

NEET 2022

QUESTION PAPER WITH SOLUTION

17th July 2022 (Sunday)

CODE - T3

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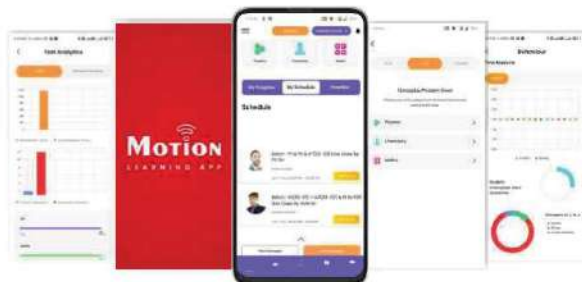
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Physics Section - A

1. A long solenoid of radius 1 mm has 100 turns per mm. If 1 A current flows in the solenoid, the magnetic field strength at the centre of the solenoid is:
- (1) 12.56×10^{-2} T
 - (2) 12.56×10^{-4} T
 - (3) 6.28×10^{-4} T
 - (4) 6.28×10^{-2} T

Sol. (1)

$$B = \mu_0 n i = \mu_0 \frac{N}{\ell} i$$

$$\therefore B = 4\pi \times 10^{-7} \times 1 = 12.56 \times 10^{-2} \text{ T}$$

2. A biconvex lens has radii of curvature, 20 cm each. If the refractive index of the material of the lens is 1.5, the power of the lens is:
- (1) +20 D
 - (2) +5D
 - (3) infinity
 - (4) +2D

Sol. (2)

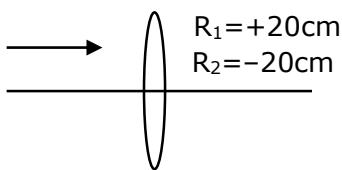
$$f = \frac{R}{2(\mu - 1)}$$

$$\frac{20}{2(1.5 - 1)} = \frac{10}{1/2}$$

$$f = 20 \text{ cm}$$

$$p = 100/f$$

$$= 100/20 = 5 \text{ D}$$



3. Let T_1 and T_2 be the energy of an electron in the first and second excited states of hydrogen atom, respectively. According to the Bohr's model of an atom, the ratio $T_1 : T_2$ is :
- (1) 4 : 1
 - (2) 4 : 9
 - (3) 9 : 4
 - (4) 1 : 4

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Sol. (3)

First excited state $\Rightarrow n = 2$

$$T_1 = -13.6 \frac{z^2}{n^2} = -\frac{13.6}{4} \text{eV}$$

Second excited state $\Rightarrow n = 3$

$$T_2 = -13.6 \frac{z^2}{n^2} = -\frac{13.6}{9} \text{eV}$$

$$T_1 : T_2 = \frac{1}{4} : \frac{1}{9} = 9 : 4$$

4. The peak voltage of the ac source is equal to:
- (1) the rms value of the ac source
 - (2) $\sqrt{2}$ times the rms value of the ac source
 - (3) $1/\sqrt{2}$ times the rms value of the ac source
 - (4) the value of voltage supplied to the circuit.

Sol. (2)

Peak voltage is $\sqrt{2}$ times rms voltages in ac.

5. Match List-I with List- II :

List - I

(Electromagnetic waves)

- (a) AM radio waves
- (b) Microwaves
- (c) Infrared radiations
- (d) X-rays

List - II

(Wavelength)

- (i) 10^{-10} m
- (ii) 10^2 m
- (iii) 10^{-2} m
- (iv) 10^{-4} m

Choose the correct answer from the options given below:

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

Sol. (3)

- (a) AM radio wave $\approx 10^2$ m (ii)
 - (b) Microwave $\approx 10^{-2}$ m (iii)
 - (c) Infrared radiations (iv) $\approx 10^{-4}$ m (iv)
 - (d) X-ray $\approx \text{\AA} = 10^{-10}$ m (i)
- (a) - (ii), (b) - (iii), (c) - (iv), (d) - (i)

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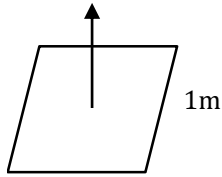
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6. A square loop of side 1m and resistance 1Ω is placed in a magnetic field of 0.5T. If the plane of loop is perpendicular to the direction of magnetic field, the magnetic flux through the loop is :
- (1) 0.5 weber
 - (2) 1 weber
 - (3) zero weber
 - (4) 2 weber

Sol. (1)

$$B = 0.5T$$



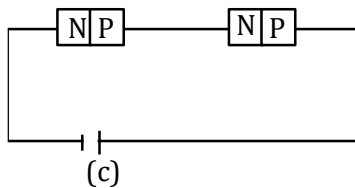
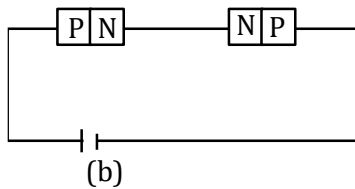
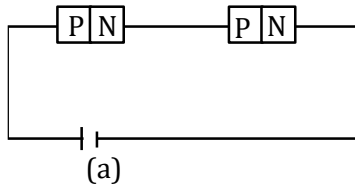
Angle between \vec{B} & \vec{A} zero

$$\phi = B.A \cos 0$$

$$= 0.5 \times 1 \times 1$$

$$= 0.5 \text{ wb}$$

7.



In the given circuits (a), (b) and (c), the potential drop across the two p-n junctions are equal in :

- (1) Circuit (b) only
- (2) Circuit (c) only
- (3) Both circuits (a) and (c)
- (4) Circuit (a) only

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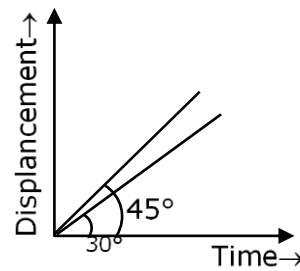
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Sol. (3)

In (a) & (c) circuits, both the junctions are in same biasing conditions so offers equal resistances. Since both are in series, therefore equal potential will drop across the junction.

8. The displacement-time graphs of two moving particles make angles of 30° and 45° with the x-axis as shown in the figure. The ratio of their respective velocity is :



- (1) 1 : 1
- (2) 1 : 2
- (3) $1 : \sqrt{3}$
- (4) $\sqrt{3} : 1$

Sol. (3)

Velocity is slope of x-t graph

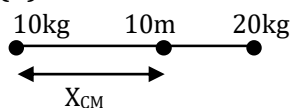
$$V = \frac{dx}{dt} = \tan\theta$$

$$\frac{V_1}{V_2} = \frac{\tan\theta_1}{\tan\theta_2} = \frac{\tan 30^\circ}{\tan 45^\circ} = \frac{1}{\sqrt{3}}$$

9. Two objects of mass 10kg and 20kg respectively are connected to the two ends of a rigid rod of length 10m with negligible mass. The distance of the center of mass of the system from the 10kg mass is :

- (1) $\frac{20}{3}$ m
- (2) 10m
- (3) 5m
- (4) $\frac{10}{3}$ m

Sol. (1)



$$X_{CM} = \frac{20 \times 10}{20 + 10} = \frac{20}{3} \text{ m}$$

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10. The angle between the electric lines of force and the equipotential surface is :
 (1) 45° (2) 90° (3) 180° (4) 0°

Sol. (2)
 Electric field is always perpendicular to EPS.

11. If the initial tension on a stretched string is doubled, then the ratio of the initial and final speeds of a transverse waves along the string is:

- (1) $\sqrt{2} : 1$ (2) $1 : \sqrt{2}$ (3) $1 : 2$ (4) $1 : 1$

Sol. (2)
 $V \propto \sqrt{\text{Tension}}$
 $\frac{v_i}{v_f} = \sqrt{\frac{T_i}{T_f}}$
 $\frac{v_i}{v_f} = \sqrt{\frac{T}{2T}}$
 $\frac{v_i}{v_f} = \sqrt{\frac{1}{2}} = \frac{1}{\sqrt{2}}$

12. When two monochromatic lights of frequency, ν and $\frac{\nu}{2}$ are incident on a photoelectric metal, their stopping potential becomes $\frac{V_s}{2}$ and V_s respectively. The threshold frequency for this metal is :

- (1) 3ν
 (2) $\frac{2}{3}\nu$
 (3) $\frac{3}{2}\nu$
 (4) 2ν

Sol. (3)
 $h\nu = w + \frac{eV_s}{2}$
 $\frac{h\nu}{2} = w + eV_s$
 $2h\nu - h\nu/2 = 2w - w$
 $\frac{3h\nu}{2} = w$
 $\frac{3k\nu}{2} = kv_{th}$
 $\nu_{th} = \frac{3\nu}{2}$

Answer is correct but it is not practically possible.

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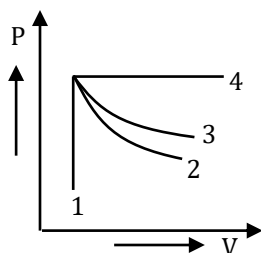
13. As the temperature increases, the electrical resistance:
 (1) decreases for both conductors and semiconductors
 (2) increases for conductors but decreases for semiconductors
 (3) decreases for conductors but increases for semiconductors
 (4) increases for both conductors and semiconductors

Sol. (2)

For conductors α is (+) ve

For semiconductors & Insulators α is (-)ve

14. An ideal gas undergoes four different processes from the same initial state as shown in the figure below. Those processes are adiabatic, isothermal, isobaric and isochoric. The curve which represents the adiabatic process among 1, 2, 3 and 4 is :



- (1) 2
 (2) 3
 (3) 4
 (4) 1

Sol. (1)

1 : Isochoric

2 : Adiabatic

3 : Isothermal

4 : Isobaric

15. The energy that will be ideally radiated by a 100 kW transmitter in 1 hour is :

- (1) 36×10^4 J
 (2) 36×10^5 J
 (3) 1×10^5 J
 (4) 36×10^7 J

Sol. (4)

$$E = P \times t = 100 \times 10^3 \times 3600$$

$$= 36 \times 10^7 \text{ J}$$

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16. The ratio of the distances travelled by a freely falling body in the 1st, 2nd, 3rd and 4th second :
 (1) 1 : 4 : 9 : 16 (2) 1 : 3 : 5 : 7 (3) 1 : 1 : 1 : 1 (4) 1 : 2 : 3 : 4

Sol. (2)

$$S_{nth} = u + \frac{a}{2}(2n - 1)$$

$$= 0 + \frac{a}{2}(2n - 1)$$

$$S_{nth} \propto (2n - 1)$$

$$\Rightarrow S_{1st}, S_{2nd}, S_{3rd}, S_{4th}$$

$$= [2(1) - 1] : [2(2) - 1] : [2(3) - 1] : [2(4) - 1]$$

$$= 1 : 3 : 5 : 7$$

17. Given below are two statements :

Statement I : Biot-Savart's law gives us the expression for the magnetic field strength of an infinitesimal current element (Idl) of a current carrying conductor only.

Statement II : Biot-Savart's law is analogous to Coulomb's inverse square law of charge q , with the former being related to the field produced by a scalar source, Idl while the latter being produced by a vector source, q .

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

- (1) Both **Statement I** and **Statement II** are incorrect
 (2) **Statement I** is correct and **Statement II** is incorrect
 (3) **Statement I** is incorrect and **Statement II** is correct
 (4) Both **Statement I** and **Statement II** are correct

Sol. (2)

$$d\vec{B} = \frac{\mu_0 (Id\vec{\ell} \times \vec{r})}{4\pi r^3}$$

As per Biot Savart law, the expression for magnetic field depends on current carrying element $Id\vec{\ell}$, which is a vector quantity, therefore, statement-I is correct and statement-II is wrong.

18. When light propagates through a material medium of relative permittivity ϵ_r and relative permeability μ_r , the velocity of light v is given by : (c : velocity of light in vacuum)

(1) $v = \sqrt{\frac{\mu_r}{\epsilon_r}}$ (2) $v = \sqrt{\frac{\epsilon_r}{\mu_r}}$ (3) $v = \frac{c}{\sqrt{\epsilon_r \mu_r}}$ (4) $v = c$

Sol. (3)

$$n = \sqrt{\epsilon_r \mu_r}$$

$$n = \frac{c}{v} \Rightarrow v = \frac{c}{n}$$

$$v = \left(\frac{c}{\sqrt{\epsilon_r \mu_r}} \right)$$

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19. A body of mass 60g experiences a gravitational force of 3.0N, when placed at a particular point. The magnitude of the gravitational field intensity at that point is :

- (1) 50 N/kg (2) 20 N/kg (3) 180 N/kg (4) 0.05 N/kg

Sol. (1)

$$I_g = \frac{F}{m}$$

$$= \frac{3}{60 \times 10^{-3}} = 50 \text{ N/kg}$$

20. In half wave rectification, if the input frequency is 60Hz then the output frequency would be :

- (1) 30Hz (2) 60Hz (3) 120 Hz (4) zero

Sol. (2)

In half wave rectification

$$f_{in} = f_{out}$$

$$\Rightarrow f_{out} = 60\text{Hz}$$

21. If a soap bubble expands, the pressure inside the bubble:

- (1) increases (2) remains the same
(3) is equal to the atmospheric pressure (4) decreases

Sol. (4)

$$\Delta P = \frac{4T}{R}$$

$$P_{in} = P_{out} = \frac{4T}{R}$$

If soap bubble expands

R will increase

P_{in} will decrease.

22. The ratio of the radius of gyration of a thin uniform disc about an axis passing through its centre and normal to its plane to the radius of gyration of the disc about its diameter is :

- (1) $\sqrt{2} : 1$ (2) 4 : 1 (3) 1 : $\sqrt{2}$ (4) 2 : 1

Sol. (1)

$$\frac{MR^2}{2} = MK_1^2$$

$$\frac{MR^2}{4} = MK_2^2$$

$$\frac{4}{2} = \frac{K_1^2}{K_2^2}$$

$$\frac{K_1}{K_2} = \sqrt{2}$$

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23. Two hollow conducting spheres of radii R_1 and R_2 ($R_1 \gg R_2$) have equal charges. The potential would be:
- (1) more on smaller sphere
 - (2) equal on both the spheres
 - (3) dependent on the material property of the sphere
 - (4) more on bigger sphere

Sol. (1)

$$V = \frac{kQ}{R}$$

$$V_1 = \frac{kQ}{R_1}; V_2 = \frac{kQ}{R_2}$$

$$R_1 \gg R_2$$

$$\text{Then } V_1 \ll V_2$$

Smaller sphere has more potential.

