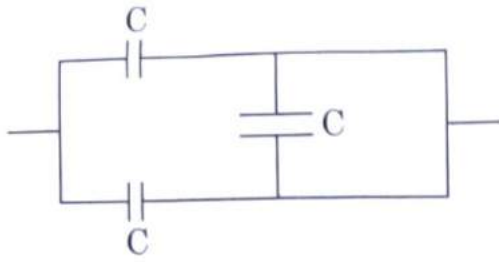The equivalent capacitance of the combination shown in the figure is :


(1)   3C

(2)   2C

(3)   C/2

(4)   3C/2

Polar molecules are the molecules :

(1)   having zero dipole moment.

(2)   acquire a dipole moment only in the presence of electric field due to displacement of charges.

(3)   acquire a dipole moment only when magnetic field is absent.

(4)   having a permanent electric dipole moment.

An infinitely long straight conductor carries a current of 5 A as shown. An electron is moving with a speed of 10^5 m/s parallel to the conductor. The perpendicular distance between the electron and the conductor is 20 cm at an instant. Calculate the magnitude of the force experienced by the electron at that instant.

Electron $v = 10^5$ m/s

20 cm

P   5 A   Q
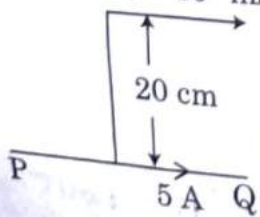
(1) 4×10^{-20} N

(2) $8\pi \times 10^{-20}$ N

(3) $4\pi \times 10^{-20}$ N

(4) 8×10^{-20} N

cross-section. The variation of magnetic field due to the cable with the distance 'r' from of the cable is represented by :

(1)   B

r

(2)   B

r

(3)   B

r

(4)   B

r
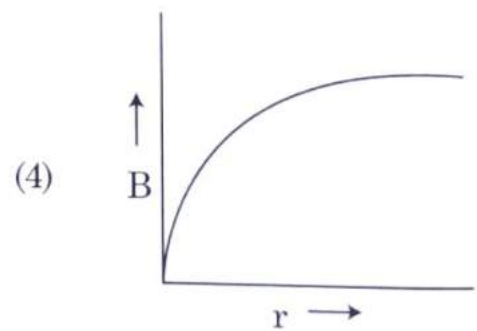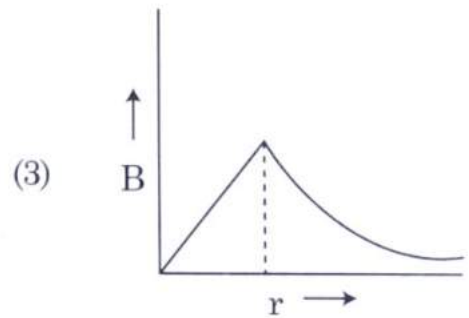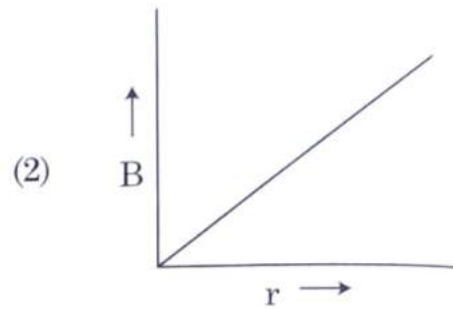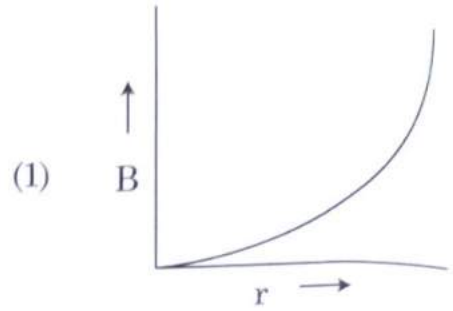
5.   In a potentiometer circuit a cell of EMF balance point at 36 cm length of wire cell of EMF 2.5 V replaces the first what length of the wire, the balance p

(1)   60 cm

(2)   21.6 cm

1

n, which one of the following combination correct possible directions for electric and magnetic field (B) respectively ?
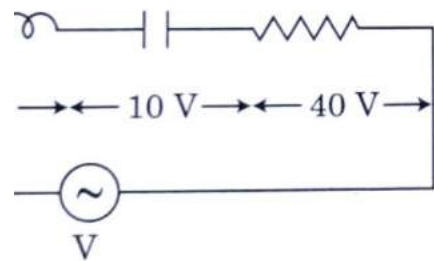
$-\hat{k}, \quad \hat{j}+\hat{k}$

$\hat{i}+\hat{k}, \quad -\hat{j}-\hat{k}$

$-\hat{k}, \quad -\hat{j}-\hat{k}$

$\hat{i}+\hat{k}, \quad -\hat{j}+\hat{k}$

ctor of inductance L, a capacitor of ace C and a resistor of resistance 'R' are d in series to an ac source of potential e 'V' volts as shown in figure.

l difference across L, C and R is 40 V, l 40 V, respectively. The amplitude of flowing through LCR series circuit is The impedance of the circuit is :

$\overline{2} \ \Omega$

$\sqrt{2} \ \Omega$

work function. emitted from the surface has de-Broglie wavelengt λ_d, then :

(1) $\quad \lambda = \left(\dfrac{2m}{hc}\right)\lambda_d^{\ 2}$

(2) $\quad \lambda_d = \left(\dfrac{2mc}{h}\right)\lambda^2$

(3) $\quad \lambda = \left(\dfrac{2mc}{h}\right)\lambda_d^{\ 2}$

(4) $\quad \lambda = \left(\dfrac{2h}{mc}\right)\lambda_d^{\ 2}$

10. Column - I gives certain physical terms associated with flow of current through a metallic conductor Column - II gives some mathematical relation involving electrical quantities. Match Column - I and Column - II with appropriate relations.

Column - I		Column - II	
(A)	Drift Velocity	(P)	$\dfrac{m}{ne^2\rho}$
(B)	Electrical Resistivity	(Q)	nev_d
(C)	Relaxation Period	(R)	$\dfrac{eE}{m}\tau$
(D)	Current Density	(S)	$\dfrac{E}{J}$

(1) (A)-(R), (B)-(S), (C)-(P), (D)-(Q)

(2) (A)-(R), (B)-(S), (C)-(Q), (D)-(P)

(3) (A)-(R), (B)-(P), (C)-(S), (D)-(Q)

(4) (A)-(R), (B)-(Q), (C)-(S), (D)-(P)

er of photons per second on an average y the source of monochromatic light of th 600 nm, when it delivers the power of ₃ watt will be : (h = 6.6 × 10⁻³⁴ Js)

₃

7

11. The escape velocity from the Earth's surface is v. The escape velocity from the surface of another planet having a radius, four times that of Earth and same mass density is :

(1) $\quad v$

(2) $\quad 2v$

2

12. The velocity of a small ball of mass M and density d, when dropped in a container filled with glycerine becomes constant after some time. If the density of glycerine is $\frac{d}{2}$, then the viscous force acting on the ball will be :

   (1) $\frac{Mg}{2}$

   (2) Mg

   (3) $\frac{3}{2}Mg$

   (4) $2Mg$

13. A body is executing simple harmonic motion with frequency 'n', the frequency of its potential energy is :

   (1) n

   (2) $2n$

   (3) $3n$

   (4) $4n$

14. Water falls from a height of 60 m at the rate of 15 kg/s to operate a turbine. The losses due to frictional force are 10% of the input energy. How much power is generated by the turbine ? $(g = 10 \text{ m/s}^2)$

   (1) 10.2 kW

   (2) 8.1 kW

   (3) 12.3 kW

   (4) 7.0 kW

15. A dipole is placed in an electric field as shown. In which direction will it move ?
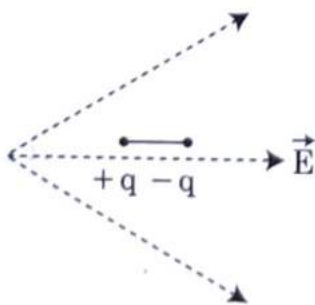
   (1) towards the left as its potential energy will increase.

   (2) towards the right as its potiantial energy will decrease.

   (3) towards the left as its potential energy will decrease.

16. A capacitor ... an ac source of voltage V, given b

$V = V_0 \sin\omega t$

The displacement current betwe the capacitor, would then be give

   (1) $I_d = V_0 \omega C \cos\omega t$

   (2) $I_d = \frac{V_0}{\omega C} \cos\omega t$

   (3) $I_d = \frac{V_0}{\omega C} \sin\omega t$

   (4) $I_d = V_0 \omega C \sin\omega t$

17. A cup of coffee cools from 90°C to 8C when the room temperature is 2 taken by a similar cup of coffee to to 60°C at a room temperature sa

   (1) $\frac{13}{10}t$

   (2) $\frac{13}{5}t$

   (3) $\frac{10}{13}t$

   (4) $\frac{5}{13}t$

18. The effective resistance of a parallel consists of four wires of equal lengt cross-section and same material is will be the effective resistance if the in series ?

