substrate. Given below are two statements about this method:

The blue coloured colonies have DNA insert in Statement the plasmid and they are identified as recombinant colonies. I:

The colonies without blue colour have DNA Statement insert in the plasmid and are identified as recombinant colonies. П:

1.Statement I is correct: Statement II is incorrect

2. Statement I is incorrect; Statement II is correct 3.Both Statement I and Statement II are correct

4. Both Statement I and Statement II are incorrect

found animal, a researcher did the histology of adult animal and observed a cavity with presence of mesodermal tissue towards the body wall but no mesodermal tissue was observed towards the alimentary canal. What could be the possible coelome of that animal?

1. Schizocoelomate

2. Spongocoelomate

3. Acoelomate

4. Pseudocoelomate

Given below are two statements:

In a floral formula ⊕ stands for zygomorphic Statement I :nature of the flower, and G stands for inferior ovary.

In a floral formula ⊕ stands for Statement II: actinomorphic nature of the flower and G stands for superior ovary.

Which of the following microbes is NOT involved in

the preparation of household products?

Aspergillus niger A.

В. Lactobacillus

C. Trichoderma polysporum

D. Saccharomycescerevisiae

E. Propionibacterium sharmanii

Choose the correct answer from the options given below:

1. C and D only

2. C and E only

3. A and B only

4. A and C only

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

1. Statement I is correct but Statement II is incorrect

2. Statement I is incorrect but Statement II is correct

3.Both Statement I and Statement II are correct

4.Both Statement I and Statement II are incorrect

Given below are two statements:

Statement I: In ecosystem, there is unidirectional flow of energy of sun from producers to consumers.

Statement II:Ecosystems are exempted from 2nd law of thermodynamics.

Silencing of specific mRNA is possible via RNAi

because of -

1. Complementary tRNA

2. Non-complementary ssRNA

3. Complementary dsRNA

4. Inhibitory ssRNA

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

1. Statement I is correct but statement II is incorrect

2. Statement I is incorrect but statement II is correct

3.Both statement I and statement II are correct

4.Both statement I and statement II are incorrect

The complex II of mitochondrial electron transport

chain is also known as

1. Cytochrome c oxidase

2. NADH dehydrogenase

3. Cytochrome bc

4. Succinate dehydrogenase

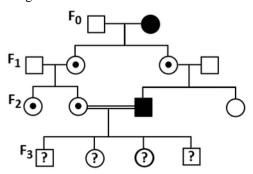
Which of the following is the unit of productivity

1. KCalm ⁻³ 2. (KCal m-2)yr-1

3. gm-2

4. KCalm ⁻²

With the help of given pedigree, find out the probability for the birth of a child having no disease and being a carrier (has the disease mutation in one allele of the gene) in F3 generation.



- Unaffected male
- Affected male
- Carrier female
- Unaffected female
- Affected female
- 1. 1/8
- 2. Zero
- 3. 1/4
- 4. 1/2

In the seeds of cereals, the outer covering of endosperm separates the embryo by a protein-rich layer called:

- 1. Integument
- 2. Aleurone layer
- 3. Coleoptile
- 4. Coleorhiza

Match List-II with List-II:

List-I A. Chlorophyll a B. Chlorophyll b C. Xanthophylls D. Carotenoids II. Yellow III. Blue-green IV. Yellow to Yellow-orange Choose the option with all correct matches:

- 1. A-I, B-II, C-IV, D-III
- 2. A-I, B-IV, C-III, D-II
- 3. A-III, B-IV, C-II, D-I
- 4. A-III, B-I, C-II, D-IV

Who proposed that the genetic code for amino a

- should be made up of three nucleotides?
- 1. Jacque Monod
- 2. Franklin Stahl
- 3. George Gamow
- 4. Francis Crick

Histones are enriched with-

- 1. Phenylalanine & Leucine
- 2. Phenylalanine & Arginine
- 3. Lysine & Arginine
- 4. Leucine & Lysine

Which of the following enzyme(s) are NOT esse

for gene cloning?

- A. Restriction enzymes
- B. DNA ligase
- C. DNA mutase
- D. DNA recombinase
- E. DNA polymerase

Choose the correct answer from the options given below:

- 1. **D** and **E** only
- 2. B and C only
- 3. C and D only
- 4. A and B only

A specialised membranous structure in a prokary

cell which helps in cell wall formation, DNA replication is:

- 1. Cristae
- 2. Endoplasmic Reticulum
- 3. Mesosome
- 4. Chromatophores

Which factor is important for termination of

transcription?

- $1. \rho \text{ (rho)}$
- 2. γ (gamma)
- 3. α (alpha)
- 4. σ (sigma)

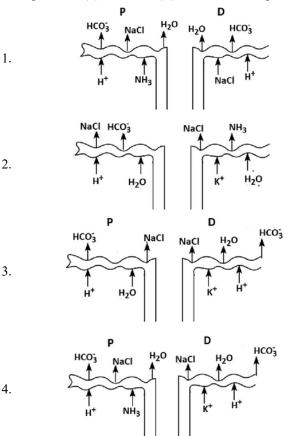
Which of the following statement is correct about

location of the male from copulatory pad?

- 1. Second digit of fore limb
- 2. First digit of the fore limb
- 3. First and Second digit of fore limb
- 4. First digit of hind limb

Which of the following diagrams is correct with regaind the statement that is NOT correct with regard

to the proximal (P) and distal (D) tubule of the Nephron.



Identify the statement that is NOT correct.

- 1. Antigen binding site is located at C-terminal region of antibody molecules.
- 2.Constant region of heavy and light chains are located at C-terminus of antibody molecules.
- 3. Each antibody has two light and two heavy chain.
- 4. The heavy and light chains are held together by disulfide bonds.