24. Plane angle and solid angle have:
- (1) Dimensions but no units
 - (2) No units and no dimensions
 - (3) Both units and dimensions
 - (4) Units but no dimensions

Sol. (4)

Unit of angle – radian

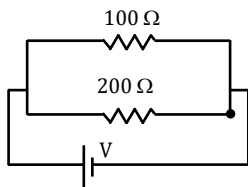
Unit of solid angle – steradian

But both are dimensionless

25. Two resistors of resistance, 100Ω and 200Ω are connected in parallel in an electrical circuit. The ratio of the thermal energy developed in 100Ω to that in 200Ω in a given time is :

- (1) 2 : 1
- (2) 1 : 4
- (3) 4 : 1
- (4) 1 : 2

Sol. (1)



$$P = \frac{V^2}{R}$$

$v = \text{same in parallel}$

$$\frac{P_1}{P_2} = \frac{R_2}{R_1} = \frac{200}{100} = \frac{2}{1}$$

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26. The angular speed of a fly wheel moving with uniform angular acceleration changes from 1200 rpm to 3120 rpm in 16 second. The angular acceleration in rad/s^2 is :

- (1) 4π
- (2) 12π
- (3) 104π
- (4) 2π

Sol. (1)

$$f_0 = \frac{1200}{60} = 20 \text{ Hz}$$

$$\omega_0 = 2\pi f_0 = 40\pi \text{ rad}$$

$$f = \frac{3120}{60} = 50 \text{ Hz}$$

$$\omega = 2\pi f = 104\pi \text{ rad}$$

$$t = 16 \text{ s}$$

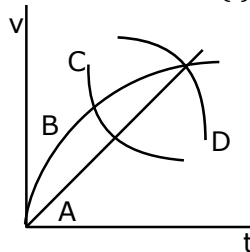
$$\omega = \omega_0 + \alpha t$$

$$104\pi = 40\pi + \alpha(16)$$

$$\frac{64\pi}{16} = \alpha$$

$$\alpha = 4\pi$$

27. A spherical ball is dropped in a long column of a highly viscous liquid. The curve in the graph shown, which represents the speed of the ball (v) as a function of time (t) is :



- (1) B
- (2) C
- (3) D
- (4) A

Sol. (1)

As ball is falling vertically downward at first velocity increases then become equal to terminal velocity (constant).

28. A light ray falls on a glass surface of refractive index $\sqrt{3}$, at an angle 60° . The angle between the refracted and reflected rays would be :

- (1) 60°
- (2) 90°
- (3) 120°
- (4) 30°

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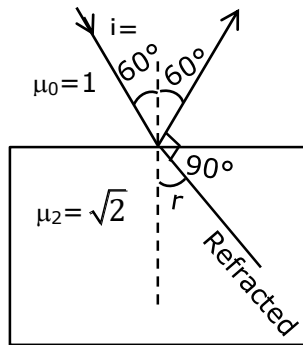
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Sol. (2)



$$\mu_1 \sin I = \mu_2 \sin r$$

$$1 \times \frac{\sqrt{3}}{2} = \sqrt{2} \sin r$$

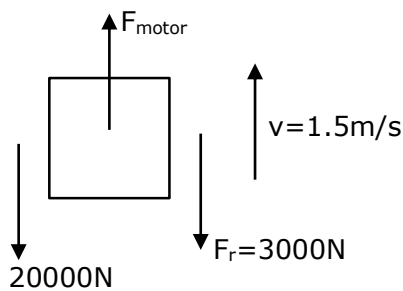
$$\sin r = \frac{1}{2}$$

$$r = 30^\circ$$

29. An electric lift with a maximum load of 2000 kg (lift + passengers) is moving up with a constant speed of 1.5 ms^{-1} . The frictional force opposing the motion is 3000N. The minimum power delivered by the motor to the lift in watts is : ($g = 10\text{ms}^{-2}$)

- (1) 20000
- (2) 34500
- (3) 23500
- (4) 23000

Sol. (2)



$$P = fm.v$$

$$= (20000 + 3000) \times 1.5$$

$$= 23000 \times 1.5$$

$$= 34500 \text{ watt}$$

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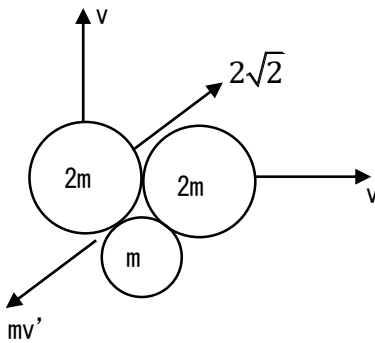
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30. A shell of mass m is at rest initially. It explodes into three fragments having equal mass in the ratio 2:2:1. If the fragments having equal mass fly off along mutually perpendicular directions with speed v , the speed of the third (lighter) fragment is:

- (1) $\sqrt{2}v$
 (2) $2\sqrt{2}v$
 (3) $3\sqrt{2}v$
 (4) v

Sol. (2)



$$mv' = 2\sqrt{2}mv$$

$$v' = 2\sqrt{2}v$$

31. The dimensions $[MLT^{-2}A^{-2}]$ belong to the :

- (1) self inductance
 (2) magnetic permeability
 (3) electric permittivity
 (4) magnetic flux

Sol. (2)

As we know

$$\frac{dF}{d\ell} = \frac{\mu_0 i_1 i_2}{2\pi d}$$

$$\therefore \mu_0 = \left(\frac{dF}{d\ell}\right) \left(\frac{2\pi d}{i_1 i_2}\right)$$

$$= \frac{[MLT^{-2}][L]}{[L][A^2]}$$

$$= [MLT^{-2}A^{-2}]$$

32. A copper wire of length 10 m and radius $\left(10^{-2}/\sqrt{\pi}\right)^m$ has electrical resistance of 10Ω . The current density in the wire for an electric field strength of $10(V/m)$ is:

- (1) $10^6 A/m^2$ (2) $10^{-5} A/m^2$ (3) $10^5 A/m^2$ (4) $10^4 A/m^2$

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Sol. (3)

$$l = 10\text{m}$$

$$R = \frac{10^{-2}}{\sqrt{\pi}} \text{ m}$$

$$R = 10\Omega$$

$$E = 10 \frac{\text{V}}{\text{m}}$$

As we know

$$J = \sigma E = \frac{E}{\rho}$$

$$\text{Now, } R = \frac{\rho l}{A}$$

$$\therefore \rho = \frac{RA}{l}$$

$$\text{Hence, } J = \frac{E l}{RA}$$

$$\text{Now, } A = \pi r^2 = \pi \frac{(10^{-2})^2}{\pi} = 10^{-4} \text{ m}^2$$

$$\therefore J = \frac{10 \times 10}{10 \times 10^{-4}} = 10^5 \text{ A/m}^2$$

33. In a Young's double slit experiment, a student observes 8 fringes in a certain segment of screen when a monochromatic light of 600 nm wavelength is used. If the wavelength of light is changed to 400 nm, then number of fringes he would observe in the same region of the screen is:

- (1) 8
- (2) 9
- (3) 12
- (4) 6

Sol. (3)

$$n_1 B_1 = n_2 B_2$$

$$n_1 \frac{\lambda_1 D}{d} = n_2 \frac{\lambda_2 D}{d}$$

$$\therefore n_1 L_1 = n_2 L_2$$

$$8 \times 600 = n_2 \times 400$$

$$n_2 = \frac{4800}{400} = 12$$

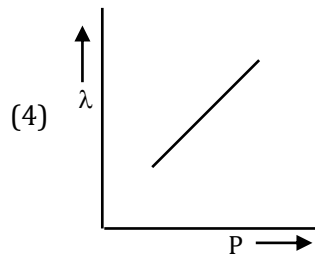
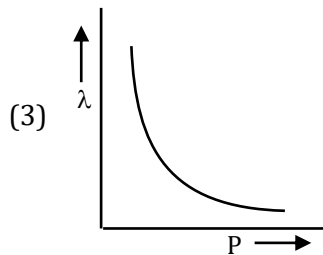
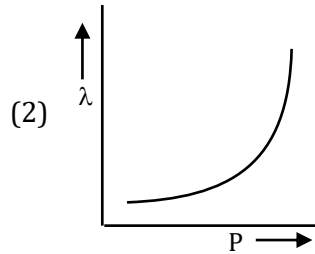
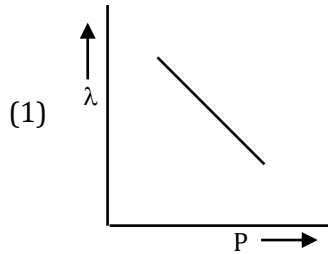
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34. The graph which shows the variation of the de Broglie wavelength (λ) of a particle and its associated momentum (p) is:

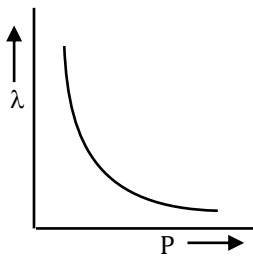


- Sol.** (3)
According to de Broglie

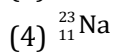
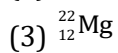
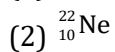
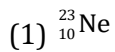
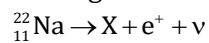
$$\lambda = \frac{h}{p}$$

$$\lambda p = \text{constant}$$

Hence, graph will be hyperbola



35. In the given nuclear reaction, the element X is :



- Sol.** (2)
On balance the equation we find that X is ${}_{10}^{22}\text{Ne}$

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SECTION - B

36. A series LCR circuit with inductance 10H, capacitance 10 μ F, resistance 50 Ω is connected to an ac source of voltage $V = 200 \sin(100t)$ volt. If the resonant frequency of the LCR circuit is ν_0 and the frequency of the ac source is ν then :

$$(1) \nu_0 = \nu = \frac{50}{\pi} \text{ Hz}$$

$$(2) \nu_0 = \frac{50}{\pi} \text{ Hz}, \nu = 50 \text{ Hz}$$

$$(3) \nu = 100 \text{ Hz}, \nu_0 = \frac{100}{\pi} \text{ Hz}$$

$$(4) \nu_0 = \nu = 5 \text{ Hz}$$

Sol. (1)

$$\text{Resonant frequency } (\nu_0) = \frac{1}{2\pi\sqrt{LC}}$$

$$\text{Since, } L = 10\text{H}$$

$$C = 10\mu\text{F} = 10^{-5}\text{f}$$

$$\nu_0 = \frac{1}{2\pi\sqrt{10 \times 10^{-5}}} = \frac{1}{2\pi \times 10^{-2}}$$

$$\frac{100}{2\pi} = \frac{50}{\pi} \text{ Hz}$$

On comparing with

$$\nu = \nu_0 \sin \omega t$$

$$\omega = 100$$

$$2\pi\nu = 100$$

$$\nu = \frac{100}{2\pi} = \frac{50}{\pi} \text{ Hz}$$

Hence, option (1) correct.

37. Match List-I with List-II.

List-I

- (a) Gravitational constant (G)
- (b) Gravitational potential energy
- (c) Gravitational potential
- (d) Gravitational intensity

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

List-II

- (i) $[L^2T^{-2}]$
- (ii) $[M^{-1}L^3T^{-2}]$
- (iii) $[LT^{-2}]$
- (iv) $[ML^2T^{-2}]$

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Sol. (1)

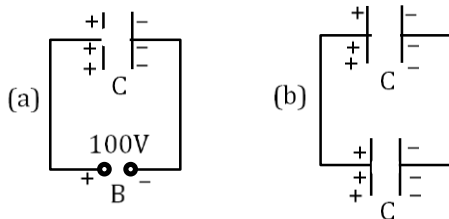
$$(a) G \rightarrow \frac{Fr^2}{m^2} = \frac{[MLT^{-2}][L^2]}{[M^2]} = [M^{-1}L^3T^{-2}]$$

(b) Gravitational potential energy \Rightarrow Dimension of energy ML^2T^{-2}

$$(c) \text{Gravitational potential} = \frac{w}{m} = \frac{ML^2T^{-2}}{M} = [L^2T^{-2}]$$

$$(d) \text{Gravitational intensity} = \frac{f}{m} = \frac{MLT^{-2}}{M} = [LT^{-2}]$$

38. A capacitor of capacitance $C = 900\text{pF}$ is charged fully by 100V battery B as shown in figure (a). Then it is disconnected from the battery and connected to another uncharged capacitor of capacitance $C = 900\text{pF}$ as shown in figure (b). The electrostatic energy stored by the system (b) is :



- (1) $3.25 \times 10^{-6} \text{ J}$
 (2) $2.25 \times 10^{-6} \text{ J}$
 (3) $1.5 \times 10^{-6} \text{ J}$
 (4) $4.5 \times 10^{-6} \text{ J}$

Sol. (2)

$$q = CV$$

$$= (900 \text{ pf})(100)$$

$$= (900 \times 10^{-12})(100)$$

$$= 9 \times 10^{-8} \text{ C}$$

Since charge remain constant for given case.

Energy store in system b is

$$C_{eq} = 2C = 1800 \times 10^{-12} \text{ f}$$

$$= 18 \times 10^{-10} \text{ f}$$

$$\therefore E_b = \frac{(9 \times 10^{-8})^2}{2 \times 18 \times 10^{-10}} = \frac{81 \times 10^{-16}}{36 \times 10^{-10}}$$

$$= 2.25 \times 10^{-6} \text{ J}$$

39. Two transparent media A and B are separated by a plane boundary. The speed of light in those media are $1.5 \times 10^8 \text{ m/s}$ and $2.0 \times 10^8 \text{ m/s}$, respectively. The critical angle for a ray of light for these two media is :

- (1) $\sin^{-1}(0.750)$ (2) $\tan^{-1}(0.500)$ (3) $\tan^{-1}(0.750)$ (4) $\sin^{-1}(0.500)$

Sol. (1)

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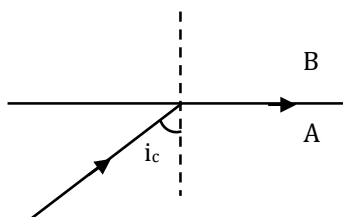
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Since, $\mu = \frac{C}{V}$

$\therefore \mu_A = \frac{C}{V_A}$

and $\mu_B = \frac{C}{V_B}$

on observing the speed we can say media A is denser.