   (1) 0.25 Ω

   (2) 0.5 Ω

3

ch **Column - I** and **Column - II** and choose correct match from the given choices.

Column - I		Column - II
Root mean square speed of gas molecules	(P)	$\frac{1}{3} nm\bar{v}^2$
Pressure exerted by ideal gas	(Q)	$\sqrt{\dfrac{3\,RT}{M}}$
Average kinetic energy of a molecule	(R)	$\frac{5}{2}RT$
Total internal energy of 1 mole of a diatomic gas	(S)	$\frac{3}{2}k_B T$

(A) - (R), (B) - (P), (C) - (S), (D) - (Q)

(A) - (Q), (B) - (R), (C) - (S), (D) - (P)

(A) - (Q), (B) - (P), (C) - (S), (D) - (R)

(A) - (R), (B) - (Q), (C) - (P), (D) - (S)

all block slides down on a smooth inclined , starting from rest at time $t = 0$. Let S_n be stance travelled by the block in the interval $\cdot 1$ to $t = n$. Then, the ratio $\dfrac{S_n}{S_{n+1}}$ is :

$\dfrac{2n-1}{2n}$

$\dfrac{2n-1}{2n+1}$

$\dfrac{2n+1}{2n-1}$

$\dfrac{2n}{2n-1}$

active nucleus $_{Z}^{A}X$ undergoes spontaneous n the sequence

$_{Z-1}B \rightarrow _{Z-3}C \rightarrow _{Z-2}D$, where Z is the number of element X. The possible decay es in the sequence are :

ɣ, β^-, β^+

ɣ, β^+, β^-

22. used to measure the

Main scale reading : 0 mm

Circular scale reading : 52 divisions

Given that 1 mm on main scale corresponds 100 divisions on the circular scale. The diame of the wire from the above data is :

(1) 0.52 cm

(2) 0.026 cm

(3) 0.26 cm

(4) 0.052 cm

23. A parallel plate capacitor has a uniform elec field '$\vec{E}$' in the space between the plates. If distance between the plates is 'd' and the are each plate is 'A', the energy stored in the capaci is : (ε_0 = permittivity of free space)

(1) $\dfrac{1}{2}\varepsilon_0 E^2$

(2) $\varepsilon_0 EAd$

(3) $\dfrac{1}{2}\varepsilon_0 E^2 Ad$

(4) $\dfrac{E^2 Ad}{\varepsilon_0}$

24. The electron concentration in an n-ty semiconductor is the same as hole concentrat in a p-type semiconductor. An external fi (electric) is applied across each of them. Comp the currents in them.

(1) current in n-type = current in p-type.

(2) current in p-type > current in n-type.

(3) current in n-type > current in p-type.

(4) No current will flow in p-type, current only flow in n-type.

25. A convex lens 'A' of focal length 20 cm and a conc lens 'B' of focal length 5 cm are kept along same axis with a distance 'd' between them. parallel beam of light falling on 'A' leaves 'B' parallel beam, then the distance 'd' in cm will

(1) 25

(2) 15

prism. Refractive index of the glass is ...
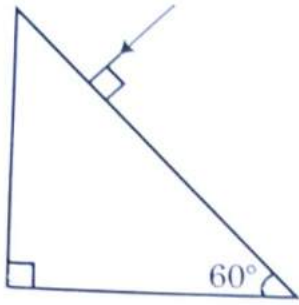
(1)   60°

(2)   30°

(3)   45°

(4)   90°

Consider the following **statements (A)** and **(B)** and identify the **correct** answer.

(A)   A zener diode is connected in reverse bias, when used as a voltage regulator.

(B)   The potential barrier of p-n junction lies between 0.1 V to 0.3 V.

(1)   **(A)** and **(B)** both are correct.

(2)   **(A)** and **(B)** both are incorrect.

(3)   **(A)** is correct and **(B)** is incorrect.

(4)   **(A)** is incorrect but **(B)** is correct.

Two charged spherical conductors of radius R_1 and R_2 are connected by a wire. Then the ratio of surface charge densities of the spheres (σ_1/σ_2) is :

(1) $\dfrac{R_1}{R_2}$

(2) $\dfrac{R_2}{R_1}$

(3) $\sqrt{\left(\dfrac{R_1}{R_2}\right)}$

(4) $\dfrac{R_1^2}{R_2^2}$

If force [F], acceleration [A] and time [T] are chosen as the fundamental physical quantities. Find the dimensions of energy.

(1)   [F] [A] [T]

(2)   [F] [A] [T²]

(3)

of :

(1) $[M^2][L^{-1}][T^0]$

(2) $[M][L^{-1}][T^{-1}]$

(3) $[M][L^0][T^0]$

(4) $[M^2][L^{-2}][T^{-1}]$

31.   A lens of large focal length and la best suited as an objective of an telescope since :

(1)   a large aperture contribute and visibility of the images.

(2)   a large area of the objective light gathering power.

(3)   a large aperture provides a be

(4)   all of the above.

32.   A nucleus with mass number 240 b fragments each of mass number 12 energy per nucleon of unfragmer 7.6 MeV while that of fragments is total gain in the Binding Energy in t

(1)   0.9 MeV

(2)   9.4 MeV

(3)   804 MeV

(4)   216 MeV

33.   A particle is released from height surface of the Earth. At a certain hei energy is three times its potential height from the surface of earth and the particle at that instant are respe

(1) $\dfrac{S}{4}$, $\dfrac{3gS}{2}$

(2) $\dfrac{S}{4}$, $\dfrac{\sqrt{3gS}}{2}$

(3) $\dfrac{S}{2}$, $\dfrac{\sqrt{3gS}}{2}$

...-life of a radioactive nuclide is 100 hours.
e fraction of original activity that will remain
er 150 hours would be :

  1/2

  $\dfrac{1}{2\sqrt{2}}$

  $\dfrac{2}{3}$

  $\dfrac{2}{3\sqrt{2}}$

ring is stretched by 5 cm by a force 10 N. The
period of the oscillations when a mass of 2 kg
spended by it is :

  0.0628 s

  6.28 s

  3.14 s

  0.628 s

Section - B (Physics)

ies LCR circuit containing 5.0 H inductor,
capacitor and 40 Ω resistor is connected to
variable frequency ac source. The angular
encies of the source at which power
erred to the circuit is half the power at the
int angular frequency are likely to be :

25 rad/s and 75 rad/s

50 rad/s and 25 rad/s

46 rad/s and 54 rad/s

42 rad/s and 58 rad/s

nducting circular loops of radii R_1 and R_2
ced in the same plane with their centres
ng. If $R_1 >> R_2$, the mutual inductance M
n them will be directly proportional to :

$\dfrac{R_1}{R_2}$

$\dfrac{R_2}{R_1}$

$\dfrac{R_1^2}{R_2}$

$\dfrac{R_2^2}{R_2}$

3b.
10 m, strik.. The magnitu..
height. $(g = 10 \text{ m/s}^2)$ nearly :
the ball is

(1)   0 kg m/s

(2)   4.2 kg m/s

(3)   2.1 kg m/s

(4)   1.4 kg m/s

39. A point object is placed at a distance of 60 cm from
a convex lens of focal length 30 cm. If a plane
mirror were put perpendicular to the principal axis
of the lens and at a distance of 40 cm from it, the
final image would be formed at a distance of :

←—60 cm—→|←—40 cm—→|
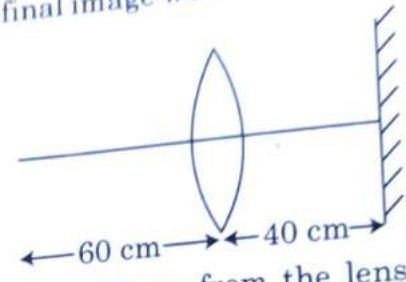
(1)   20 cm from the lens, it would be a real
image.

(2)   30 cm from the lens, it would be a real
image.

(3)   30 cm from the plane mirror, it would be a
virtual image.

(4)   20 cm from the plane mirror, it would be a
virtual image.

40. A uniform conducting wire of length 12a an
resistance 'R' is wound up as a current carryin
coil in the shape of,

(i)   an equilateral triangle of side 'a'.

(ii)   a square of side 'a'.