Match List-II with List-II:

List-I A.Scutellum I. Persistent nucellus B.Non-albuminous II. Cotyledon of Monocot seed C. Epiblast III. Groundnut D.Perisperm IV.Rudimentary cotyledon Chaose the option with all correct matches

Choose the option with all correct matches.

1. A-IV, B-III, C-I, D-II 2. A-II, B-IV, C-III, D-I 3. A-II, B-III, C-IV, D-I 4. A-IV, B-III, C-II, D-I

the structure of monocot stem.

- 1. Vascular bundles are conjoint and closed.
- 2. Phloem parenchyma is absent.
- 3. Hypodermis is parenchymatous.
- 4. Vascular bundles are scattered.

Twins are born to a family that lives next door to

The twins are a boy and a girl. Which of the following must be true?

- 1. The were conceived through in vitro fertilization.
- 2. They have 75% identical genetic content.
- 3. They are monozygotic twins.
- 4. They are fraternal twins.

Sweet potato and potato represent a certain type

evolution. Select the correct combination of terms to explain the evolution.

- 1. Homology, convergent
- 2. Analogy, divergent
- 3. Analogy, convergent
- 4. Homology, divergent

Which one of the following phytohormones prom

nutrient mobilization which helps in the delay of leaf senescence in plants?

- 1. Gibberellin
- 2. Cytokinin
- 3. Ethylene
- 4. Abscisic acid

Why can't insulin be given orally to diabetic patier

- 1.Because of structural variation
- 2.Its bioavailability will be increased
- 3. Human body will elicit strong immune response
- 4.It will be digested in Gastro-Intestinal (GI) tract

Name the class of enzyme that usually catalyze

following reaction:

S-G+S# → S+S#-G

Where, $G \ensuremath{\rightarrow}\xspace a$ group other than hydrogen

 $S \rightarrow a$ substrate

 $S\# \rightarrow$ another substate

- 1. Transferase
- 2. Ligase
- 3. Hydrolase
- 4. Lyase

Given below are two statements:

The DNA fragments extracted from gel

Statement I: electrophoresis can be used in construction of recombinant DNA.

Smaller size DNA fragments are observed

Statement II: near anode while larger fragments are found near the wells in an agarose gel.

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

- 1. Statement I is correct but statement II is incorrect
- 2. Statement I is incorrect but statement II is correct
- 3.Both statement I and statement II are correct
- 4.Both statement I and statement II are incorrect

The correct sequence of events in the life $2\sqrt{2N} = N(r-K)$

bryophytes is

- A. Fusion of antherozoid with egg.
- B. Attachment of gametophyte to substratum.
- C. Reduction division to produce haploid spores.
- D. Formation of sporophyte.

1. Phenotypic ratio - 9:3:3:1

2. Phenotypic ratio - 9:7

4. Phenotypic ratio - 3:1

3. Phenotypic ratio - 1:2:1

E. Release of antherozoids into water.

Choose the correct answer from the options given below:

- 1. B, E, A, D, C
- 2. D, E, A, B, C
- 3. D, E, A, C, B
- 4. B, E, A, C, D

generation?

Match List-I with List-II.

List-I

List-I

A. Centromere I. Mitochondrion II. Cell division B. Cilium Cristae Cell membrane Cell movement D. Phospholipid Bilayer

Choose the correct answer hom the options given below:

- 1. A-IV, B-II, C-III, D-I
- 2. A-II, B-III, C-I, D-IV
- 3. A-I, B-II, C-III, D-IV
- 4. A-II, B-I, C-IV, D-III

Which one of the following equations represent

Verhulst-Pearl Logistic Growth of population?

1.
$$dN = rN(\frac{N-K}{N})$$

Match List-I with List-II.

List-I

List-II

Rapid spasms in muscle due to to the complete the complete to the complete the comp Damaged alveolar walls and

Becaused Postarisory surface

Acute chest pain when not

Genes R and Y follow independent assortment. Claumerulonephritis III. enough oxygen is reaching to

heart muscle

D. Tetany

IV.Inflammation of glomeruli of

kidney

Choose the correct answer from the options given below:

- 1. A-II, B-IV, C-III, D-I
- 2. A-II, B-III, C-IV, D-I
- 3. A-III, B-I, C-IV, D-II

Each of the following characteristics represent ⁴a A-III, B-I, C-II, D-IV

Kingdom proposed by Whittaker. Arrange the following in increasing order of complexity of body organization.

RRYY produce round yellow seed and rryy produce wrinkled

green seeds, what will be then phenotypic ratio of the F2

A.Multicellular heterotrophs with cell wall made of chitin.

- **B.**Heterotrophs with tissue/organ/organ system level of body organization.
- C.Prokaryotes with cell wall made of polysaccharides and amino acids.
- **D.**Eukaryotic autotrophs with tissue/organ level of body organization.

E.Eukaryotes with cellular body organization.

Choose the correct answer from the options given below:

- 1. A, C, E, D, B
- 2. C, E, A, B, D
- A, C, E, B, D
- C, E, A, D, B

Cardiac activities of the heart are regulated by:

- A.Nodal tissue
- **B.**A special neural centre in the medulla oblongata
- C.Adrenal medullary hormones
- **D.**Adrenal cortical hormones

Choose the correct answer from the options given below:

- 1. A, C and D only
- 2. A, B and D only
- 3. A, B and C only
- 4. A, B C and D

Fill OMR Sheet*

*If above link doesn't work, please go to test link from where you got the pdf and fill OMR from there. After filling the OMR, you would get answers and explanations for the questions in the test.