$\therefore \mu_A \sin i_c = \mu_B \sin 90^\circ = \mu_B$

$\sin i_c = \frac{\mu_B}{\mu_A} = \frac{C/V_B}{C/V_A} = \frac{V_A}{V_B}$

$= \frac{1.5 \times 10^8}{2 \times 10^8} = 0.750$

$\therefore i_c = \sin^{-1}(0.750)$

40. The volume occupied by the molecules contained in 4.5 kg water at STP if the intermolecular forces vanish away is :

- (1) $5.6 \times 10^3 \text{ m}^3$
- (2) $5.6 \times 10^{-3} \text{ m}^3$
- (3) 5.6 m^3
- (4) $5.6 \times 10^6 \text{ m}^3$

Sol. (3)

$\mu = \frac{\text{mass of water}}{\text{molecular weight}} = \frac{4.5}{18 \times 10^{-3}} = 250$

$T = 273, P = 10^5 \text{ N/m}^2$

$PV = \mu RT$

$V = \frac{\mu RT}{\rho}$

$= \frac{250 \times 8.3 \times 273}{10^5}$

$= 5.6 \text{ m}^3$

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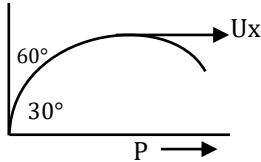
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41. A ball is projected with a velocity, 10 ms^{-1} , at an angle of 60° with the vertical direction. Its speed at the highest point of its trajectory will be:

- (1) $5\sqrt{3} \text{ ms}^{-1}$ (2) 5 ms^{-1} (3) 10 ms^{-1} (4) Zero

Sol. (1)

At maxm height



$$\begin{aligned} 4x &= 4 \cos\theta \\ &= 10 \cos 30^\circ \\ &= 10 \times \frac{\sqrt{3}}{2} = 5\sqrt{3} \text{ m/s} \end{aligned}$$

42. Given below are two statements: One is labelled as **Assertion (A)** and the other is labelled as **Reason (R)**.
Assertion (A) :

The stretching of a spring is determined by the shear modulus of the material of the spring.

Reason (R):

A coil spring of copper has more tensile strength than a steel spring of same dimensions.

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

- (1) Both **(A)** and **(R)** are true and **(R)** is not the correct explanation of **(A)**
 (2) **(A)** is true but **(R)** is false
 (3) **(A)** is false but **(R)** is true
 (4) Both **(A)** and **(R)** are true and **(R)** is the correct explanation of **(A)**

Sol. (2)

Because the stretching of coil simply change it's shape without any change in length of the wire used in coil. Due to which shean modulus of elasticity is involved.

$$Y_{\text{stell}} > Y_{\text{copper}}$$

43. Two pendulums of length 121 cm and 100 cm start vibrating in phase. At some instant, the two are at their mean position in the same phase. The minimum number of vibrations of the shorter pendulum after which the two are again in phase at the mean position is:

- (1) 9 (2) 10 (3) 8 (4) 11

Sol. (4)

$$T = 2\pi\sqrt{\frac{\ell}{g}}$$

$$\frac{T_1}{T_2} = \sqrt{\frac{121}{100}}$$

$$\frac{T_1}{T_2} = \frac{11}{10}$$

$$11 T_2 = 10 T_1$$

11 oscn of smaller is equal to 10 oscn of T_1

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44. A big circular coil of 1000 turns and average radius 10 m is rotating about its horizontal diameter at 2 rad s^{-1} . If the vertical component of earth's magnetic field at that place is $2 \times 10^{-5} \text{ T}$ and electrical resistance of the coil is 12.56 Ω , then the maximum induced current in the coil will be:
 (1) 1.5 A (2) 1 A (3) 2 A (4) 0.25 A

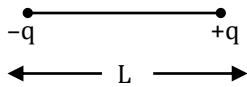
Sol. (2)

$$i = \frac{e_{\max}}{R} = \frac{NBA\omega}{R}$$

$$= \frac{1000 \times 2 \times 10^{-5} \times \pi \times 10^2 \times 2}{12.56}$$

$$= \frac{12.56}{12.56} = 1 \text{ A}$$

45. Two point charges $-q$ and $+q$ are placed at a distance of L , as shown in the figure.



The magnitude of electric field intensity at a distance R ($R \gg L$) varies as:

- (1) $\frac{1}{R^3}$ (2) $\frac{1}{R^4}$ (3) $\frac{1}{R^6}$ (4) $\frac{1}{R^2}$

Sol. (1)

$$E = \frac{2kq}{R^3} = E \propto \frac{1}{R^3}$$

46. A nucleus of mass number 189 splits into two nuclei having mass number 125 and 64. The ratio of radius of two daughter nuclei respectively is :

- (1) 4 : 5
 (2) 5 : 4
 (3) 25 : 16
 (4) 1 : 1

Sol. (2)

$$R = R_0 (A)^{1/3}$$

$$R \propto A^{1/3}$$

$$\frac{R_1}{R_2} = \left[\frac{A_1}{A_2} \right]^{1/3}$$

$$\frac{R_1}{R_2} = \left[\frac{125}{64} \right]^{1/3}$$

$$\frac{R_1}{R_2} = \frac{5}{4}$$

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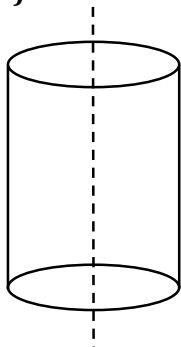
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47. From Ampere's circuital law for a long straight wire of circular cross-section carrying a steady current, the variation of magnetic field in the inside and outside region of the wire is :
- (1) a linearly increasing function of distance upto the boundary of the wire and then linearly decreasing for the outside region.
 - (2) a linearly increasing function of distance r upto the boundary of the wire and then decreasing one with $1/r$ dependence for the outside region.
 - (3) a linearly decreasing function of distance upto the boundary of the wire and then a linearly increasing one for the outside region.
 - (4) uniform and remains constant for both the regions.

Sol. (2)

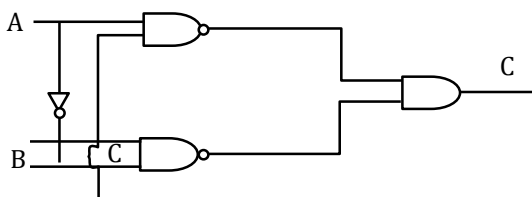


$$B_{in} = \frac{\mu_0 I r}{2\pi R^2}$$

$$B_s = \frac{\mu_0 I}{2\pi R}$$

$$B_o = \frac{\mu_0 I}{2\pi r}$$

48.



The truth table for the given logic circuit is :

A	B	C
0	0	1
(1) 0	1	0
1	0	0
1	1	1

A	B	C
0	0	1
(2) 0	1	0
1	0	1
1	1	0

A	B	C
0	0	0
(3) 0	1	1
1	0	0
1	1	1

A	B	C
0	0	0
(4) 0	1	1
1	0	1
1	1	0

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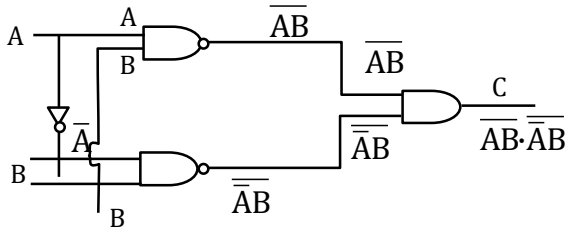
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Sol. (2)

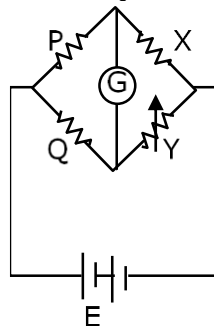


$$\begin{aligned}
 C &= \overline{AB} \cdot \overline{\overline{AB}} \\
 &= (\overline{A + B}) \cdot (A + \overline{B}) \\
 &= \overline{AA} + \overline{AB} + \overline{A\overline{B}} + \overline{B\overline{B}} \\
 &= \overline{AB} + \overline{A\overline{B}} + \overline{B} \\
 &= \overline{AB} + \overline{B}(A + 1)
 \end{aligned}$$

$$C = \overline{B}(A + 1)$$

A	B	\overline{A}	\overline{B}
0	0	1	1
0	1	1	0
1	0	0	1
1	1	0	0

49. A wheatstone bridge is used to determine the value of unknown resistance X by adjusting the variable resistance Y as shown in the figure. For the most precise measurement of X, the resistance P and Q :



- (1) should be approximately equal and are small
- (2) should be very large and unequal
- (3) do not play any significant role
- (4) should be approximately equal to 2x

Sol. (1)

Resistance of P & Q should be approx.. equal as it decreases error in experiment.

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50. The area of a rectangular field (in m²) of length 55.3m and breadth 25m after rounding off the value for correct significant digits is :

- (1) 1382
- (2) 1382.5
- (3) 14×10^2
- (4) 138×10^1

Sol. (3)

$$\begin{aligned} A &= l \times B \\ &= 55.3 \times 25 \\ &= 1382.5 \approx 14 \times 10^2 \end{aligned}$$

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CHEMISTRY SECTION - A

51. Identify the incorrect statement from the following.
- (1) All the five 4d orbitals have shapes similar to the respective 3d orbitals
 - (2) In an atom, all the five 3d orbitals are equal in energy free state.
 - (3) The shapes of d_{xy} , d_{yz} , and d_{zx} orbitals are similar to each other; and $d_{x^2-y^2}$ and d_{z^2} are similar to each other.
 - (4) All the five 5d orbitals are different in size when compared to the respective 4d orbitals

Sol. (3)
 $d_{x^2-y^2}$ is double dumbbell while d_{z^2} has baby soother shape.

52. Given below are two statements :

Statement I :

The acidic strength of monosubstituted nitrophenol is higher than phenol because of electron withdrawing nitro group.

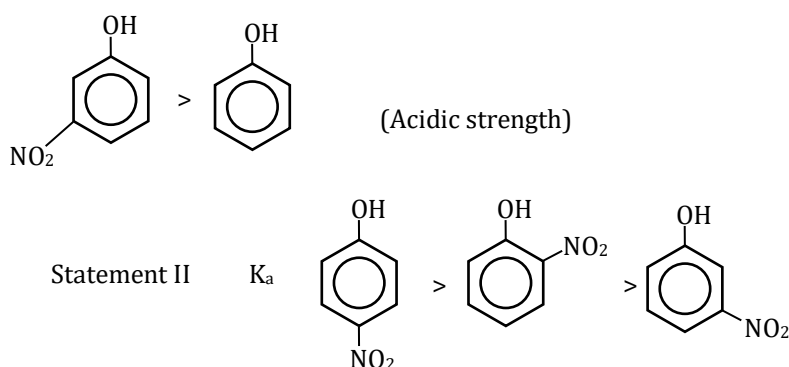
Statement II ;

o-nitrophenol, m-nitrophenol and p-nitrophenol will have same acidic strength as they have one nitro group attached to the phenolic ring.

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

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

Sol. (2)



I is correct II is incorrect.

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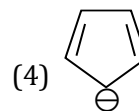
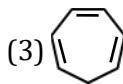
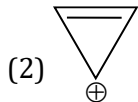
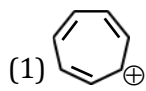
53. The incorrect statement regarding chirality is :

- (1) The product obtained by S_N2 reaction of haloalkane having chirality at the reactive site shows inversion of configuration.
- (2) Enantiomers are superimposable mirror images on each other.
- (3) A racemic mixture shows zero optical rotation.
- (4) S_N1 reaction yielded 1 : 1 mixture of both enantiomers.

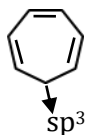
Sol. (2)

Enantiomers are non-superimposable mirror images on each other.

54. Which compound amongst the following is not an aromatic compound ?s



Sol. (3)

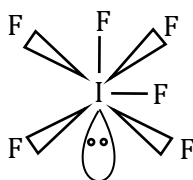
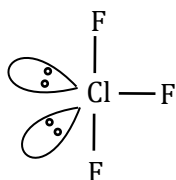
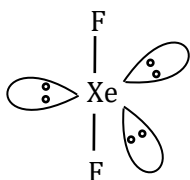


- compound is cyclic
- compound is not planar
so it is not aromatic

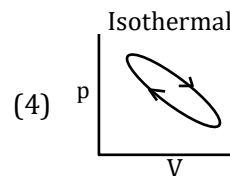
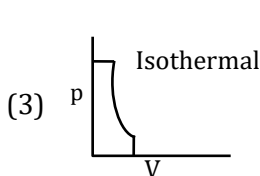
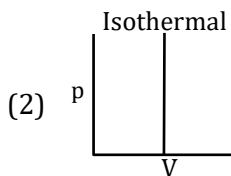
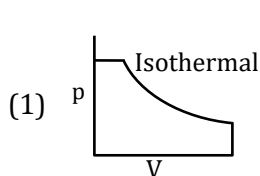
55. Amongst the following which one will have maximum 'lone pair-lone pair' electron repulsions.

- (1) IF_5
- (2) SF_4
- (3) XeF_2
- (4) ClF_3

Sol. (3)



56. Which of the following p-V curve represents maximum work done ?



Sol. (1)

Max area under the curve max. work done

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57. The IUPAC name of the complex $[\text{Ag}(\text{H}_2\text{O})_2][\text{Ag}(\text{CN})_2]$ is :
- (1) diaquasilver (II) dicyanidoargentate (II)
 - (2) dicyanidosilver (I) and diaquaargentate (I)
 - (3) diaquasilver (I) dicyanidoargentate(I)
 - (4) dicyanidosilver(II) diaquaargentate(II)

Sol. (3)
diaquasilver (I) dicyanidoargentate(I)

58. What mass of 95% pure CaCO_3 will be required neutralize 50mL of 0.5 M HCl solution according the following reaction?



[Calculate upto second place of decimal point]

- (1) 1.32 g
- (2) 3.65 g
- (3) 9.50 g
- (4) 1.25 g

Sol. (1)
 $\text{CaCO}_{3(s)} + 2\text{HCl}(\text{aq}) \rightarrow \text{CaCl}_2(\text{aq}) + \text{CO}_2(\text{g}) + 2\text{H}_2\text{O}$

$$50 \times \frac{1}{2}$$

$$= 25 \text{ m mol}$$

$$\text{Moles of CaCO}_3 = 12.5 \text{ m mol}$$

$$\text{Mass of CaCO}_3 = \frac{12.5 \times 100}{1000} \times \frac{100}{95}$$

$$= 1.32 \text{ g}$$

59. Match List-I with List-II.

List-I

(Drug class)

- (a) Antacids
- (b) Antihistamines
- (c) Analgesics
- (d) Antimicrobials

List-II

(Drug molecule)

- (i) Salvarsan
- (ii) Morphine
- (iii) Cimetidine
- (iv) Seldane

Choose the correct answer from the options give below :

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

Sol. (1)
(a) Antacids → (iii) cematidine
(b) Antihistamine → (iv) Seldane
(c) Analgesics → (ii) Morphine
(d) Antimicrobials → (i) Salvarsan

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60. Match List-I with List-II.