The magnetic dipole moments of the coil in ea
case respectively are :

(1) $\sqrt{3}\, Ia^2$ and $3\, Ia^2$

(2) $3\, Ia^2$ and Ia^2

(3) $3\, Ia^2$ and $4\, Ia^2$

(4) $4\, Ia^2$ and $3\, Ia^2$

41. A car starts from rest and accelerates at 5 m
At $t = 4$ s, a ball is dropped out of a window b
person sitting in the car. What is the velocity
acceleration of the ball at $t = 6$ s ?
(Take $g = 10 \text{ m/s}^2$)

(1)   20 m/s, 5 m/s²

(2)   20 m/s, 0

(3) $20\sqrt{2}$ m/s, 0

(4) $20\sqrt{2}$ m/s, 10 m/s²

Three resistors having resistances r_1, r_2 and r_3 are connected as shown in the given circuit. The ratio $\dfrac{i_3}{i_1}$ of currents in terms of resistances used in the circuit is :
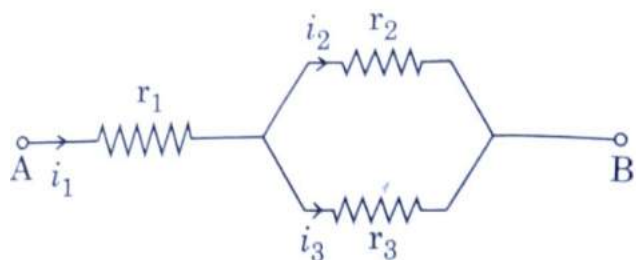
1) $\dfrac{r_1}{r_2 + r_3}$

2) $\dfrac{r_2}{r_2 + r_3}$

3) $\dfrac{r_1}{r_1 + r_2}$

4) $\dfrac{r_2}{r_1 + r_3}$

particle of mass 'm' is projected with a velocity $= kV_e (k < 1)$ from the surface of the earth.

$_e =$ escape velocity)

e maximum height above the surface reached the particle is :

$R\left(\dfrac{k}{1-k}\right)^2$

$R\left(\dfrac{k}{1+k}\right)^2$

$\dfrac{R^2 k}{1+k}$

$\dfrac{Rk^2}{1-k^2}$

tep down transformer connected to an ac mains pply of 220 V is made to operate at 11 V, 44 W np. Ignoring power losses in the transformer, nat is the current in the primary circuit ?
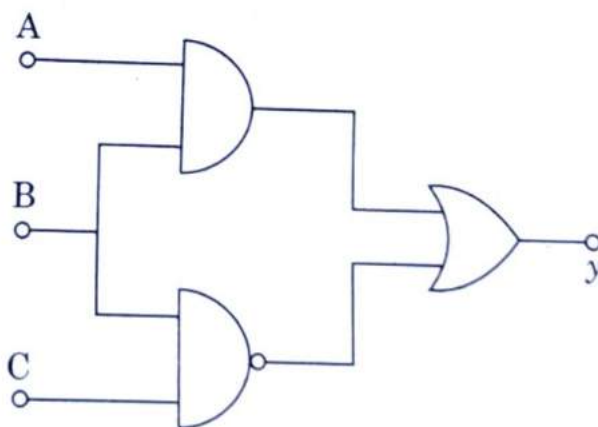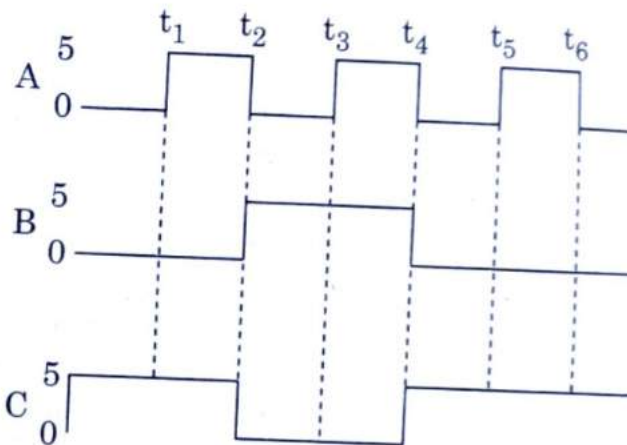
) 0.2 A

2) 0.4 A

(3) 2 A

45. Twenty seven drops of same size are charge 220 V each. They combine to form a bigger d Calculate the potential of the bigger drop.

(1) 660 V

(2) 1320 V

(3) 1520 V

(4) 1980 V

3599745

46. For the given circuit, the input digital signa applied at the terminals A, B and C. What be the output at the terminal y ?

(1)

(2)

7

A particle moving in a circle of radius R with a uniform speed takes a time T to complete one revolution.

If this particle were projected with the same speed at an angle 'θ' to the horizontal, the maximum height attained by it equals 4R. The angle of projection, θ, is then given by :

(1) $\theta = \cos^{-1}\left(\dfrac{gT^2}{\pi^2 R}\right)^{1/2}$

(2) $\theta = \cos^{-1}\left(\dfrac{\pi^2 R}{gT^2}\right)^{1/2}$

(3) $\theta = \sin^{-1}\left(\dfrac{\pi^2 R}{gT^2}\right)^{1/2}$

) $\theta = \sin^{-1}\left(\dfrac{2gT^2}{\pi^2 R}\right)^{1/2}$

om a circular ring of mass 'M' and radius 'R' an : corresponding to a 90° sector is removed. The ment of inertia of the remaining part of the ring ut an axis passing through the centre of the g and perpendicular to the plane of the ring is imes 'MR²'. Then the value of 'K' is :
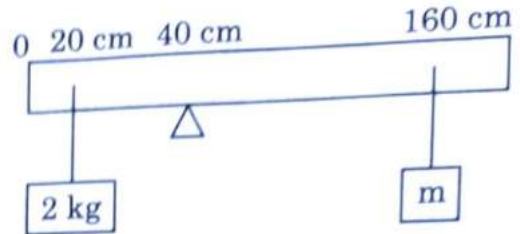
$\dfrac{3}{4}$

$\dfrac{7}{8}$

$\dfrac{1}{4}$

49. A uniform rod of length 200 cm and mass balanced on a wedge placed at 40 cm mark mass of 2 kg is suspended from the rod at 2 and another unknown mass 'm' is suspended the rod at 160 cm mark as shown in the fig Find the value of 'm' such that the rod i equilibrium. $(g = 10 \text{ m/s}^2)$

(1) $\dfrac{1}{2}$ kg

(2) $\dfrac{1}{3}$ kg

(3) $\dfrac{1}{6}$ kg

(4) $\dfrac{1}{12}$ kg

50. In the product

$$\vec{F} = q\left(\vec{v} \times \vec{B}\right)$$

$$= q\,\vec{v} \times \left(B\,\hat{i} + B\,\hat{j} + B_0\,\hat{k}\right)$$

For $q = 1$ and $\vec{v} = 2\hat{i} + 4\hat{j} + 6\hat{k}$ and

$$\vec{F} = 4\hat{i} - 20\hat{j} + 12\hat{k}$$

What will be the complete expression for $\vec{B}$?

(1) $-8\hat{i} - 8\hat{j} - 6\hat{k}$

(2) $-6\hat{i} - 6\hat{j} - 8\hat{k}$

(3) $8\hat{i} + 8\hat{j} - 6\hat{k}$

Section - A (Chemistry)

The correct sequence of bond enthalpy of 'C–X' bond is :

(1) $CH_3 - F < CH_3 - Cl < CH_3 - Br < CH_3 - I$

(2) $CH_3 - F > CH_3 - Cl > CH_3 - Br > CH_3 - I$

(3) $CH_3 - F < CH_3 - Cl > CH_3 - Br > CH_3 - I$

(4) $CH_3 - Cl > CH_3 - F > CH_3 - Br > CH_3 - I$

. Which one of the following methods can be used to obtain highly pure metal which is liquid at room temperature ?

(1) Electrolysis

(2) Chromatography

(3) Distillation

(4) Zone refining

. The correct option for the number of body centred unit cells in all 14 types of Bravais lattice unit cells is :

(1) 7

(2) 5

(3) 2

(4) 3

. Among the following alkaline earth metal halides, one which is covalent and soluble in organic solvents is :

(1) Calcium chloride

(2) Strontium chloride

(3) Magnesium chloride

(4) Beryllium chloride

5. Zr (Z = 40) and Hf (Z = 72) have similar atomic and ionic radii because of :

(1) belonging to same group

(2) diagonal relationship

(3) lanthanoid contraction

(4) having similar chemical properties

6. The maximum temperature that can be achieved in blast furnace is :

(1) upto 1200 K

(2) upto 2200 K

(3) upto 1900 K

(4) upto 5000 K

57. What is the IUPAC name of the organic compound formed in the following chemical reaction ?

Acetone $\xrightarrow[\text{(ii) } H_2O, H^+]{\text{(i) } C_2H_5MgBr, \text{ dry Ether}}$ Product
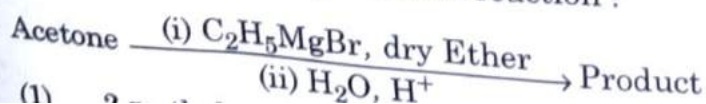
58. Which one by addition polymerisation :

(1) Teflon

(2) Nylon-66

(3) Novolac

(4) Dacron

59. Right option for the number of te octahedral voids in hexagonal prin are :

(1) 8, 4

(2) 6, 12

(3) 2, 1

(4) 12, 6

60. **Statement I :**

Acid strength increases in the $HF << HCl << HBr << HI$.

Statement II :

As the size of the elements F, Cl, down the group, the bond streng HBr and HI decreases and so th increases.

In the light of the above stateme **correct** answer from the options

(1) Both **Statement I** and **St** true.

(2) Both **Statement I** and **St** false.

(3) **Statement I** is correct bu is false.

(4) **Statement I** is i **Statement II** is true.

61. The **incorrect** statement among

(1) Actinoid contraction is gr to element than Lanthano

(2) Most of the trivalent Lar colorless in the solid state

ion is :

$$\text{CH}-\text{CH}=\text{CH}_2 + \text{HBr} \xrightarrow{(\text{C}_6\text{H}_5\text{CO})_2\text{O}_2} ?$$

$$\underset{\text{CH}_3}{\overset{\text{CH}_3}{\diagdown}}\text{CH}-\text{CH}_2-\text{CH}_2-\text{Br}$$

$$\underset{\text{CH}_3}{\overset{\text{CH}_3}{\diagdown}}\text{CH}-\text{CH}_2-\text{CH}_2-\text{O}-\text{COC}_6\text{H}_5$$

$$\underset{\text{CH}_3}{\overset{\text{CH}_3}{\diagdown}}\text{CH}-\underset{\underset{\text{Br}}{|}}{\text{CH}}-\text{CH}_3$$

$$\underset{\text{CH}_3}{\overset{\text{CH}_3}{\diagdown}}\text{CBr}-\text{CH}_2-\text{CH}_3$$

ructures of beryllium chloride in solid state
pour phase, are :

Chain and dimer, respectively

Linear in both

Dimer and Linear, respectively

Chain in both

below are two statements :

ment I :

n and Paracetamol belong to the class of
ic analgesics.

ment II :

ine and Heroin are non-narcotic analgesics.

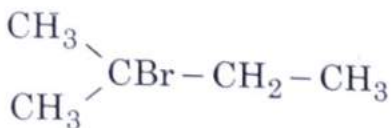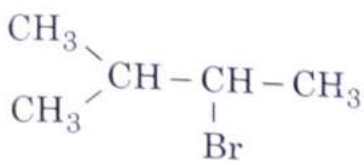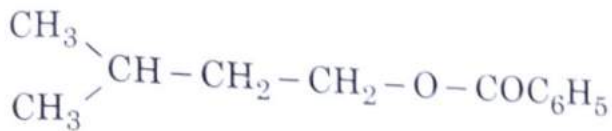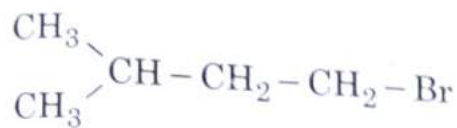light of the above statements, choose the
ct answer from the options given below.

Both **Statement I** and **Statement II** are
true.

Both **Statement I** and **Statement II** are

false.

Statement II

65. An organic compound contains 78% (by wt.) carbo
and remaining percentage of hydrogen. The rigl
option for the empirical formula of this compoun
is : [Atomic wt. of C is 12, H is 1]

(1)   CH

(2) CH_2

(3) CH_3

(4) CH_4

66. The correct structure of 2,6-Dimethyl-dec-4-en
is :

(1)

(2)

(3)

(4)
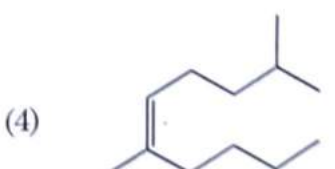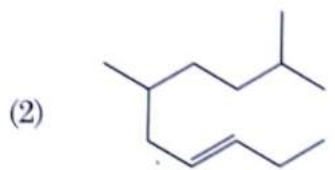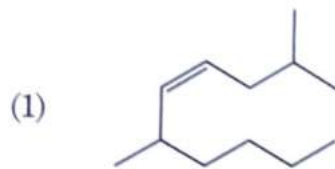
67. The major product formed in dehydrohalogenation
reaction of 2-Bromo pentane is Pent-2-ene. This
product formation is based on ?

(1)   Saytzeff's Rule

(2)   Hund's Rule

For a reaction $A \rightarrow B$, enthalpy of reaction is $-4.2 \, kJ \, mol^{-1}$ and enthalpy of activation is $9.6 \, kJ \, mol^{-1}$. The correct potential energy profile for the reaction is shown in option.

(1)

Reaction Progress

(2)

Reaction Progress

(3)

Reaction Progress

(4)

Reaction Progress
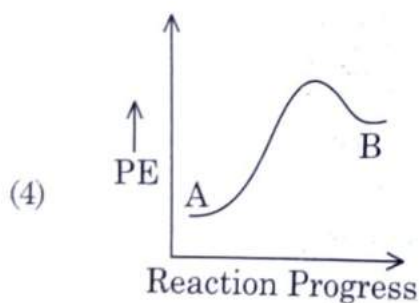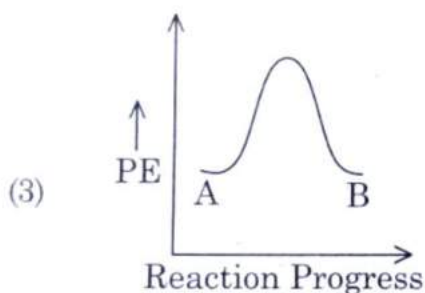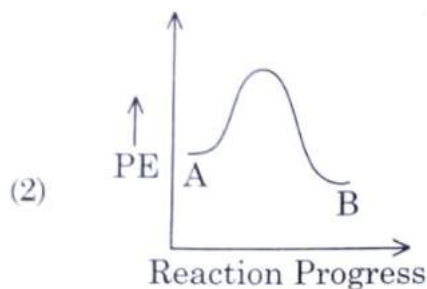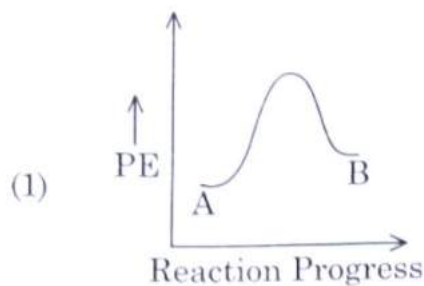
Ethylene diaminetetraacetate (EDTA) ion is :

(1) Hexadentate ligand with four "O" and two "N" donor atoms

(2) Unidentate ligand

(3) Bidentate ligand with two "N" donor atoms

(4) Tridentate ligand with three "N" donor atoms

Noble gases are named because of their inertness towards reactivity. Identify an **incorrect** statement about them.

(1) Noble gases are sparingly soluble in water.

(2) Noble gases b

71. Which of displacement reaction ? Choose th

(1) $2KClO_3 \xrightarrow{\Delta} 2KCl + 3O_2$

(2) $Cr_2O_3 + 2Al \xrightarrow{\Delta} Al_2O_3 + 2$

(3) $Fe + 2HCl \rightarrow FeCl_2 + H_2\uparrow$

(4) $2Pb(NO_3)_2 \rightarrow 2PbO + 4NO_2$
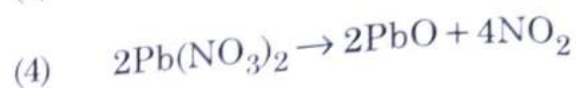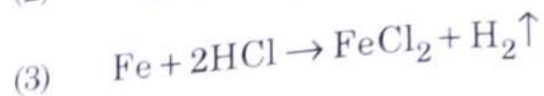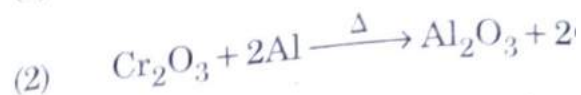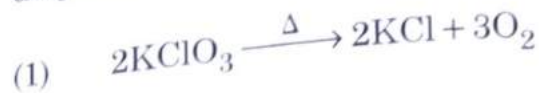
72. The compound which shows meta

(1) C_5H_{12}

(2) C_3H_8O

(3) C_3H_6O

(4) $C_4H_{10}O$

73. The RBC deficiency is deficiency d

(1) Vitamin B_{12}

(2) Vitamin B_6 ,

(3) Vitamin B_1

(4) Vitamin B_2

74. Dihedral angle of least stable conf is :

(1) $120°$

(2) $180°$

(3) $60°$

(4) $0°$

75. Tritium, a radioactive isotope of H which of the following particles ?

volume of a gas at different

200 K
400 K
600 K

olume (V) ⟶
$1m^3$)
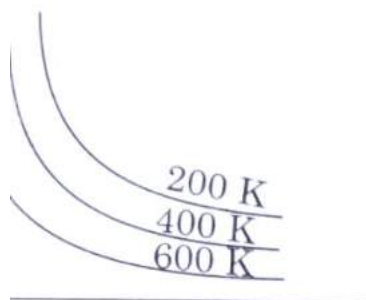
00 K, 400 K, 600 K)

Volume (V) ⟶
(dm^3)

200 K
400 K
600 K

Volume (V) ⟶
(dm^3)

600 K
400 K
200 K
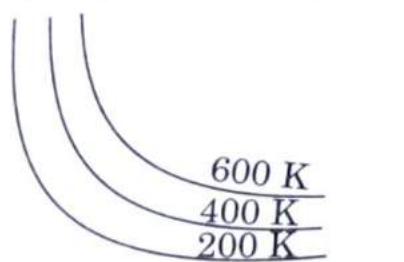
Volume (V) ⟶
(dm^3)

conductance of NaCl, HCl and at infinite dilution are 126.45, 426.16 $m^2 mol^{-1}$ respectively. The molar of CH_3COOH at infinite dilution is. ight option for your answer.