List-I

(Products formed)

- (a) Cynohydrin
- (b) Acetal
- (c) Schiff's base
- (d) Oxime

List-II

(Reaction of carbonyl
Compound with)

- (i) NH₂OH
- (ii) RNH₂
- (iii) alcohol
- (iv) HCN

Choose the correct answer from the options give below :

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

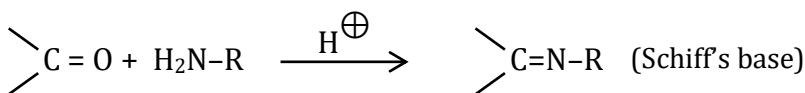
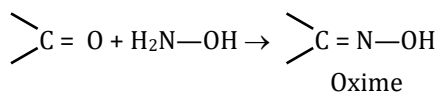
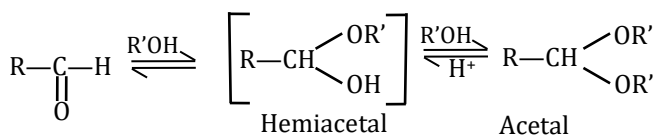
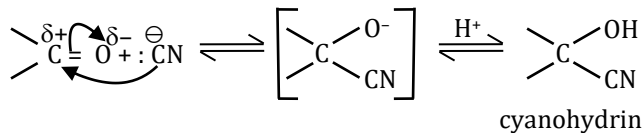
Sol. (3)

List-I

- (a) Cynohydrin
- (b) Acetal
- (c) Schiff's base
- (d) Oxime

List-II

- (iv) HCN
- (iii) alcohol
- (ii) RNH₂
- (i) NH₂OH



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

Assertion (A) : ICl is more reactive than I₂.

Reason (R) : I-Cl bond is weaker than I-I bond.

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

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

(2) (A) is correct but (R) is not correct.

(3) (A) is not correct but (R) is correct.

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

Sol. (4)

[NCERT (XII) Page No. 207 Vol.-I]

ICl is more reactive than I₂ due to its polar bond character.

62. Which one is not correct mathematical equation for Dalton's Law of partial pressure ? Here p = total pressure of gaseous mixture.

(1) $p = n_1 \frac{RT}{V} + n_2 \frac{RT}{V} + n_3 \frac{RT}{V}$

(2) $p_i = x_i p$, where p_i = partial pressure of ith gas
 x_i = mole fraction of ith gas in gaseous mixture

(3) $p_i = x_i p_i^\circ$, where x_i = mole fraction of ith gas in gaseous mixture
 p_i° = mole fraction of ith gas in gaseous mixture

(4) $p = p_1 + p_2 + p_3$

Sol. (3)

$p_i = x_i p_i^\circ$, this is not Dalton's law

63. Which amongst the following is incorrect statement ?

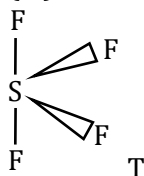
(1) C₂ molecule has four electrons in its two degenerate π molecular orbitals.

(2) H₂⁺ ion has one electron.

(3) O₂⁺ ion is diamagnetic.

(4) The bond orders of O₂⁺, O₂, O₂⁻ and O₂²⁻ are 2.5, 2, 1.5 and 1, respectively.

Sol. (3)



Max lp at 120° in XeF₂

(1) O₂⁺ 1s e⁻ add e⁻ = para

(2) O₂⁺ O₂ O₂⁻ O₂²⁻
30 2.5 1.5 1

(3) C₂ $\sigma 1s^2 \sigma^* 1s^2 \sigma 2s^2 \sigma^* 2s^2 \pi 2p_x^2 = \pi 2p_y^2$

Total = 12

(4) H₂⁺ 1e⁻

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64. In one molal solution that contains 0.5 mole of a solute, there is :
- (1) 500 g of solvent (2) 100 mL of solvent
(3) 1000 g of solvent (4) 500 mL of solvent

Sol. (1)

$$1 = \frac{0.5}{W}$$

$$W = 0.5 \text{ kg}$$

$$W = 500 \text{ gm}$$

65. Given below are two statement :

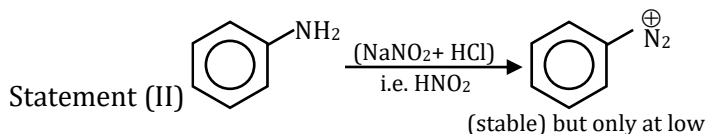
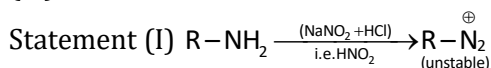
Statement I :

Primary aliphatic amines react with HNO_2 to give unstable diazonium salts.

Statement II : Primary aromatic amines react with HNO_2 to form diazonium salts which are stable even above 300 K. In the light of the above statement, choose the most appropriate answer from the options given below :

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

Sol. (2)



Temperature i.e. $0-5^\circ\text{C}$ ($273\text{K} - 276\text{K}$) so at above 300K it will be unstable.
Statement I is correct but II incorrect.

66. Given below are two statements :

Statement I :

The boiling points of the following hydrides of group 16 elements increases in the order -
 $\text{H}_2\text{O} < \text{H}_2\text{S} < \text{H}_2\text{Se} < \text{H}_2\text{Te}$

Statement II :

The boiling points of these hydrides increase with increase in molar mass.

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

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

Sol. (1)

Order of BP for VIA $\text{H}_2\text{S} < \text{H}_2\text{Se} < \text{H}_2\text{Te} < \text{H}_2\text{O}$

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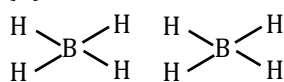
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67. Which of the following statement is not correct about diborane?
 (1) The four terminal B-H bonds are two centre two electron bonds.
 (2) The four terminal Hydrogen atoms and the two Boron atoms lie in one plane.
 (3) Both the Boron atoms are sp^2 hybridised.
 (4) There are two 3-centre-2-electron bonds.

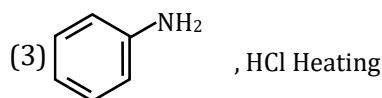
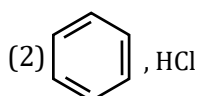
Sol. (3)



Both Boron atoms are sp^3 hybrid.

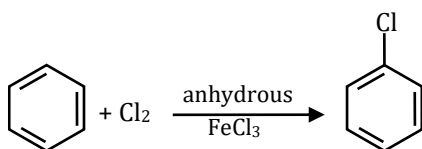
68. Which of the following is suitable to synthesize chlorobenzene ?

(1) Phenol, $NaNO_2$, HCl, CuCl



(4) Benzene, Cl_2 , anhydrous $FeCl_3$

Sol. (4)



69. Given below are statements :

Statements I:

In the congluation of negative sol, the flocculating power of the there givne ions is in the order :

$Al^{3+} > Ba^{2+} > Na^+$

Statements II :

In the congulations of a positive sol, the flocculating power of the three given salts is in the order-

$NaCl > Na_2SO_4 > Na_3PO_4$

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

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

Sol. (2)

Order of coagulation power

$Al^{+3} > Ba^{+2} > Na^+$

Order of coagulation power

For +ve sol $PO_4^{-3} > SO_4^{-2} > Cl^-$

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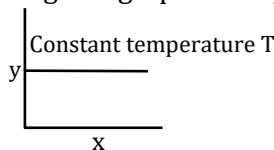
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70. The given graph is a representation of kinetics of a reaction.



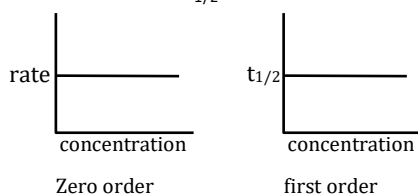
The y and x axes for zero and first order reactions, respectively are :

- (1) zero order (y = concentration and x = time), first order (y = rate constant and x = concentration)
- (2) zero order (y = rate and x = concentration), first order (y = $t_{1/2}$ and x = concentration)
- (3) zero order (y = rate and x = concentration), first order (y = rate and x = $t_{1/2}$)
- (4) zero order (y = concentration and x = time), first order (y = $t_{1/2}$ and x = concentration)

Sol. (2)

zero order (y = rate and x = concentration)

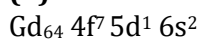
first order (y = $t_{1/2}$ and x = concentration)



71. Gadolinium has a low value of third ionization enthalpy because of :

- (1) high exchange enthalpy
- (2) high electronegativity
- (3) high basic character
- (4) small size

Sol. (1)



high exchange enthalpy

72. Given below are two statements :

Statements I:

The boiling points of aldehydes and ketones are higher than hydrocarbons of comparable molecular masses because of weak molecular association in aldehydes and ketones due to dipole-dipole interactions.

Statements II :

The boiling points of aldehydes and ketones are lower than the alcohols of similar molecular masses due to the absence of H-bonding.

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

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

Sol. (4)

[NCERT (XII) Page No. 365 Vol-II]

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73. The IUPAC name of an element with atomic number 119 is :
- (1) unnilennium (2) unununnium
(3) ununoctium (4) ununennium

Sol. (4)
119 Ununennium

74. The pH of the solution containing 50 mL each of 0.10 M sodium acetate 0.01 M acetic acid is :
[Given : pK_a of $CH_3COOH = 4.57$]
- (1) 3.57 (2) 4.57 (3) 2.57 (4) 5.57

Sol. (4)

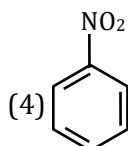
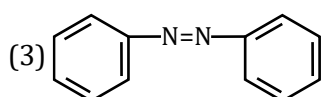
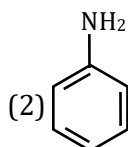
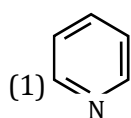
$$pH = 4.57 + \log \frac{50 \times 0.1}{50 \times 0.01}$$

$$pH = 4.57 + \log 10$$

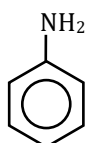
$$pH = 4.57 + 1$$

$$pH = 5.57$$

75. The Kjeldahl's method for the estimation of nitrogen can be used to estimate the amount of nitrogen in which one of the following compounds ?



Sol. (2)
[NCERT (XII) Page No. 366 Vol.-I]



In Kjeldahl's method is not applicable to N present in Nitro and Azo group and N present in the ring like pyridine.

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76. Given below are two statements : one is labelled as :

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

Assertion (A) :

In a particular point defect, an ionic solid is electrically neutral, even if few of its cations are missing from its unit cells.

Reason (R) :

In an ionic solid, Frenkel defect arises due to dislocation of cation from its lattice site to interstitial site, maintaining overall electrical neutrality.

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

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

(2) (A) is correct but (R) is not correct.

(3) (A) is not correct but (R) is correct.

(4) Both (A) and (R) are correct but (R) is the correct explanation of (A).

Sol. (1)

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

77. Match List-I with List-II.

List-I	List-II
(Hydrides)	(Nature)
(a) MgH ₂	(i) Electron precise
(b) GeH ₄	(ii) Electron deficient
(c) B ₂ H ₆	(iii) Electron rich
(d) HF	(iv) Ionic
(1) (a)-(iii), (b)-(i), (c)-(ii), d-(iv)	
(2) (a)-(i), (b)-(ii), (c)-(iv), d-(iii)	
(3) (a)-(ii), (b)-(iii), (c)-(iv), d-(i)	
(4) (a)-(iv), (b)-(i), (c)-(ii), d-(iii)	

Sol. (4)

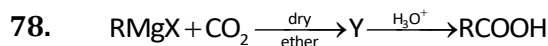
(a) MgH ₂	→	(iv) Ionic
(b) GeH ₄	→	(i) Electron precise
(c) B ₂ H ₆	→	(ii) Electron deficient
(d) HF	→	(iii) Electron rich

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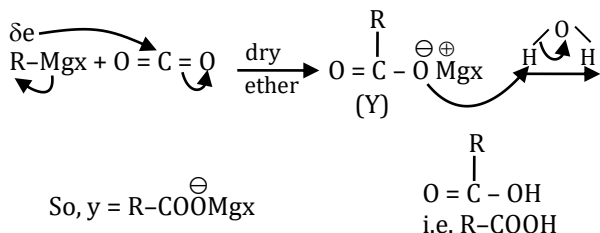
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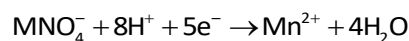
What is Y in the above reaction :

- (1) $\text{R}_3\text{CO-Mg}^+\text{X}$ (2) RCOO-X^+
 (3) $(\text{RCOO})_2\text{Mg}$ (4) $\text{RCOO-Mg}^+\text{X}$

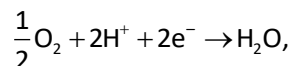
Sol. (4)



79. Given below are half cell reaction:



$$E_{\text{Mn}^{2+}/\text{MnO}_4^-}^\circ = -1.510\text{V}$$

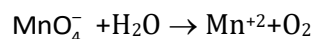


$$E_{\text{O}_2/\text{H}_2\text{O}}^\circ = +1.223\text{V}$$

Will the permanganate ion, MnO_4^- liberate O_2 from water in the presence of an acid?

- (1) No, because $E_{\text{cell}}^\circ = -0.287\text{V}$
 (2) Yes, because $E_{\text{cell}}^\circ = +2.733\text{V}$
 (3) No, because $E_{\text{cell}}^\circ = -2.733\text{V}$
 (4) Yes, because $E_{\text{cell}}^\circ = +0.287\text{V}$

Sol. (4)



$$E_{\text{cell}}^\circ = 1.51 - 1.223$$

$$E_{\text{cell}}^\circ = +0.287$$

Yes MnO_4^- liberate O_2 from water in the presence of an acid

80. Which statement regarding polymers is not correct?

- (1) Fibers possess high tensile strength.
 (2) Thermoplastic polymers are capable of repeatedly softening and hardening on heating and cooling respectively.
 (3) Thermosetting polymers are reusable.
 (4) Elastomers have polymer chains held together by weak intermolecular forces.

Sol. (3)

Thermosetting polymers are not reusable.

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81. At 298 K, the standard electrode potential of Cu^{2+}/Cu , Zn^{2+}/Zn , Fe^{2+}/Fe and Ag^+/Ag are 0.34 V, -0.76 V, -0.44 V and 0.80 V, respectively.

On the basis of standard electrode potential, predict which of the following reaction can not occur?