$3 S cm^2 mol^{-1}$
$1 S cm^2 mol^{-1}$
$8 S cm^2 mol^{-1}$
$8 S cm^2 mol^{-1}$

dimethylamine and pK_a of acetic 1.4 77 respectively at T (K).

List - I		List - II	
(a)	PCl_5	(i)	Square pyramidal
(b)	SF_6	(ii)	Trigonal planar
(c)	BrF_5	(iii)	Octahedral
(d)	BF_3	(iv)	Trigonal bipyramidal

Choose the **correct** answer from the options given below.

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

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

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

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

80. Identify the compound that will react with Hinsberg's reagent to give a solid which dissolves in alkali.

(1) CH_3–CH_2–$\ddot{N}O_2$

(2) CH_3–CH_2–$\ddot{N}H$–CH_3

(3) CH_3–CH_2–$\ddot{N}H_2$

(4) CH_3–CH_2–$\ddot{N}(CH_3)$–CH_2–CH_3

81. The right option for the statement "Tyndall effect is exhibited by", is :

(1)   NaCl solution

(2)   Glucose solution

(3)   Starch solution

(4)   Urea solution

82. BF_3 is planar and electron deficient compound. Hybridization and number of electrons around the central atom, respectively are :

(1) sp^3 and 4

(2) sp^3 and 6

(3) sp^2 and 6

(4) sp^2 and 8

83. A particular station of All India Radio, New Delhi, broadcasts on a frequency of 1,368 kHz (kilohertz). The wavelength of the electromagnetic radiation emitted by the transmitter is : [speed of light, $c = 3.0 \times 10^8 ms^{-1}$]

(1)   219.3 m

Which one among the following is the correct option for right relationship between C_P and C_V for one mole of ideal gas ?

(1) $C_P + C_V = R$

(2) $C_P - C_V = R$

(3) $C_P = RC_V$

(4) $C_V = RC_P$

The following solutions were prepared by dissolving 10 g of glucose ($C_6H_{12}O_6$) in 250 ml of water (P_1), 10 g of urea (CH_4N_2O) in 250 ml of water (P_2) and 10 g of sucrose ($C_{12}H_{22}O_{11}$) in 250 ml of water (P_3). The right option for the decreasing order of osmotic pressure of these solutions is :

(1) $P_2 > P_1 > P_3$

(2) $P_1 > P_2 > P_3$

(3) $P_2 > P_3 > P_1$

(4) $P_3 > P_1 > P_2$

Section - B (Chemistry)

The intermediate compound 'X' in the following chemical reaction is :
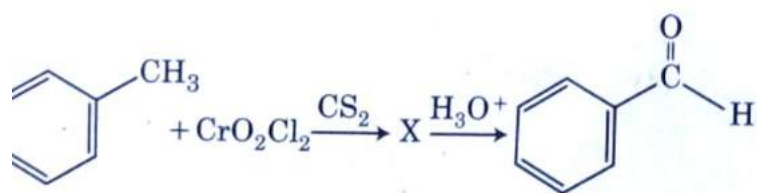
(1)

(2)

3)

4)

For irreversible expansion of an ideal gas und₋
isothermal conditi₋

88. Choose the co₋₋₋
(in atm.) in a mixture of 4 g O_2 and 2
in a total volume of one litre at 0°C
[Given R = 0.082 L atm mol^{-1}K^{-1}

(1) 2.518

(2) 2.602

(3) 25.18

(4) 26.02

89. The correct option for the value of v₋
of a solution at 45°C with benzer₋
molar ratio 3 : 2 is :

[At 45°C vapour pressure of
280 mm Hg and that of octane i₋
Assume Ideal gas]

(1) 160 mm of Hg

(2) 168 mm of Hg

(3) 336 mm of Hg

(4) 350 mm of Hg

90. The product formed in the follow
reaction is :

(1)

(2)

(3)

13

l_3

)

5
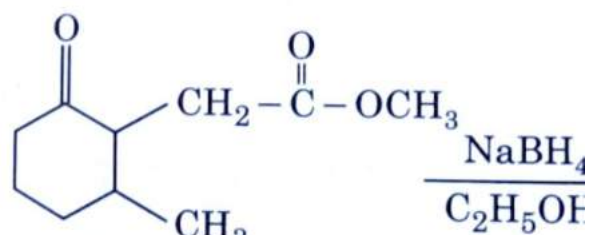
llowing pairs of ions which one is not
ronic pair ?

F$^-$

, Mg^{2+}

$^+$, Fe^{3+}

, Mn^{2+}

conductivity of 0.007 M acetic acid is
mol^{-1}. What is the dissociation
acetic acid ? Choose the correct option.

$0 \text{ S cm}^2 \text{ mol}^{-1}$

$= 50 \text{ S cm}^2 \text{ mol}^{-1}$]

$\times 10^{-4} \text{ mol L}^{-1}$

$\times 10^{-4} \text{ mol L}^{-1}$

$\times 10^{-5} \text{ mol L}^{-1}$

$\times 10^{-5} \text{ mol L}^{-1}$

of Arrhenius Plot $\left(\ln k \text{ v/s } \dfrac{1}{T} \right)$ of first

tion is -5×10^3 K. The value of E_a of
n is. Choose the correct option for your

$= 8.314 \text{ JK}^{-1}\text{mol}^{-1}$]

5 kJ mol^{-1}

$) \text{ kJ mol}^{-1}$

kJ mol^{-1}

3 kJ mol^{-1}

nt 'R' in the given sequence of chemical
s :

aNO$_2$, HCl
0 - 5°C

List - I   List - II

(a) [benzene ring] $\xrightarrow[\substack{\text{Anhyd.AlCl}_3/ \\ \text{CuCl}}]{\text{CO, HCl}}$ (i) Hell-Volhard
                                      Zelinsky rea

(b) $\underset{\text{NaOX} \longrightarrow}{R - \overset{\overset{O}{\|}}{C} - CH_3 +}$ (ii) Gattermann-
                                         reaction

(c) $R - CH_2 - OH$ (iii) Haloform
    $+ R'COOH$ reaction
    $\xrightarrow{\text{Conc. H}_2\text{SO}_4}$

(d) $R - CH_2COOH$ (iv) Esterification
    $\xrightarrow[\text{(ii) H}_2\text{O}]{\text{(i) X}_2/\text{Red P}}$
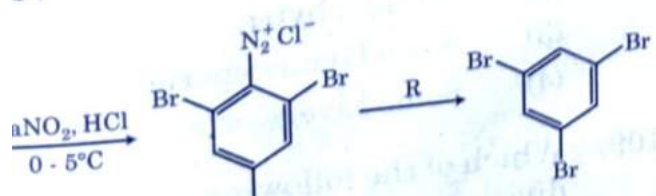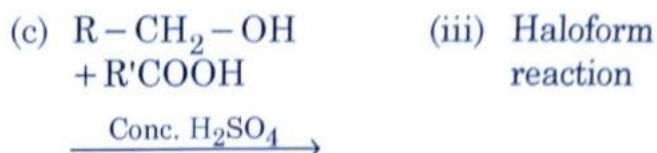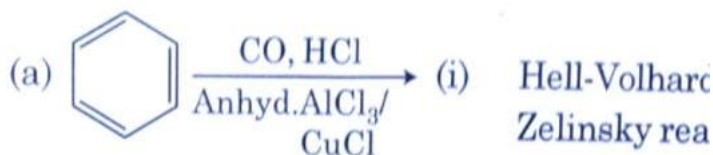
Choose the **correct** answer from the options gi
below.

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

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

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

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

97.   Match **List - I** with **List - II**.

List - I   List - II

(a) $2SO_2(g) + O_2(g) \rightarrow$ (i) Acid rain
     $2SO_3(g)$

(b) $HOCl(g) \xrightarrow{h\nu}$ (ii) Smog
     $\overset{\bullet}{O}H + \overset{\bullet}{C}l$

(c) $CaCO_3 + H_2SO_4 \rightarrow$ (iii) Ozone
     $CaSO_4 + H_2O + CO_2$ depletion

(d) $NO_2(g) \xrightarrow{h\nu}$ (iv) Tropospheric
     $NO(g) + O(g)$ pollution

Choose the **correct** answer from the options giv
below.

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

98. $CH_3CH_2COO^-Na^+$ $\xrightarrow[\text{Heat}]{\text{NaOH, + ?}}$ $CH_3CH_3 +$ Na_2CO_3.

Consider the above reaction and identify the missing reagent/chemical.

(1) B_2H_6

(2) Red Phosphorus

(3) CaO

(4) DIBAL-H

). Match **List - I** with **List - II**.