- (1) $\text{CuSO}_4(\text{aq}) + \text{Fe}(\text{s}) \rightarrow \text{FeSO}_4(\text{aq}) + \text{Cu}(\text{s})$
- (2) $\text{FeSO}_4(\text{aq}) + \text{Zn}(\text{s}) \rightarrow \text{ZnSO}_4(\text{aq}) + \text{Fe}(\text{s})$
- (3) $2\text{CuSO}_4(\text{aq}) + 2\text{Ag}(\text{s}) \rightarrow 2\text{Cu}(\text{s}) + \text{Ag}_2\text{SO}_4(\text{aq})$
- (4) $\text{CuSO}_4(\text{aq}) + \text{Zn}(\text{s}) \rightarrow \text{ZnSO}_4(\text{aq}) + \text{Cu}(\text{s})$

Sol. (3)

Order of reactivity

$\text{Zn} > \text{Fe} > \text{Cu} > \text{Ag}$ (Reactivity)

82. The incorrect statement from the following :

- (1) Like chemical catalysis enzymes reduce the activation energy of bio processes.
- (2) Enzymes are polysaccharides.
- (3) Enzymes are very specific for a particular reaction and substrate.
- (4) Enzymes are biocatalysts.

Sol. (2)

All Enzymes are protein.

83. Identify the incorrect statement from the following :

- (1) The oxidation number of K in KO_2 is +4.
- (2) Ionisation enthalpy of alkali metals decreases from top to bottom in the group.
- (3) Lithium is the strongest reducing agent among the alkali metals.
- (4) Alkali metals react with water to form their hydroxides.

Sol. (1)

Oxidation states of K in KO_2 is +1 as it is a superoxide.

84. Match List-I with List-II.

List-I

List-II

- | | |
|---------|--|
| (a) Li | (i) absorbent for carbon dioxide |
| (b) Na | (ii) electrochemical cells |
| (c) KOH | (iii) coolant in fast breeder reactors |
| (d) Cs | (iv) photoelectric cell |

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

Sol. (3)

- | | |
|---------|--|
| (a) Li | (ii) electrochemical cells |
| (b) Na | (iii) coolant in fast breeder reactors |
| (c) KOH | (i) absorbent for carbon dioxide |
| (d) Cs | (iv) photoelectric cell |

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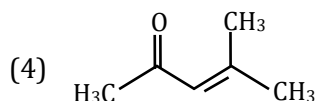
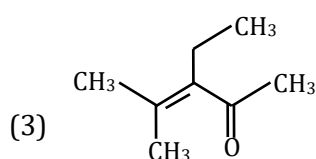
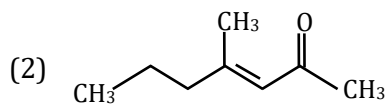
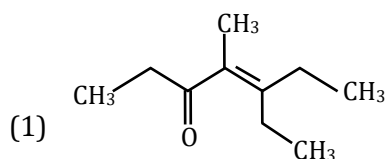
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85. Choose the correct statement :
- (1) Diamond is covalent and graphite is ionic.
 - (2) Diamond is sp^3 hybridised and graphite is sp^2 hybridized.
 - (3) Both diamond and graphite are used as dry lubricants.
 - (4) Diamond and graphite have two dimensional network.

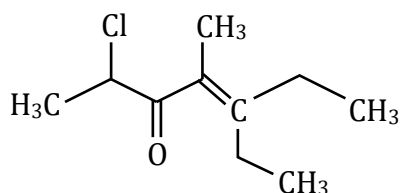
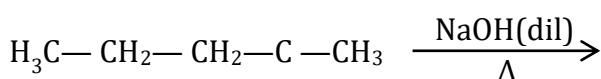
Sol. (2)
Diamond- sp^3 Graphite- sp^2

Section-B

86. Which one of the following is not formed when acetone reacts with 2-pentanone in the presence of dilute NaOH followed by heating ?



Sol. (1)
Its aldol condensation reaction. So products not possible is



This compound will be formed if pentan-3-one is involved in this reaction so, it will not be formed as product since in the reaction organic substrate is not pentan-3-one, here organic substrate are pentan-2-one and acetone.

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87. The order of energy absorbed which is responsible for the color of complexes.

- (A) $[\text{Ni}(\text{H}_2\text{O})_2(\text{en})_2]^{2+}$ (B) $[\text{Ni}(\text{H}_2\text{O})_4(\text{en})]^{2+}$ and
(C) $[\text{Ni}(\text{en})_3]^{2+}$

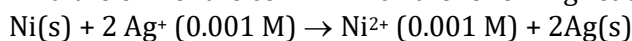
is :

- (1) (C) > (B) > (A) (2) (C) > (A) > (B)
(3) (B) > (A) > (C) (4) (A) > (B) > (C)

Sol. (2)

$\nu \text{ abs} \propto \text{strength of ligands.}$

88. Find the emf of the cell in which the following reaction takes place at 298 K



(Given that $E_{\text{cell}}^\circ = 10.5\text{V}$, $\frac{2.303RT}{F} = 0.059$ at 298 K)

- (1) 1.385 V (2) 0.9615 V (3) 1.05 V (4) 1.385 V

Sol. (Bonus)

$$E_{\text{cell}} = 10.5 - \frac{0.059}{2} \log \frac{10^{-3}}{10^{-6}}$$

$$= 10.5 - 0.0295 \times 3$$

$$= 10.5 - 0.088$$

$$= 10.41 \text{ V}$$

89. Match List-I with List-II.

List-I

(Ores)

- (a) Haematite
(b) Magnetite
(c) Calamine
(d) Kaolinite

List-II

(Composiiton)

- (i) Fe_3O_4
(ii) ZnCO_3
(iii) Fe_2O_3
(iv) $[\text{Al}_2(\text{OH})_4\text{Si}_2\text{O}_5]$

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

Sol. (1)

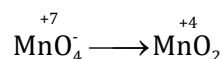
- (a) Haematite (iii) Fe_2O_3
(b) Magnetite (i) Fe_3O_4
(c) Calamine (ii) ZnCO_3
(d) Kaolinite (iv) $[\text{Al}_2(\text{OH})_4\text{Si}_2\text{O}_5]$

90. In the neutral or faintly alkaline medium, KMnO_4 oxidises iodide into iodate. The change in oxidation state of manganese in this reaction is form :

- (1) +6 to +4 (2) +7 to +3 (3) +6 to +5 (4) +7 to +4

Sol. (4)

Weak alkaline medium



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91. Given below are two statements :

Statements I:

In Lucas test, primary, secondary and tertiary alcohols distinguished on the basis of their reactivity with conc. HCl + ZnCl₂, known as Lucas Reagent.

Statements II :

Primary alcohols are most reactive and immediately produce turbidity at room temperature on reaction with Lucas Reagent.

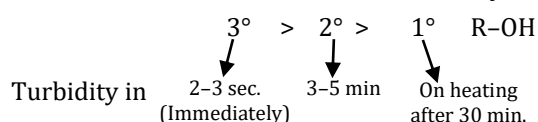
In the light of the above statements, choose the most appropriate answer from the options given below.

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

Sol. (2)

Statement I : is correct Lucas reagent is used to differentiate primary, secondary & Tertiary alcohol.

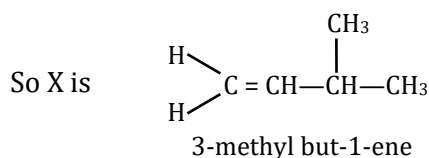
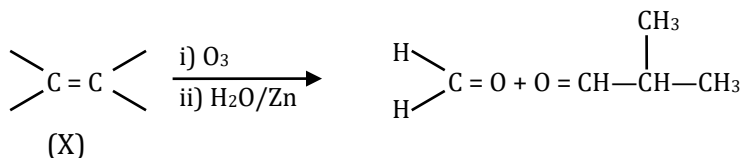
Statement II : is incorrect since reactivity order of alcohol towards Lucas reagent (HCl + ZnCl₂) is :



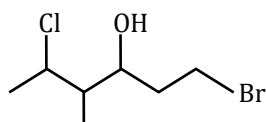
92. Compound X on reaction with O₃ followed by Zn/H₂O gives formaldehyde and 2-methyl propanal as products. The compound X is :

- (1) 2-Methylbut-1-ene
- (2) 2-Methylbut-2-ene
- (3) Pent-2-ene
- (4) 3-Methylbut-1-ene

Sol. (4)



93. The correct IUPAC name of the following compound is :



- (1) 6-bromo-2-chloro-4-methylhexan-4-ol
- (2) 1-bromo-4-methyl-5-chlorohexan-3-ol
- (3) 6-bromo-4-methyl-2-chlorohexan-4-ol
- (4) 1-bromo-5-chloro-4-methylhexan-3-ol

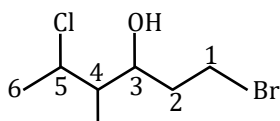
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Sol. (4)



94. A 10.0 L flask contains 64 g of oxygen at 27°C. (Assume O₂ gas is behaving ideally). The pressure inside the flask in bar is :

(Given : R = 0.0831 L bar K⁻¹ mol⁻¹)

- (1) 498.6 (2) 49.8 (3) 4.9 (4) 2.5

Sol. (3)

$$PV = nRT$$

$$P \times 10 = \frac{64}{32} \times 0.0831 \times 300$$

$$P = 4.98$$

95. The pollution due to oxides of Sulphur gets enhanced due to the presence of :

- (a) particulate matter
(b) ozone
(c) hydrocarbons
(d) hydrogen peroxide

Choose the most appropriate answer from the options given below :

- (1) (a), (b), (d) only (2) (b), (c), (d) only
(3) (a), (c), (d) only (4) (a), (d) only

Sol. (1)

[NCERT (XI) Page No. 407] Environmental Chemistry

96. For a first order reaction A → Product, initial concentration of A is 0.1 M, which becomes 0.001 M after 5 minutes. Rate constant for the reaction in min⁻¹ is :

- (1) 0.9212 (2) 0.4606 (3) 0.2303 (4) 1.3818

Sol. (1)

$$K = \frac{2.303}{5} \log \frac{0.1}{0.001}$$

$$= \frac{2.303}{5} \times 2$$

$$= \frac{4.606}{5}$$

$$= 0.9212$$

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97. Copper crystallises in fcc unit cell with cell edge length of 3.608×10^{-8} cm. The density of copper is 8.92 g cm^{-3} . Calculate the atomic mass of copper.

- (1) 31.55 u (2) 60 u (3) 65u (4) 63.1 u

Sol. (4)

$$8.92 = \frac{4 \times M}{6 \times 10^{23} \times (3.608 \times 10^{-8})^3}$$

$$M = \frac{8.92 \times 6 \times 10^{23} \times (3.608)^3 \times 10^{-24}}{4}$$

$$= 62.84$$

$$\approx 63 \text{ u}$$

98. $3\text{O}_2(\text{g}) \rightleftharpoons 2\text{O}_3(\text{g})$

For the above reaction at 298 K, K_c is found to be 3.0×10^{-59} . If the concentration of O_2 at equilibrium is 0.040 M then concentration of O_3 in M is :

- (1) 1.9×10^{-63} (2) 2.4×10^{31}
(3) 1.2×10^{21} (4) 4.38×10^{-32}

Sol. (4)

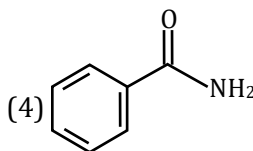
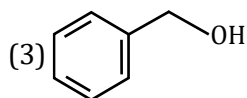
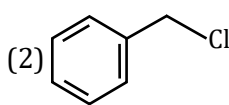
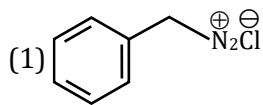
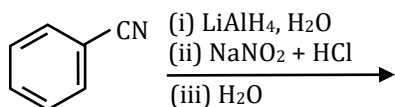
$$3 \times 10^{-59} = \frac{[\text{O}_3]^2}{[0.04]^3}$$

$$3 \times 10^{-59} \times (0.04)^3 = [\text{O}_3]^2$$

$$[\text{O}_3]^2 = 1920 \times 10^{-66}$$

$$[\text{O}_3] = 4.38 \times 10^{-32}$$

99. The produce formed from the following reaction sequence is :



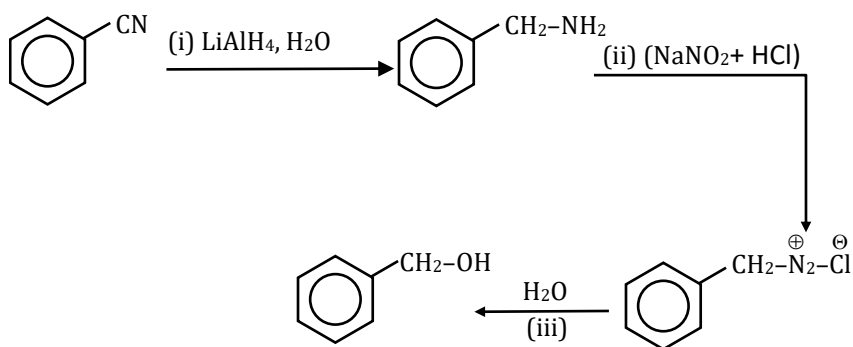
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Sol. (3)



100. If radius of second Bohr orbit of the He^+ ion is 105.8 pm, what is the radius of third Bohr orbit of Li^{+2} ion ?
 (1) 15.87 pm (2) 1.587 pm (3) 158.7 Å (4) 158.7 pm

Sol. (4)

$$\frac{r_2}{r_3} = \frac{n_2^2}{n_3^2} \times \frac{Z_{\text{Li}^{+2}}}{Z_{\text{He}^+}}$$

$$\frac{105.8}{r_3} = \frac{4}{9} \times \frac{3}{2}$$

$$r_3 = 105.8 \times 1.5$$

$$r_3 = 158.7 \text{ pm}$$

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BOTANY

Section – A

101. Which of the following is not a method of ex situ conservation ?

- (1) National parks (2) Micropropagation
(3) Cryopreservation (4) In vitro fertilization

Sol. (1)

NCERT 12th Page No. 267

102. Given below are two statements :

Statement I :

The primary CO₂ acceptor in C₄ plants is phosphoenolpyruvate and is found in the mesophyll cells.