	List - I		List - II
(a)	$[Fe(CN)_6]^{3-}$	(i)	5.92 BM
(b)	$[Fe(H_2O)_6]^{3+}$	(ii)	0 BM
(c)	$[Fe(CN)_6]^{4-}$	(iii)	4.90 BM
(d)	$[Fe(H_2O)_6]^{2+}$	(iv)	1.73 BM

Choose the **correct** answer from the options given below.

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

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

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

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

In which one of the following arrangements the given sequence is not strictly according to the properties indicated against it ?

(1) HF < HCl : Increasing acidic
< HBr < HI strength

(2) $H_2O < H_2S$: Increasing pK_a
< $H_2Se < H_2Te$ values

(3) $NH_3 < PH_3$: Increasing
< $AsH_3 < SbH_3$ acidic character

(4) $CO_2 < SiO_2$: Increasing
< $SnO_2 < PbO_2$ oxidizing power

Section - A (Biology : Botany)

Match **List - I** with **List - II**.

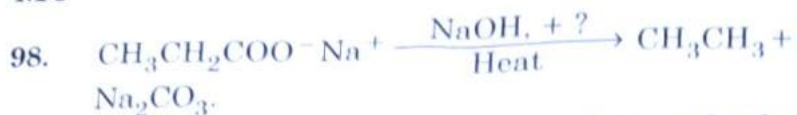| List - I		List - II	
(a)	Protoplast fusion	(i)	Totipotency
(b)	Plant tissue culture	(ii)	Pomato
(c)	Meristem culture	(iii)	Somaclones
(d)	Micropropagation	(iv)	Virus free plants

Choose the **correct** answer from the options given below.

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

102. In
R represents :

(1) Radiant energy

(2) Retardation factor

(3) Environment factor

(4) Respiration losses

103. Which of the following are no metabolites in plants ?

(1) Morphine, codeine

(2) Amino acids, glucose

(3) Vinblastin, curcumin

(4) Rubber, gums

104. The factor that leads to Found population is :

(1) Natural selection

(2) Genetic recombination

(3) Mutation

(4) Genetic drift

105. Amensalism can be represented as

(1) Species A (−) ; Species B (0)

(2) Species A (+) ; Species B (+

(3) Species A (−) ; Species B (−

(4) Species A (+) ; Species B (0)

106. A typical angiosperm embryo sac

(1) 8-nucleate and 7-celled

(2) 7-nucleate and 8-celled

(3) 7-nucleate and 7-celled

(4) 8-nucleate and 8-celled

107. During the purification process fo DNA technology, addition of c precipitates out :

(1) RNA

(2) DNA

(3) Histones

(4) Polysaccharides

108. Gemmae are present in :

(1) Mosses

(2) Pteridophytes

(3) Some Gymnosperms

(4) Some Liverworts

109. Which of the following stages of m

Match List - I with List - II.

List - I		List - II	
(a)	Lenticels	(i)	Phellogen
(b)	Cork cambium	(ii)	Suberin deposition
(c)	Secondary cortex	(iii)	Exchange of gases
(d)	Cork	(iv)	Phelloderm

Choose the **correct** answer from the options given below.

	(a)	(b)	(c)	(d)
1)	(iv)	(i)	(iii)	(ii)
2)	(iii)	(i)	(iv)	(ii)
3)	(ii)	(iii)	(iv)	(i)
4)	(iv)	(ii)	(i)	(iii)

lants follow different pathways in response to vironment or phases of life to form different nds of structures. This ability is called :

Elasticity

Flexibility

Plasticity

Maturity

e term used for transfer of pollen grains from hers of one plant to stigma of a different plant ich, during pollination, brings genetically erent types of pollen grains to stigma, is :

Xenogamy

Geitonogamy

Chasmogamy

Cleistogamy

h of the following plants is monoecious ?

Carica papaya

Chara

Marchantia polymorpha

Cycas circinalis .

lete the flow chart on central dogma.

$\text{DNA} \xrightarrow{\text{(b)}} \text{mRNA} \xrightarrow{\text{(c)}} \text{(d)}$

(a)-Replication; (b)-Transcription;
c)-Transduction; (d)-Protein

a)-Translation; (b)-Replication;
c)-Transcription; (d)-Transduction

a)-Replication; (b)-Transcription;

115. Match List

	List - I		
(a)	Cristae	(i)	Primary constrictio... chromosome
(b)	Thylakoids	(ii)	Disc-shaped sacs in Golgi apparatus
(c)	Centromere	(iii)	Infoldings in mitochondria
(d)	Cisternae	(iv)	Flattened membran... sacs in stroma of plastids

Choose the **correct** answer from the options g below.

	(a)	(b)	(c)	(d)
(1)	(iv)	(iii)	(ii)	(i)
(2)	(i)	(iv)	(iii)	(ii)
(3)	(iii)	(iv)	(i)	(ii)
(4)	(ii)	(iii)	(iv)	(i)

116. Mutations in plant cells can be induced by :
(1) Kinetin
(2) Infrared rays
(3) Gamma rays
(4) Zeatin

117. Which of the following statements is **not** cor
(1) Pyramid of biomass in sea is gene inverted.
(2) Pyramid of biomass in sea is gene upright.
(3) Pyramid of energy is always upright.
(4) Pyramid of numbers in a grass ecosystem is upright.

118. Inspite of interspecific competition in nature, mechanism the competing species might evolved for their survival ?
(1) Resource partitioning
(2) Competitive release
(3) Mutualism
(4) Predation

119. Match **List - I** with **List - II**.

List - I		List - II	
(a) Cohesion	(i)	More attraction liquid phase	
(b) Adhesion	(ii)	Mutual attracti among water molecules	
(c) Surface tension	(iii)	Water loss in li phase	
(d) Guttation	(iv)	Attraction towa polar surfaces	

Choose the **correct** answer from the optior below.

(a)	(b)	(c)	(d)

ellow bands

right orange bands

ark red bands

right blue bands

of the following is an **incorrect**
nt ?

lature sieve tube elements possess a
nspicuous nucleus and usual cytoplasmic
rganelles.

licrobodies are present both in plant and
nimal cells.

he perinuclear space forms a barrier
etween the materials present inside the
ucleus and that of the cytoplasm.

uclear pores act as passages for proteins
id RNA molecules in both directions
etween nucleus and cytoplasm.

ne targetting involving gene amplification
ipted in an individual's tissue to treat
it is known as :

opiracy

ene therapy

olecular diagnosis

fety testing

ist - I with **List - II**.

List - I		List - II
s with active cell sion capacity	(i)	Vascular tissues
sue having all cells ilar in structure function	(ii)	Meristematic tissue
sue having erent types of cells	(iii)	Sclereids
id cells with highly kened walls and row lumen	(iv)	Simple tissue

he **correct** answer from the options given

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

of the following is a co
in a PCR

126. Which of the following is **not** an applic
(Polymerase Chain Reaction) ?
(1) Molecular diagnosis
(2) Gene amplification
(3) Purification of isolated protein
(4) Detection of gene mutation

127. Genera like *Selaginella* and *Salvinia*
kinds of spores. Such plants are kno
(1) Homosorus
(2) Heterosorus
(3) Homosporous
(4) Heterosporous

128. Diadelphous stamens are found in :
(1) China rose
(2) Citrus
(3) Pea
(4) China rose and citrus

129. When the centromere is situated in t
two equal arms of chromosomes, the
is referred as :
(1) Metacentric
(2) Telocentric
(3) Sub-metacentric
(4) Acrocentric

130. Which of the following algae contain
reserve food material ?
(1) *Ectocarpus*
(2) *Gracilaria*
(3) *Volvox*
(4) *Ulothrix*

131. The amount of nutrients, such as carl
phosphorus and calcium present in t
given time, is referred as :
(1) Climax
(2) Climax community
(3) Standing state
(4) Standing crop

132. The first stable product of CO_2 fixatic
is :
(1) Pyruvic acid
(2) Oxaloacetic acid
(3) Succinic acid

(4) Blue-green algae

AA
AA
4-D
RA

oduction of gametes by the parents,
on of zygotes, the F_1 and F_2 plants, can be
ood from a diagram called :

llet square

nch square

nnett square

t square

on - B (Biology : Botany)

ponential growth equation
t. e represents :

e base of number logarithms

e base of exponential logarithms

e base of natural logarithms

e base of geometric logarithms

lumn - I with Column - II.

nn - I		Column - II
coccus	(i)	Denitrification
bium	(ii)	Conversion of ammonia to nitrite
acillus	(iii)	Conversion of nitrite to nitrate
bacter	(iv)	Conversion of atmospheric nitrogen to ammonia

e correct answer from options given

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

- I with List - II.

- I		List - II
e	(i)	Proteins are synthesized
se	(ii)	Inactive phase
nt stage	(iii)	Interval between mitosis and initiation of DNA replication
se	(iv)	DNA replication

orrect answer from the options given

---

(2) terminate the proces
bacteria.

(3) The coding strand in a transcriptio
copied to an mRNA.

(4) Split gene arrangement is characte
prokaryotes.

140. Plasmid pBR322 has PstI restriction enzy
within gene amp^R that confers amp
resistance. If this enzyme is used for inse
gene for β-galactoside production a
recombinant plasmid is inserted in an E.col

(1) it will not be able to confer amp
resistance to the host cell.

(2) the transformed cells will have the
to resist ampicillin as well as p
β-galactoside.

(3) it will lead to lysis of host cell.

(4) it will be able to produce a novel prote
dual ability.

141. DNA fingerprinting involves identifying diffe
in some specific regions in DNA sequence,
as :

(1) Satellite DNA

(2) Repetitive DNA

(3) Single nucleotides

(4) Polymorphic DNA

142. Which of the following statements is corre

(1) Fusion of two cells is called Karyoga

(2) Fusion of protoplasms between two
on non-motile gametes is called plasmo

(3) Organisms that depend on living plar
called saprophytes.

(4) Some of the organisms can fix atmosp
nitrogen in specialized cells called s
cells.

143. Match Column - I with Column - II.

Column - I   Colum

(a) %⚥ $K_{(5)}C_{1+2+(2)}A_{(9)+1}\underline{G}_1$ (i) Brassic

(b) ⊕⚥ $K_{(5)}\overline{C_{(5)}}A_5\underline{G}_2$ (ii) Liliace

(c) ⊕⚥ $\overline{P_{(3+3)}}A_{3+3}\underline{G}_{(3)}$ (iii) Fabac

(d) ⊕⚥ $K_{2+2}C_4A_{2-4}\underline{G}_{(2)}$ (iv) Solana

Select the correct answer from the options
below.

to hybridise its complimentary DNA in a clone of cells, followed by its detection using autoradiography because :

(1) mutated gene partially appears on a photographic film.

(2) mutated gene completely and clearly appears on a photographic film.

(3) mutated gene does not appear on a photographic film as the probe has no complimentarity with it.

(4) mutated gene does not appear on photographic film as the probe has complimentarity with it.

Which of the following statements is **incorrect** ?

(1) Both ATP and $NADPH + H^+$ are synthesized during non-cyclic photophosphorylation.

(2) Stroma lamellae have PS I only and lack NADP reductase.

(3) Grana lamellae have both PS I and PS II.

(4) Cyclic photophosphorylation involves both PS I and PS II.

Which of the following statements is **incorrect** ?

1) During aerobic respiration, role of oxygen is limited to the terminal stage.

) In ETC (Electron Transport Chain), one molecule of $NADH + H^+$ gives rise to 2 ATP molecules, and one $FADH_2$ gives rise to 3 ATP molecules.

. ATP is synthesized through complex V.

Oxidation-reduction reactions produce proton gradient in respiration.

tch List - I with List - II.

List - I		List - II
Protein	(i)	$C = C$ double bonds
Unsaturated fatty acid	(ii)	Phosphodiester bonds
Nucleic acid	(iii)	Glycosidic bonds
Polysaccharide	(iv)	Peptide bonds

ose the **correct** answer from the options given w.

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

at is the role of RNA polymerase III in the cess of transcription in eukaryotes ?

Transcribes rRNAs (28S, 18S and 5...

Transcribes tRNA, 5s rD...

Transcribes pr...

Trans...

---

(1) Large colorless empty cells in the epidermis of grass leaves - Su

(2) In dicot leaves, vascular bundles are surrounded by large thick-walled cells - Co tis

(3) Cells of medullary rays that form part of cambial ring - Int ca

(4) Loose parenchyma cells rupturing the epidermis and forming a lens-shaped opening in bark - Spo par

150. In some members of which of the foll of families, pollen grains retain their months after release ?

(1) Poaceae ; Rosaceae

(2) Poaceae ; Leguminosae

(3) Poaceae ; Solanaceae

(4) Rosaceae ; Leguminosae

Section - A (Biology : Zoolog

151. Match List - I with List - II.

List - I		List - II
(a) Vaults	(i)	Entry of sperm th Cervix is blocked
(b) IUDs	(ii)	Removal of Vas de
(c) Vasectomy	(iii)	Phagocytosis of spe within the Uterus
(d) Tubectomy	(iv)	Removal of fallopia

Choose the **correct** answer from the optio below.

	(a)	(b)	(c)	(d)
(1)	(iv)	(ii)	(i)	(iii)
(2)	(i)	(iii)	(ii)	(iv)
(3)	(ii)	(iv)	(iii)	(i)
(4)	(iii)	(i)	(iv)	(ii)

152. Which of the following statements wr represents the nature of smooth muscle ?

(1) These muscle ha...

(2) ...

Endoplasmic reticulum. Mitochon...
Ribosomes and Lysosomes
Endoplasmic reticulum. Golgi complex,
Lysosomes and Vacuoles
Golgi complex. Mitochondria, Ribosomes and
Lysosomes
Golgi complex. Endoplasmic reticulum.
Mitochondria and Lysosomes

entericus is referred to as :
Pancreatic juice
Intestinal juice
Gastric juice
Chyme

One of the following is an example of
releasing IUD ?
T
IG 20
7
Multiload 375

e of the following belongs to the family
?
e fly
Grasshopper
Cockroach
House fly

makes 30% of the DNA molecule, what
percentage of Thymine, Guanine and
in it ?
20 ; G : 30 ; C : 20
20 ; G : 20 ; C : 30
30 ; G : 20 ; C : 20
20 ; G : 25 ; C : 25

for sperm binding in mammals are
:
na radiata
line membrane
vitelline space
pellucida

he following is **not** an objective of
tion in crops ?
ove protein content
ove resistance to diseases
ove vitamin content
ove micronutrient and mineral content

le undergoes duplication during :

(1)   Arthritis
(2)   Muscular dystrophy
(3)   Myasthenia gravis
(4)   Gout

162.   Match **List - I** with **List - II.**

List - I		List - II	
(a)	Metamerism	(i)	Coelenterata
(b)	Canal system	(ii)	Ctenophora
(c)	Comb plates	(iii)	Annelida
(d)	Cnidoblasts	(iv)	Porifera

Choose the **correct** answer from the options g
below.

	(a)	(b)	(c)	(d)
(1)	(iv)	(iii)	(i)	(ii)
(2)	(iii)	(iv)	(i)	(ii)
(3)	(iii)	(iv)	(ii)	(i)
(4)	(iv)	(i)	(ii)	(iii)

163.   During the process of gene amplification u
PCR, if very high temperature is not maintai
in the beginning, then which of the following s
of PCR will be affected first ?

(1)   Annealing
(2)   Extension
(3)   Denaturation
(4)   Ligation

164.   Read the following statements.

(a)   Metagenesis is observed in Helminths.
(b)   Echinoderms are triploblastic and coelor
animals.
(c)   Round worms have organ-system lev
body organization.
(d)   Comb plates present in ctenophores he
digestion.
(e)   Water vascular system is characterist
Echinoderms.

Choose the **correct** answer from the options g
below.

(1)   (c), (d) and (e) are correct

Dobson units are used to measure thickness of :

(1) CFCs

(2) Stratosphere

(3) Ozone

(4) Troposphere

Which is the "Only enzyme" that has "Capability" to catalyse Initiation, Elongation and Termination in the process of transcription in prokaryotes ?

(1) DNA dependent DNA polymerase

(2) DNA dependent RNA polymerase

(3) DNA Ligase

(4) DNase

A specific recognition sequence identified by endonucleases to make cuts at specific positions within the DNA is :

(1) Degenerate primer sequence

(2) Okazaki sequences

(3) Palindromic Nucleotide sequences

(4) Poly(A) tail sequences

The fruit fly has 8 chromosomes (2n) in each cell. During interphase of Mitosis if the number of chromosomes at G_1 phase is 8, what would be the number of chromosomes after S phase ?

(1) 8

(2) 16

(3) 4

(4) 32

Sphincter of oddi is present at :

(1) Ileo-caecal junction

(2) Junction of hepato-pancreatic duct and duodenum

(3) Gastro-oesophageal junction

(4) Junction of jejunum and duodenum

Match List - I with List - II.

List - I		List - II	
(a)	Aspergillus niger	(i)	Acetic Acid
(b)	Acetobacter aceti	(ii)	Lactic Acid
(c)	Clostridium butylicum	(iii)	Citric Acid
(d)	Lactobacillus	(iv)	Butyric Acid

Choose the correct answer from the options given

171. Which one of the following organisms ha and pneumatic long bones ?

(1) Neophron

(2) Hemidactylus

(3) Macropus

(4) Ornithorhynchus

172. In a cross between a male and fer heterozygous for sickle cell anaemia percentage of the progeny will be disea

(1) 50%

(2) 75%

(3) 25%

(4) 100%

173. The partial pressures (in mm Hg) of c and carbon dioxide (CO_2) at alveoli diffusion) are :

(1) $pO_2 = 104$ and $pCO_2 = 40$

(2) $pO_2 = 40$ and $pCO_2 = 45$

(3) $pO_2 = 95$ and $pCO_2 = 40$

(4) $pO_2 = 159$ and $pCO_2 = 0.3$

174. Veneral diseases can spread through

(a) Using sterile needles

(b) Transfusion of blood from infect

(c) Infected mother to foetus

(d) Kissing

(e) Inheritance

Choose the correct answer from the o below.