Statement II :

Mesophyll cells of C₄ plants lack RuBisCo enzyme. In the light of the above statements, chose the correct answer from the options given below :

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

Sol. (4)

NCERT 11th Page No. 219

103. Read the following statements about vascular bundles :

- (a) In roots, xylem and phloem in a vascular bundle are arranged in an alternate manner along the different radii
(b) Conjoint closed vascular bundles do not possess cambium
(c) In open vascular bundles, cambium is present in between xylem and phloem
(d) The vascular bundles of dicotyledonous stem possess endarch protoxylem
(e) In monocotyledonous root, usually there are more than six xylem bundles present

Choose the correct answer from the options given below :

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

Sol. (Bonus)

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104. Given below are two statements :

Statement I :

Mendel studied seven pairs of contrasting traits in pea plants and proposed the Laws of Inheritance

Statement II :

Seven characters examined by Mendel in his experiment on pea plants were seed shape and colour, flower colour, pod shape and colour, flower position and stem height

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

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

Sol. (4)

NCERT 12th Page No. 70, 71

105. Which one of following statements cannot be connected to Predation ?

- (1) It might lead to extinction of a species
- (2) Both the interacting species are negatively impacted
- (3) It is necessitated by nature to maintain the ecological balance
- (4) It helps in maintaining species diversity in a community

Sol. (2)

NCERT 12th Page No. 233

106. DNA polymorphism forms the basis of :

- (1) DNA finger printing
- (2) Both genetic mapping and DNA finger printing
- (3) Translation
- (4) Genetic mapping

Sol. (2)

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107. Given below are two statements :

Statement I :

Cleistogamous flowers are invariably autogamous

Statement II:

Cleistogamy is disadvantageous as there is no chance for cross pollination

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

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

Sol. (4)

NCERT 12th Page No. 28

108. In old trees the greater part of secondary xylem is dark brown and resistant to insect attack due to :

- (a) Secretion of secondary metabolites and their deposition in then lumen of vessels.
- (b) Deposition of organic compounds like tannins and resins in the central layers of stem.
- (c) Deposition of suberin and aromatic substances in the outer layer of stem.
- (d) Deposition of tannins, gum, resin and aromatic substances in the peripheral layers of stem.
- (e) Presence of parenchyma cells, functionally active xylem elements and essential oils.

Choose the correct answer from the options given below :

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

Sol. (4)

NCERT 11th Page No. 96

109. What is the net gain of ATP when each molecule of glucose is converted to two molecules of pyruvic acid ?

- (1) Six
- (2) Two
- (3) Eight
- (4) Four

Sol. (3)

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110. Which one of the following never occurs during mitotic cell division ?

- (1) Movement of centrioles towards opposite poles
- (2) Pairing of homologous chromosomes
- (3) Coiling and condensation of the chromatids
- (4) Spindle fibres attach to kinetochores of chromosomes

Sol. (2)

NCERT 11th Page No. 164

111. Production of Cucumber has increased manifold in recent years. Application of which of the following phytohormones has resulted in this increased yield as the hormone is known to produce female flowers in the plants :

- (1) Gibberellin
- (2) Ethylene
- (3) Cytokinin
- (4) ABA

Sol. (2)

NCERT 11th Page No. 250

112. Match List-I with List- II.

List -I

- (a) Manganese
- (b) Magnesium
- (c) Boron
- (d) Iron

List - II

- (i) Activates the enzyme catalase
- (ii) Required for pollen germination
- (iii) Activates enzymes of respiration
- (iv) Functions in splitting of water during photosynthesis

Choose the correct answer from the options given below :

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

Sol. (1)

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113. The flowers are Zygomorphic in :

- (a) Mustard
- (b) Gulmohar
- (c) Cassia
- (d) Datura
- (e) Chilly

Choose the correct answer from the options given below :

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

Sol. (1)

NCERT 11th Page No. 72

114. Which of the following is incorrectly matched ?

- (1) Ulothrix – Mannitol
- (2) Porphyra – Floridian Starch
- (3) Volvox – Starch
- (4) Ectocarpus - Fucoxanthin

Sol. (1)

NCERT 11th Page No. 32, 33

115. Given below are two statements :

Statements I :

Decomposition is a process in which the detritus is degraded into simpler substances by microbes.

Statement II :

Decomposition is faster if the detritus is rich in lignin and chitin

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

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

Sol. (2)

NCERT 11th Page No. 243, 244

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- 116.** The appearance of recombination nodules on homologous chromosomes during meiosis characterizes :
- (1) Bivalent (2) Sites at which crossing over occurs
(3) Terminalization (4) Synaptonemal complex

Sol. (2)

NCERT 11th Page No. 168

- 117.** Which one of the following plants does not show plasticity ?
- (1) Coriander (2) Buttercup
(3) Maize (4) Cotton

Sol. (3)

NCERT 11th Page No. 246

- 118.** Read the following statements and choose the set of correct statements :

- (a) Euchromatin is loosely packed chromatin
(b) Heterochromatin is transcriptionally active
(c) Histone octamer is wrapped by negatively charged DNA in nucleosome
(d) Histones are rich in lysine and arginine
(e) A typical nucleosome contains 400 bp of DNA helix

Choose the correct answer from the options given below :

- (1) (a), (c), (d) Only (2) (b), (e) Only
(3) (a), (c), (e) Only (4) (b), (d), (e) Only

Sol. (1)

NCERT 12th Page No. 99, 100

- 119.** The device which can remove particulate matter present in the exhaust from a thermal power plant is :
- (1) Incinerator (2) Electrostatic precipitator
(3) Catalytic Converter (4) STP

Sol. (2)

NCERT 12th Page No. 271

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120. The process of translation of mRNA to proteins begins as soon as :

- (1) The larger subunit of ribosome encounters mRNA
- (2) Both the subunits join together to bind with mRNA
- (3) The tRNA is activated and the larger subunit or ribosome encounters mRNA
- (4) The small subunit of ribosome encounters mRNA

Sol. (4)

NCERT 12th Page No. 115

121. Identify the incorrect statement related to pollination

- (1) Pollination by wind is more common among abiotic pollination
- (2) Flowers produce foul odours to attract flies and beetles to get pollinated
- (3) Moths and butterflies are the most dominant pollinating agents among insects
- (4) Pollination by water is quite rare in flowering plants

Sol. (3)

NCERT 12th Page No. 29, 30

122. The gaseous plant growth regulator is used in plants to :

- (1) Promote root growth and root hair formation to increase the absorption surface
- (2) Help overcome apical dominance
- (3) Kill dicotyledonous weeds in the fields
- (4) Speed up the malting process

Sol. (1)

NCERT 11th Page No. 250

123. Which one of the following produces nitrogen fixing nodules on the roots of *Alnus* ?

- | | |
|------------------|--------------------|
| (1) Frankia | (2) Rhodospirillum |
| (3) Beijerinckia | (4) Rhizobium |

Sol. (1)

NCERT 11th Page No. 102

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124. What amount of energy is released from glucose during lactic acid fermentation ?

- (1) More than 18% (2) About 10 %
(3) Less than 7 % (4) Approximately 15%

Sol. (3)

NCERT 11th Page No. 230

125. Habitat loss and fragmentation, over exploitation, alien species invasion and co-extinction are cause for :

- (1) Competition (2) Biodiversity loss
(3) Natality (4) Population explosion

Sol. (2)

NCERT 12th Page No. 264, 265

126. Given below are two statements : one is labelled as

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

Assertion (A) :

Polymerase chain reaction is used in DNA amplification

Reason (R) :

The ampicillin resistant gene is used as a selectable marker to check transformation

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

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

Sol. (1)

NCERT 12th Page No. 199, 200, 202

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127. Identify the correct set of statements :

- (a) The leaflets are modified into pointed hard thorns in Citrus and Bougainvillea
- (b) Axillary buds form slender and spirally coiled tendrils in cucumber and pumpkin
- (c) Stem is flattened and fleshy in Opuntia and modified to perform the function of leaves
- (d) Rhizophora shows vertically upward growing roots that help to get oxygen for respiration
- (e) Subaerially growing stems in grasses and strawberry help in vegetative propagation

Choose the correct answer from the options given below :

- (1) (a) and (d) Only
- (2) (b), (c) (d) and (e) Only
- (3) (a), (b), (d) and (e) Only
- (4) (b) and (c) Only

Sol. (2)

NCERT 11th Page No. 67, 68, 69, 71

128. "Girdling Experiment" was performed by plant physiologists to identify the plant tissue through which :

- (1) Food is transported
- (2) For both water and food transportation
- (3) Osmosis is observed
- (4) Water is transported

Sol. (1)

NCERT 11th Page No. 192

129. Which one of the following statement is not true regarding gel electrophoresis technique?

- (1) The separated DNA fragments are stained by using ethidium bromide.
- (2) The presence of chromogenic substrate gives blue coloured DNA bands on the gel.
- (3) Bright orange coloured bands of DNA can be observed in the gel when exposed to UV light.
- (4) The process of extraction of separated DNA strands from gel is called elution.

Sol. (2)

NCERT 12th Page No. 198

130. XO type of sex determination can be found in :

- (1) Birds
- (2) Grasshoppers
- (3) Monkeys
- (4) Drosophila

Sol. (2)

NCERT 12th Page No. 86

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131. Exoskeleton of arthropods is composed of :

- (1) Cellulose (2) Chitin
(3) Glucosamine (4) Cutin

Sol. (2)

NCERT 11th Page No. 149

132. Hydrocolloid carrageen is obtained from :

- (1) Phaeophyceae and Rhodophyceae (2) Rhodophyceae only
(3) Phaeophyceae only (4) Chlorophyceae and Phaeophyceae

Sol. (2)

NCERT 11th Page No. 33

133. Which one of the following is not true regarding the release of energy during ATP synthesis through chemiosmosis? It involves :

- (1) Breakdown of electron gradient
(2) Movement of protons across the membrane to the stroma
(3) Reduction of NADP to NADPH₂ on the stroma side of the membrane
(4) Breakdown of proton gradient

Sol. (1)

NCERT 11th Page No. 213, 214, 215

134. Which of the following is not observed during apoplastic pathway?

- (1) The movement does not involve crossing of cell membrane
(2) The movement is aided by cytoplasmic streaming
(3) Apoplast is continuous and does not provide any barrier to water movement
(4) Movement of water occurs through intercellular spaces and wall of the cells.

Sol. (2)

NCERT 11th Page No. 184, 185

135. Which one of the following plants shows vexillary aestivation and diadelphous stamens?

- (1) Pisum sativum (2) Allium cepa
(3) Solanum nigrum (4) Colchicum autumnale

Sol. (1)

NCERT 11th Page No. 74, 75

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Section – B

136. Transposons can be used during which one of the following ?

- (1) Gene silencing (2) Autoradiography
(3) Gene sequencing (4) Polymerase Chain Reaction

Sol. (1)

137. Which of the following occurs due to the presence of autosome linked dominant trait?

- (1) Myotonic dystrophy (2) Haemophilia
(3) Thalessemia (4) Sickle cell anaemia

Sol. (1)

NCERT 12th Page No. 89, 90, 91

138. While explaining interspecific interaction of population (+) sign is assigned for beneficial interaction, (-) sign is assigned for detrimental interaction and (0) for neutral interaction. Which of the following interactions can be assigned (+) for one species and (-) for another species involved in the interaction?

- (1) Amensalism (2) Commensalism
(3) Competition (4) Predation

Sol. (4)

NCERT 12th Page No. 232

139. In the following palindromic base sequences of DNA, which one can be cut easily by particular restriction enzyme?

- (1) 5' GAATTC 3' ; 3' CTTAAG 5' (2) 5' CTCAGT 3' ; 3' GAGTCA 5'
(3) 5' GTATTC 3' ; 3' CATAAG 5' (4) 5' GATACT 3' ; 3' CTATGA 5'

Sol. (1)

NCERT 12th Page No. 196, 197

140. The entire fleet of buses in Delhi were converted to CNG from diesel. In reference to this, which one of the following statements is false?

- (1) The same diesel engine is used in CNG buses making the cost of conversion low
(2) It is cheaper than diesel
(3) It can not be adulterated like diesel
(4) CNG burns more efficiently than diesel

Sol. (1)

NCERT 12th Page No. 272, 273

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141. If a geneticist uses the blind approach for sequencing the whole genome of an organism, followed by assignment of function to different segments, the methodology adopted by him is called as :

- (1) Gene mapping (2) Expressed sequence tags
(3) Bioinformatics (4) Sequence annotation

Sol. (4)

NCERT 12th Page No. 119

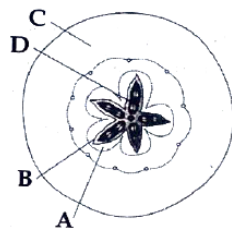
142. Addition of more solutes in a given solution will :

- (1) lower its water potential (2) make its water potential zero
(3) not affect the water potential all (4) raise its water potential

Sol. (1)

NCERT 11th Page No. 179, 180

143. Which part of the fruit, labelled in the given figure makes it a false fruit ?



- (1) B → Endocarp (2) C → Thalamus (3) D → Seed (4) A → Mesocarp

Sol. (2)

NCERT 12th Page No. 37

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

Assertion (A) :

Mendel's law of Independent assortment does not hold good for the genes that are located closely on the same chromosome.

Reason (R) :

Closely located genes assort independently.

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

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

Sol. (2)

NCERT 12th Page No. 80

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145. Read the following statements on lipids and find out correct set of statements :

- (a) Lecithin found in the plasma membrane is a glycolipid
- (b) Saturated fatty acids possess one or more $C=C$ bonds
- (c) Gingly oil has lower melting point, hence remains as oil in winter
- (d) Lipids are generally insoluble in water but soluble in some organic solvents
- (e) When fatty acid is esterified with glycerol, monoglycerides are formed

Choose the correct answer form the options given below :

- (1) (a), (d) and (e) Only
- (2) (c), (d) and (e) Only
- (3) (a), (b) and (d) Only
- (4) (a), (b) and (c) and

Sol. (2)

NCERT 11th Page No. 144

146. What is the role of large bundle sheath cells found around the vascular bundles in C_4 plants ?

- (1) To increase the number of chloroplast for the operation of Calvin cycle
- (2) To enable the plant to tolerate high temperature
- (3) To protect the vascular tissue form high light intensity
- (4) To provide the site for photorespiratory pathway

Sol. (1)

NCERT 11th Page No. 218

147. Match the plant with the kind of life cycle it exhibits :

	List-I		List-II
(a)	Spirogyra	(i)	dominant diploid sporophyte vascular plant, with highly reduced male or female gametophyte
(b)	Fern	(ii)	Dominant haploid free-living gametophyte
(c)	Funaria	(iii)	Dominant diploid sporophyte alternating with reduced gametophyte called prothallus
(d)	Cycas	(iv)	Dominant haploid leafy gametophyte alternating with partially dependent multicellular sporophyte

Choose the correct answer from the options given below :

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

Sol. (1)

NCERT 11th Page No. 34 - 39

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- 148.** Which one of following will accelerate phosphorus cycle?
 (1) Volcanic activity (2) Weathering of rocks
 (3) Rain fall and storms (4) Burning of fossil fuels

Sol. (2)
NCERT 12th Page No. 254

- 149.** The anatomy of springwood shows some peculiar features. Identify the correct set of statements about springwood.