(1) (a), (b) and (c) only

(2) (b), (c) and (d) only

(3) (b) and (c) only

(4) (a) and (c) only

175. Which of the followin

Select the favourable conditions required for the formation of oxyhaemoglobin at the alveoli.

(1) High pO_2, low pCO_2, less H^+, lower temperature

(2) Low pO_2, high pCO_2, more H^+, higher temperature

(3) High pO_2, high pCO_2, less H^+, higher temperature

(4) Low pO_2, low pCO_2, more H^+, higher temperature

Match the following :

	List - I		List - II
(a)	Physalia	(i)	Pearl oyster
(b)	Limulus	(ii)	Portuguese Man of War
(c)	Ancylostoma	(iii)	Living fossil
(d)	Pinctada	(iv)	Hookworm

Choose the **correct** answer from the options given below.

	(a)	(b)	(c)	(d)
(1)	(ii)	(iii)	(i)	(iv)
(2)	(iv)	(i)	(iii)	(ii)
(3)	(ii)	(iii)	(iv)	(i)
(4)	(i)	(iv)	(iii)	(ii)

Which enzyme is responsible for the conversion of inactive fibrinogens to fibrins ?

(1) Thrombin

(2) Renin

(3) Epinephrine

(4) Thrombokinase

For effective treatment of the disease, early diagnosis and understanding its pathophysiology is very important. Which of the following molecular diagnostic techniques is very useful for early detection ?

(1) Western Blotting Technique

(2) Southern Blotting Technique

(3) ELISA Technique

(4) Hybridization Technique

Identify the **incorrect** pair.

(1) Alkaloids - Codeine
Abrin

181. Which stage of meiotic prophase shows terminalisation of chiasmata as its distinctive feature ?

(1) Leptotene

(2) Zygotene

(4) Diakinesis

(4) Pachytene

182. With regard to insulin choose correct options.

(a) C-peptide is not present in mature insulin.

(b) The insulin produced by rDNA technology has C-peptide.

(c) The pro-insulin has C-peptide.

(d) A-peptide and B-peptide of insulin are interconnected by disulphide bridges.

Choose the **correct** answer from the options given below.

(1) (b) and (d) only

(2) (b) and (c) only

(3) (a), (c) and (d) only

(4) (a) and (d) only

183. Persons with 'AB' blood group are called as "Universal recipients". This is due to :

(1) Absence of antigens A and B on the surface of RBCs

(2) Absence of antigens A and B in plasma

(3) Presence of antibodies, anti-A and anti-B, on RBCs

(4) Absence of antibodies, anti-A and anti-B, in plasma

184. Erythropoietin hormone which stimulates R.B.C formation is produced by :

(1) Alpha cells of pancreas

(2) The cells of rostral adenohypophysis

(3) The cells of bone marrow

(4) Juxtaglomerular cells of the kidney

185. Which of the following characteristics is **incorrect** with respect to cockroach ?

(1) A ring of gastric caeca is present at the junction of midgut and hind gut.

(2) Hypopharynx lies within the cavity enclosed by the mouth parts.

(3) In females, 7th-9th sterna together form genital pouch.

(4) 10th abdominal segment in both sexes, bear a pair of anal cerci.

... deaminase deficiency results into :
(1) Dysfunction of Immune system
(2) Parkinson's disease
(3) Digestive disorder
(4) Addison's disease

7. Which of the following is **not** a step in Multiple Ovulation Embryo Transfer Technology (MOET) ?
(1) Cow is administered hormone having LH like activity for super ovulation
(2) Cow yields about 6-8 eggs at a time
(3) Cow is fertilized by artificial insemination
(4) Fertilized eggs are transferred to surrogate mothers at 8-32 cell stage

8. Match **List - I** with **List - II**.

	List - I		List - II
(a)	Adaptive radiation	(i)	Selection of resistant varieties due to excessive use of herbicides and pesticides
(b)	Convergent evolution	(ii)	Bones of forelimbs in Man and Whale
(c)	Divergent evolution	(iii)	Wings of Butterfly and Bird
(d)	Evolution by anthropo-genic action	(iv)	Darwin Finches

Choose the **correct** answer from the options given below.

	(a)	(b)	(c)	(d)
(1)	(iv)	(iii)	(ii)	(i)
(2)	(iii)	(ii)	(i)	(iv)
(3)	(ii)	(i)	(iv)	(iii)
(4)	(i)	(iv)	(iii)	(ii)

Which one of the following statements about Histones is **wrong** ?
(1) Histones are organized to form a unit of 8 molecules.
(2) The pH of histones is slightly acidic.
(3) Histones are rich in amino acids - Lysine and Arginine.
(4) Histones carry positive charge in the side chain.

Which of the following secretes the hormone, relaxin, during the later phase of pregnancy ?
(1) Graafian follicle
(2) Corpus luteum
(3) Foetus
(4) Uterus

'lipids'.

... with reference

(a) Lipids having only single bonds are ca unsaturated fatty acids.
(b) Lecithin is a phospholipid.
(c) Trihydroxy propane is glycerol.
(d) Palmitic acid has 20 carbon atoms incl carboxyl carbon.
(e) Arachidonic acid has 16 carbon atom

Choose the **correct** answer from the options below.

(1) (a) and (b) only
(2) (c) and (d) only
(3) (b) and (c) only
(4) (b) and (e) only

192. Match **List - I** with **List - II**.

	List - I		List - II
(a)	Filariasis	(i)	*Haemophilus influenzae*
(b)	Amoebiasis	(ii)	*Trichophyton*
(c)	Pneumonia	(iii)	*Wuchereria banc*
(d)	Ringworm	(iv)	*Entamoeba histo*

Choose the **correct** answer from the optic below.

	(a)	(b)	(c)	(d)
(1)	(iv)	(i)	(iii)	(ii)
(2)	(iii)	(iv)	(i)	(ii)
(3)	(i)	(ii)	(iv)	(iii)
(4)	(ii)	(iii)	(i)	(iv)

193. Identify the types of cell junctions that h the leakage of the substances across a t facilitation of communication with neig cells via rapid transfer of ions and mole
(1) Gap junctions and Adhering j respectively.
(2) Tight junctions and Gap j respectively.
(3) Adhering junctions and Tight respectively.
(4) Adhering junctions and Gap respective

ng events occur?

H' zone disappears

A' band widens

' band reduces in width

Myosine hydrolyzes ATP, releasing the ADP and Pi

i-lines attached to actins are pulled inwards

the **correct** answer from the options given

a), (c), (d), (e) only

a), (b), (c), (d) only

b), (c), (d), (e) only

b), (d), (e), (a) only

ng are the statements about prostomium worm.

t serves as a covering for mouth.

t helps to open cracks in the soil into which t can crawl.

t is one of the sensory structures.

t is the first body segment.

the **correct** answer from the options given

a), (b) and (c) are correct

a), (b) and (d) are correct

a), (b), (c) and (d) are correct

b) and (c) are correct

ion (A) :

on goes to high altitude and experiences le sickness' with symptoms like breathing ty and heart palpitations.

n (R) :

low atmospheric pressure at high altitude, y does not get sufficient oxygen.

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

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

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

(A) is true but (R) is false

(A) is false but (R) is true

of these is **not** an important component of

...urition in humans?

...erone ratio

(a)	Allen's Rule	(i)	Kangaroo rat
(b)	Physiological adaptation	(ii)	Desert lizard
(c)	Behavioural adaptation	(iii)	Marine fish at dep
(d)	Biochemical adaptation	(iv)	Polar seal

Choose the **correct** answer from the options below.

	(a)	(b)	(c)	(d)
(1)	(iv)	(ii)	(iii)	(i)
(2)	(iv)	(i)	(iii)	(ii)
(3)	(iv)	(i)	(ii)	(iii)
(4)	(iv)	(iii)	(ii)	(i)

199. Match **List - I** with **List - II**.

List - I		List - II	
(a) Scapula		(i)	Cartilaginous jo
(b) Cranium		(ii)	Flat bone
(c) Sternum		(iii)	Fibrous joints
(d) Vertebral column		(iv)	Triangular flat b

Choose the **correct** answer from the options below.

	(a)	(b)	(c)	(d)
(1)	(i)	(iii)	(ii)	(iv)
(2)	(ii)	(iii)	(iv)	(i)
(3)	(iv)	(ii)	(iii)	(i)
(4)	(iv)	(iii)	(ii)	(i)

200. **Statement I :**

The codon 'AUG' codes for methionine phenylalanine.

Statement II :

'AAA' and 'AAG' both codons code for the acid lysine.

In the light of the above statements, choo **correct** answer from the options given belo

(1) Both **Statement I** and **Statement** true

(2) Both **Statement I** and **Statement** false

(3) **Statement I** is correct but **Statem** is false

(4) **Statement I** is incorrect **Statement II** is true