- (a) It is also called as the earlywood
 (b) In spring season cambium produces xylem elements with narrow vessels
 (c) It is lighter in colour
 (d) The springwood along with autumnwood shows alternate concentric rings forming annual rings
 (e) It has lower density

Choose the correct answer from the options given below :

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

Sol. (1)
NCERT 11th Page No. 96

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

(a)	Metacentric chromosome	(i)	Centromere situated close to the end forming one extremely short and one very long arms
(b)	Acrocentric chromosome	(ii)	Centromere at the terminal end
(c)	Sub-metacent	(iii)	Centromere in the middle forming two equal arms of chromosomes
(d)	Telocentric Chromosome	(iv)	Centromere slightly away from the middle forming one shorter arm and one longer arm

Choose the correct answer from the options given below :

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

Sol. (4)
NCERT 11th Page No. 139

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ZOOLOGY

Section – A

151. In gene therapy of Adenosine Deaminase (ADA) deficiency, the patient requires periodic infusion of genetically engineered lymphocytes because :

- (1) Gene isolated from marrow cells producing ADA is introduced into at embryonic stages
- (2) Lymphocytes from patient's blood are grown in culture, outside the body.
- (3) Genetically engineered lymphocytes are not immortal cells.
- (4) Retroviral vector is introduced into these lymphocytes.

Sol. (3)

NCERT 12th Page No. 211

152. In-situ conservation refers to :

- (1) Conserve only high risk species
- (2) Conserve only endangered species
- (3) Conserve only extinct species
- (4) Protect and conserve the whole ecosystem

Sol. (4)

NCERT 12th Page No. 266

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

Osteoporosis is characterised by decreased bone mass and increased chances of fractures.

Reason (R) :

Common cause of osteoporosis is increased levels of estrogen.

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

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

Sol. (2)

154. Which of the following is a **correct** match for disease and its symptoms?

- (1) Tetany – high Ca^{2+} level causing rapid spasms.
- (2) Myasthenia gravis – Genetic disorder resulting in weakening and paralysis of skeletal muscle
- (3) Muscular dystrophy – An auto immune disorder causing progressive degeneration of skeletal muscle
- (4) Arthritis – Inflamed joints

Sol. (4)

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155. In the taxonomic categories which hierarchical arrangement in ascending order is **correct** in case of animals?

- (1) Kingdom, Class, Phylum, Family, Order, Genus, Species
- (2) Kingdom, Order, Class, Phylum, Family, Genus, Species
- (3) Kingdom, Order, Phylum, Class, Family, Genus, Species
- (4) Kingdom, Phylum, Class, Order, Family, Genus, Species

Sol. (4)

NCERT 11th Page No. 10

156. Regarding Meiosis, which of the statements is **incorrect**?

- (1) DNA replication occurs in S phase of Meiosis-II
- (2) Pairing of homologous chromosomes and recombination occurs in Meiosis-I
- (3) Four haploid cells are formed at the end of Meiosis-II
- (4) There are two stages in Meiosis, Meiosis-I and II

Sol. (1)

NCERT 11th Page No. 167

157. If the length of a DNA molecule is 1.1 metres, what will be the approximate number of base pairs?

- (1) 6.6×10^9 bp
- (2) 3.3×10^6 bp
- (3) 6.6×10^6 bp
- (4) 3.3×10^9 bp

Sol. (4)

NCERT 12th Page No. 99

158. Given below are two statements :

Statement I :

The coagulum is formed of network of threads called thrombins.

Statements II :

Spleen is the graveyard of erythrocytes.

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

- (1) Both **Statement I** and **Statement II** are incorrect
- (2) **Statement I** is correct but **Statement II** is incorrect
- (3) **Statement I** is incorrect but **Statement II** is correct
- (4) Both **Statement I** and **Statement II** are correct

Sol. (3)

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159. Given below are two statements :

Statement I :

Mycoplasma can pass through less than 1 micron filter size.

Statement II :

Mycoplasma are bacteria with cell wall

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

- (1) Both **Statement I** and **Statement II** are incorrect
(2) **Statement I** is correct but **Statement II** is incorrect
(3) **Statement I** is incorrect but **Statement II** is correct
(4) both **Statement I** and **Statement II** are correct

Sol. (2)

NCERT 11th Page No. 20

160. If '8' Drosophila in laboratory population of '80' died during a week, the death rate in the population is _____ individuals per Drosophila per week.

- (1) 10 (2) 1.0 (3) zero (4) 0.1

Sol. (4)

NCERT 12th Page No. 83

161. A dehydration reaction links two glucose molecules to produce maltose. If the formula for glucose is $C_6H_{12}O_6$ then what is the formula for maltose ?

- (1) $C_{12}H_{24}O_{12}$ (2) $C_{12}H_{22}O_{11}$ (3) $C_{12}H_{24}O_{11}$ (4) $C_{12}H_{20}O_{10}$

Sol. (2)

162. Tegmina in cockroach, arises from :

- (1) Mesothorax
(2) Metathorax
(3) Prothorax and Mesothorax
(4) Prothorax

Sol. (1)

163. Identify the microorganism which is responsible for the production of an immunosuppressive molecule cyclosporin A :

- (1) Clostridium butylicum (2) Aspergillus niger
(3) Streptococcus cerevisiae (4) Trichoderma polysporum

Sol. (4)

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164. Nitrogenous waste is excreted in the form of pellet or paste by :
- (1) Salamandra (2) Hippocampus
(3) Pavo (4) Ornithorhynchus

Sol. (3)

165. Which of the following functions is not performed by secretions from salivary glands ?
- (1) Digestion of complex carbohydrates
(2) Lubrication of oral cavity
(3) Digestion of disaccharides
(4) Control bacterial population in mouth

Sol. (3)

166. Breeding crops with higher levels of vitamins and minerals or higher proteins and healthier fats is called ?
- (1) Bio-remediation (2) Bio-fortification
(3) Bio-accumulation (4) Bio-magnification

Sol. (2)

NCERT 12th Page No. 166

167. Which of the following is not the function of conduction part of respiratory system ?
- (1) Inhaled air is humidified
(2) Temperature of inhaled air is brought to body temperature
(3) Provides surface for diffusion of O₂ and CO₂
(4) It clears inhaled air from foreign particles

Sol. (3)

168. Natural selection where more individuals acquire specific character value other than the mean character value, leads to :
- (1) Directional change (2) Disruptive change
(3) Random change (4) Stabilising change

Sol. (1)

169. Which of the following statements with respect to endoplasmic reticulum is **incorrect** ?
- (1) SER is devoid of ribosomes
(2) In prokaryotes only RER are present
(3) SER are the sites for lipid synthesis
(4) RER has ribosomes attached to ER

Sol. (2)

NCERT 11th Page No. 133

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170. Given below are statements :

Statement I :

Autoimmune disorder is a condition where body defense mechanism recognizes its own cells as foreign bodies.

Statement II :

Rheumatoid arthritis is a condition where body does not attack self cells.

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

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

Sol. (2)

171. Under normal physiological conditions in human being every 100ml of oxygenated blood can deliver _____ml of O₂ to the tissues.

- (1) 5 ml
- (2) 4 ml
- (3) 10 ml
- (4) 2 ml

Sol. (1)

172. In an E.coli strain i gene gets mutated and its product can not bind the inducer molecule. If growth medium is provided with lactose, what will be the outcome ?

- (1) z, y, a genes will be transcribed
- (2) z, y, a genes will not be translated
- (3) RNA polymerase will bind the promoter region
- (4) Only z gene will get transcribed

Sol. (2)

NCERT 12th Page No. 116, 117

173. Which of the following is present between the adjacent bones of the vertebral column ?

- (1) Cartilage
- (2) Areolar tissue
- (3) Smooth muscle
- (4) Intercalated discs

Sol. (1)

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174. Given below are two statements : one is labelled as assertion (A) and the other is labelled as Reason (R).

Assertion (A)

All vertebrates are chordates but all chordates are not vertebrates.

Reason (R) :

Notochord is replaced by vertebral column in the adult vertebrates.

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

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

Sol. (4)

175. Given below are two statements :

Statement I :

The release of sperms into the seminiferous tubules is called spermiation.

Statement II :

Spermiogenesis is the process of formation of sperm from spermatogonia.

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

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

Sol. (2)

176. Identify the asexual reproductive structure associated with Penicillium :

- (1) Conidia
- (2) Gemmules
- (3) Buds
- (4) Zoospores

Sol. (1)

NCERT 12th Page No. 6

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177. Which of the following statements are true for spermatogenesis but do not hold true for Oogenesis ?
- (a) It results in the formation of haploid gametes
 - (b) Differentiation of gamete occurs after the completion of meiosis
 - (c) Meiosis occurs continuously in a mitotically dividing stem cell population.
 - (d) It is controlled by the Luteinising hormone (LH) and Follicle Stimulating Hormone (FSH) secreted by the anterior pituitary
 - (e) It is initiated at puberty

Choose the most appropriate answer from the options give below :

- (1) (b) and (c) only
- (2) (b), (d) and (e) only
- (3) (b), (c) and (e) only
- (4) (c) and (e) Only

Sol. (3)

178. Given below are two statements :

Statement I :

Restriction endonucleases recognise specific sequence to cut DNA known as palindromic nucleotide sequence.

Statement II :

Restriction endonucleases cut the DNA strand a little away from the centre of the palindromic site

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

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

Sol. (4)

NCERT 12th Page No. 196, 197

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179. Lippe's loop is a type of contraceptive used as :

- (1) Vault barrier (2) Non-Medicated IUD
(3) Copper releasing IUD (4) Cervical barrier

Sol. (2)

180. Detritivores breakdown detritus into smaller particles. This process is called :

- (1) Fragmentation (2) humification
(3) Decomposition (4) Catabolism

Sol. (1)

NCERT 12th Page No. 243, 244

181. Which of the following is not a connective tissue ?

- (1) Adipose tissue (2) Cartilage
(3) Neuroglia (4) Blood

Sol. (3)

NCERT 11th Page No. 102, 103

182. In which of the following animals, digestive tract has additional chambers like crop and gizzard ?

- (1) Bufo, Balaenoptera, Bangarus
(2) Catla, Columba, Crocodilus
(3) Pavo, Psittacula, Corvus
(4) Corvus, Columba, Chameleon

Sol. (3)

NCERT 11th Page No. 58, 59

183. Given below are two statements :

Statement I :

Fatty acids and glycerols cannot be absorbed into the blood.

Statement II :

Specialized lymphatic capillaries called lacteals carry chylomicrons into lymphatic vessels and ultimately into the blood.

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

- (1) Both **Statement I** and **Statement II** are incorrect
(2) **Statement I** is correct but **Statement II** is incorrect
(3) **Statement I** is incorrect but **Statement II** is correct
(4) Both **Statement I** and **Statement II** are correct

Sol. (4)

NCERT 11th Page No. 265

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184. Select the incorrect statement with reference to mitosis :

- (1) Spindle fibres attach to centromere of chromosomes
- (2) Chromosomes decondense at telophase.
- (3) Splitting of centromere occurs at anaphase.
- (4) All the chromosomes lie at the equator at metaphase.

Sol. (1)

NCERT 11th Page No. 164, 165, 167

185. At which stage of life the oogenesis process is initiated ?

- (1) Embryonic development stage
- (2) Birth
- (3) Adult
- (4) Puberty

Sol. (1)

NCERT 12th Page No. 48

Section-B

186. The recombination frequency between the genes a & c is 5%, b & c is 15%, b & d is 9%, a & b 20%, c & d is 24% and a & d is 29%. What will be the sequence of these genes on a linear chromosome ?

- (1) d, b, a, c
- (2) a, b, c, d
- (3) a, c, b, d
- (4) a, d, b, c

Sol. (3)

NCERT 12th Page No. 83, 84

187. Which one of the following statements is correct ?

- (1) The tricuspid and the bicuspid valves open due to the pressure exerted by the simultaneous contraction of the atria
- (2) Blood moves freely from atrium to the ventricle during joint diastole.
- (3) Increased ventricular pressure causes closing of the semilunar valves.
- (4) The atrio-ventricular node (AVN) generates an action potential to stimulate atrial contraction

Sol. (2)

NCERT 11th Page No. 284, 285

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188. Given below are two statements :

Statement I :

In a scrubber the exhaust from the thermal plant is passed through the electric wires to charge the dust particles.

Statement II :

Particulate matter (PM 2.5) can not be removed by scrubber but can be removed by an electrostatic precipitator.

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

- (1) Both **Statement I** and **Statement II** are incorrect
- (2) **Statement I** is correct but **Statement II** is incorrect
- (3) **Statement I** is incorrect but **Statement II** is correct
- (4) Both **Statement I** and **Statement II** are correct

Sol. (3)

NCERT 12th Page No. 271

189. Match List-I with List-II

List-I

- (a) Bronchioles
- (b) Goblet cell
- (c) Tendons
- (d) Adipose Tissue

List-II

- (i) Dense Regular Connective tissue
- (ii) Loose Connective Tissue
- (iii) Glandular Tissue
- (iv) Ciliated Epithelium

Choose the correct answer from the options given below :

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

Sol. (4)

NCERT 11th Page No. 102, 103

190. Ten E.coli cells with ¹⁵N-dsDNA are incubated in medium containing ¹⁴N nucleotide. After 60 minutes, how many E.coli cells will have DNA totally free from ¹⁵N?

- (1) 40 cells
- (2) 60 cells
- (3) 80 cells
- (4) 20 cells

Sol. (2)

NCERT 12th Page No. 104, 105

191. Select the incorrect statement regarding synapses :

- (1) Electrical current can flow directly from one neuron into the other across the electrical synapse.
- (2) Chemical synapses use neurotransmitters
- (3) Impulse transmission across a chemical synapse is always faster than that across an electrical synapse.
- (4) The membranes of presynaptic and postsynaptic neurons are in close proximity in an electrical synapse.

Sol. (3)

NCERT 11th Page No. 319

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192. Which of the following are **not** the effects of parathyroid hormone ?

- (a) Stimulates the process of bone resorption
- (b) Decreases Ca^{2+} level in blood
- (c) Reabsorption of Ca^{2+} by renal tubules
- (d) Decreases the absorption of Ca^{2+} from digested food
- (e) Increases metabolism of carbohydrates

Choose the most appropriate answer from the options given below :

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

Sol. (1)

NCERT 11th Page No. 334

193. Which of the following statements is not true ?

- (1) Sweet potato and potato is an example of analogy
- (2) Homology indicates common ancestry
- (3) Flippers of penguins and dolphins are a pair of homologous organs
- (4) Analogous structures are a result of convergent evolution

Sol. (3)

NCERT 12th Page No. 130, 131

194. If a colour blind female marries a man whose mother was also colour blind , what are the chances of her progeny having colour blindness ?

- (1) 50 %
- (2) 75 %
- (3) 100 %
- (4) 25 %

Sol. (3)

NCERT 12th Page No. 89

195. Which of the following is a **correct** statement ?

- (1) Bacteria are exclusively heterotrophic organisms
- (2) Slime moulds are saprophytic organisms classified under Kingdom Monera.
- (3) Mycoplasma have DNA, Ribosome and cell wall
- (4) Cyanobacteria are a group of autotrophic organisms classified under kingdom Monera.

Sol. (4)

NCERT 11th Page No. 20

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196. Match List-I with List-II.

List-I (Biological Molecules)	List-II (Biological functions)
(a) Glycogen	(i) Hormone
(b) Globulin	(ii) Biocatalyst
(c) Steroids	(iii) Antibody
(d) Thrombin	(iv) Storage product

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

Sol. (3)

NCERT 11th Page No. 130, 131

197. Which of the following is **not** a desirable feature of a cloning vector?

- (1) Presence of a marker gene. (2) Presence of single restriction enzyme site
 (3) Presence of two or more recognition sites (4) Presence of origin of replication

Sol. (3)

NCERT 12th Page No. 198, 199, 200

198. Match List-I with List-II with respect to methods of Contraception and their respective actions.

List-I	List-II
(a) Diaphragms	(i) Inhibit ovulation and Implantation
(b) Contraceptive Pills	(ii) Increase phagocytosis of sperm within uterus
(c) Intra Uterine Devices	(iii) Absence of Menstrual cycle and ovulation following parturition
(d) Lactational Amenorrhoea	(iv) They cover the cervix blocking the entry of sperms

Choose the correct answer from the options given below :

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

Sol. (1)

NCERT 12th Page No. 60, 61

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199. Statements related to human insulin are given below:

Which statement (s) is/are **correct** about genetically engineered Insulin?

- (a) Pro-hormone insulin contain extra stretch of C-peptide.
- (b) A-peptide and B-peptide chains of insulin were produced separately in E.coli, extracted and combined by creating disulphide bond between them.
- (c) Insulin used for treating Diabetes was extracted from Cattles and Pigs.
- (d) Pro-hormone Insulin needs to be processed for converting into a mature and functional hormone.
- (e) Some patients develop allergic reactions to the foreign insulin.

Choose the **most appropriate** answer from the options given below :

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

Sol. (1)

NCERT 12th Page No. 210, 211

200. Select the **incorrect** statement with respect to acquired immunity.

- (1) Anamnestic response is elicited on subsequent encounters with the same pathogen.
- (2) Anamnestic response is due to memory of first encounter.
- (3) Acquired immunity is non-specific type of defense present at the time of birth
- (4) Primary response is produced when our body encounters a pathogen for the first time.

Sol. (3)

NCERT 12th Page No. 151

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जेईई और नीट की तैयारी के लिए 1.4 लाख स्टूडेंट्स पहुंचे, एक लाख के और आने की उम्मीद

कोटा क्लासरूम कोचिंग का क्रेज: कोविड के बाद फिर लौटी शिक्षा नगरी की सैनिक



कोटा
शहर के लिए अच्छी खबर है। दो साल कोविड की मार झेलने के बाद कोटा कोचिंग में एक बार फिर रौनक लौट आई है। देशभर से स्टूडेंट्स इंजीनियरिंग व मेडिकल में प्रवेश परीक्षाओं की तैयारी के लिए एडमिशन ले रहे हैं। इससे हॉस्टल और मैस संचालक से लेकर डेयरी, फूट-जूस, चाय-कॉफी थडी वाले, स्टेशनरी और ऑटो चालक तक, सभी खुश हैं। अच्छे एडमिशन से कोटा का लोकल बिजनेस बढ़ेगा। दरअसल कोचिंग के लिए आने वाले बच्चों का पूरे साल का खर्चा करीब द्वाइ से तीन लाख रुपए होता है। यह राशि हॉस्टल, कोचिंग, मैस और पीजी मालिक से लेकर फुटकर व्यापारियों और स्थानीय दुकानदारों तक पहुंचती है। एक साल कोविड की मार झेलने के बाद कोटा कोचिंग में एक बार फिर रौनक लौट आई है। देशभर से स्टूडेंट्स इंजीनियरिंग व मेडिकल में प्रवेश परीक्षाओं की तैयारी के लिए एडमिशन ले रहे हैं। इससे हॉस्टल और मैस संचालक से लेकर डेयरी, फूट-जूस, चाय-कॉफी थडी वाले, स्टेशनरी और ऑटो चालक तक, सभी खुश हैं। इससे हॉस्टल और मैस संचालक से लेकर डेयरी, फूट-जूस, चाय-कॉफी थडी वाले, स्टेशनरी और ऑटो चालक तक, सभी खुश हैं।

व्यापारियों और स्थानीय दुकानदारों तक पहुंचती है। एक साल कोविड की मार झेलने के बाद कोटा कोचिंग में एक बार फिर रौनक लौट आई है। देशभर से स्टूडेंट्स इंजीनियरिंग व मेडिकल में प्रवेश परीक्षाओं की तैयारी के लिए एडमिशन ले रहे हैं। इससे हॉस्टल और मैस संचालक से लेकर डेयरी, फूट-जूस, चाय-कॉफी थडी वाले, स्टेशनरी और ऑटो चालक तक, सभी खुश हैं। इससे हॉस्टल और मैस संचालक से लेकर डेयरी, फूट-जूस, चाय-कॉफी थडी वाले, स्टेशनरी और ऑटो चालक तक, सभी खुश हैं।

हॉस्टल फुल होने के आसार: कोटा शहर में करीब दो से सवा दो लाख विद्यार्थियों के लिए हॉस्टल पीजी रुम हैं। नए बच्चों की बात कर तो अभी तक 1.40 लाख से अधिक बच्चे आ चुके हैं। ये हॉस्टल में रह रहे हैं। अभी बच्चे आते रहेंगे और इस तरह कोटा के सभी हॉस्टल फुल हो जाएंगे। ज्यादातर विद्यार्थी हिन्दी पढ़ी के वेसे तो देश के सभी 28 राज्यों और 8 केंद्र शासित प्रदेशों से स्टूडेंट कोटा पहुंचते हैं लेकिन ज्यादातर विद्यार्थी हिन्दी पढ़ी के 6 राज्यों से ही होते हैं। वर्ष 2019 में विहार 32 हजार, उत्तर प्रदेश 28 हजार, राजस्थान से 27 हजार विद्यार्थी थे इस के अलावा 1 व 1 मध्य प्रदेश 1, छत्तीसगढ़, गुजरात और महाराष्ट्र से 27 हजार, पंजाब, हरियाणा और हिमाचलप्रदेश से 6000 और पश्चिम बंगाल और ओडिशा से 7500 छात्र-छात्राएं कोचिंग के लिए कोटा पहुंचे।

जानिए, क्यों उमड़ रहा स्टूडेंट्स का रैला

कोटा
सफलता कोटा की फिजा में ही घुली हुई है। यहाँ काबिल फेकल्टी ही नहीं, जहाँ विद्यार्थियों की विद्यार्थी कोटा आ चुके हैं। सुरक्षित वातावरण और अन्य सुविधाओं के कारण सफलता के लिए खास इको सिस्टम है। स्टूडेंट्स फ्रेंडली माहौल के कारण देशभर-कश्मीर से कन्याकुमारी और अरुणाचल से कच्छ तक के स्टूडेंट्स इंजीनियरिंग व मेडिकल प्रवेश परीक्षाओं की तैयारी करने के लिए यहाँ आकर कोचिंग बना रहे हैं। वर्ष 2019 में 1.65 लाख विद्यार्थी कोटा आए थे। कोचिंग विद्यार्थी बहुत कम पहुंचे हैं। इसके बाद कोरोना के कारण कोचिंग विद्यार्थी बहुत कम पहुंचे हैं। कोचिंग ऑनलाइन आधारित हो गई थी, लेकिन स्क्रीन टाइम बढ़ने और नेट से होने वाला डिस्टर्बन्स के कारण ज्यादातर स्टूडेंट्स और पेरेंट्स ऑनलाइन पढ़ाई से संतुष्ट नहीं हैं। क्लासरूम कोचिंग में मिलाने वाला शिक्षक का पूरा ध्यान और कड़ी प्रतिक्रिया भी यहाँ नहीं मिलती। ऐसे में विद्यार्थी फिर से क्लासरूम कोचिंग का रुख कर रहे हैं और कोटा क्लासरूम के प्रति क्रेज दिखाई भी दे रहा है। अब तक करीब 1.40 लाख विद्यार्थी कोटा आ चुके हैं। देश में सभी स्टेट बोर्ड एग्जाम समान हो गए हैं। सीबीएसई के भी दसवीं बोर्ड के एग्जाम हो चुके हैं और 12वीं के एग्जाम भी निपट रहे हैं और कोचिंग इंस्टीट्यूट नए नए बैच शुरू कर रहे हैं।

आपके संकल्प को सफलता में बदलने को तैयार हैं हम

कोटा
आपके विश्वास ने मोशन को कोटा में जेईई, नीट और ओलंपियाड की तैयारी के लिए सबसे तेजी से बढ़ने वाला और सर्वश्रेष्ठ कोचिंग संस्थान बना दिया है। मोशन हमारे लिए किसी इंस्टीट्यूट या संस्था का नाम नहीं है। हमारे लिए यह मिशन, जिम्मेदारी और सफलता का संकल्प शिक्षा के क्षेत्र में बनना है। माता पीढ़ी के करियर के सपनों को साकार करने का।



हमारे लिए हर विद्यार्थी खास है। हम चाहते हैं कि विद्यार्थियों को अच्छे से अच्छा माहौल मिले और वे अपने मकसद में कामयाब हों। इसलिए हम हमेशा उनका खास ख्याल रखते हैं, उनके सपने से लेकर सफलता तक के सफर में साथ रहते हैं। उनकी हर समस्या और समस्या होती है और हम उनके समाधान के लिए हर समय तैयार रहते हैं। लोकडाउन में जब

सब कुछ थम गया तो भी हमने विद्यार्थियों का पूरा ध्यान रखा, हर मदद की। पढ़ाई का नुकसान नहीं कर्णधार तैयार करते हैं जो देश को फेकल्टीज के मार्गदर्शन की टीम के रूप में हमने अपने लक्ष्य व्याख्या की। जिन विद्यार्थियों ने कोविड में अपना सब कुछ खो दिया, मोशन उनका भी सबल बना। विद्यार्थियों और अभिभावकों का विश्वास ही हमारी पूंजी है।

विस्तार से पहले हमारे लिए सेवा का जज्बा है। हम डॉक्टर इंजीनियर ही नहीं, देश के कर्णधार तैयार करते हैं जो देश को ऊंचाई पर ले जाएंगे। आज एक दिन कोटा कोचिंग की टीम के रूप में हमने अपने लक्ष्य तय कर रहे हैं, उन पर जोश और कोविड के साथ थाम कर रहे हैं और नए आयाम स्थापित कर रहे हैं। विद्यार्थियों की कामयाबी में उनकी मेहनत और लगन के अलावा

15 साल पहले एक कमरे की फिजिक्स क्लास से आगाज, हजारों जुड़े हैं आज

सक्सेस स्टोरी : सफलता के सपने साकार होते हैं यहाँ

कोटा
मोशन एजुकेशन का सफर 7 दिसंबर 2007 को 10 हजार रुपए और एक कमरे की फिजिक्स क्लास के साथ शुरू हुआ था। 15 साल में आज देशभर में मोशन के 55 से अधिक सेंटर कार्य कर रहे हैं। 2022-23 में 100 केंद्र शुरू करने की योजना है। मोशन परिवार 1100 कर्मचारियों, 500 से अधिक शिक्षकों, दो लाख से अधिक विद्यार्थियों का हो गया और हम 50 हजार से अधिक विद्यार्थियों की सफलता के लिए प्रतिबद्ध हैं।

प्रोफेशनल्स फेकल्टीज के रूप में सेवाएं दे रहे हैं। हमारे इस लक्ष्य कि शुरुआत केवल आईआईटी डिजीवन के साथ हुई थी किन्तु आज मोशन एजुकेशन मेडिकल, इंजीनियरिंग के साथ-साथ एनटीसी और ओलंपियाड्स की क्लासरूम और ऑनलाइन कोचिंग के साथ शुरू हो गई है। मोशन परिवार 1100 कर्मचारियों, 500 से अधिक शिक्षकों, दो लाख से अधिक विद्यार्थियों का हो गया और हम 50 हजार से अधिक विद्यार्थियों की सफलता के लिए प्रतिबद्ध हैं।



अंकलेश्वर, अंधिकापुर, औरंगाबाद, भुज, भिलाई, भुवनेश्वर, चेन्नई, चंद्रपुर, कोयंबटूर, धौलपुर, दुर्ग, दुर्गपुर, गुवाहाटी, ग्वालियर, हिमाचलनगर, हमीरपुर, हावड़ा, हैदराबाद, जगदलपुर, जम्मू, जलगांव, जूड़, मुंबई, कटुआ, कोहापुर, कोलकाता, कोरबा, लखनऊ, लातूर, मालेगांव, मेहसाणा, मुजफ्फरपुर, नडियाद, नागपुर, नासिक, पालनपुर, पाटन गुजरात, पड़कोडूर, पुलवागा, रायपुर, रांची, रोवा, राउरकेला, श्रीसिंग भुवनेश्वर, त्रिपुर, वडोदरा

बच्चों के लिए पॉजिटिव माहौल
मेरा वेद इंजीनियरिंग बनना चाहता है। उसको लेकर यहाँ आया हूँ। कोटा वाकई शिक्षा की काशी है। इसमें पूरा देश सामान्य हुआ है। यहाँ चारों ओर स्टूडेंट, हॉस्टल, कोचिंग का माहौल नजर आता है। लगता है यह शहर स्टूडेंट के सपनों को साकार करने के लिए ही बना है। कोटा कोचिंग की अच्छी बात है कि यहाँ पेरेंट्स की पढ़ाई और उपस्थिति के बारे में लगातार अपडेट रखा जाता है।
मनप्रदीप सिंह, जालनघर, पंजाब
ऑनलाइन पढ़ाई से बेहो हो गए थे बच्चे कोरोना काल में ऑनलाइन पढ़ाई बच्चों के लिए बेरिंग रहा। जब फेस टू फेस बच्चा ऑफलाइन क्लासरूम में पढ़ता है, तब बच्चे का एनर्जी माहौल काफी हाई होता है। कभीकभार एनवायरनमेंट भी यहाँ होता है। उम्मीद है कि कोटा में जिस तरह से पहले पढ़ाई होती रही है, इस बार भी अच्छी पढ़ाई यहाँ पर होगी। सभी कोटावासी बच्चों का यहाँ पर अच्छा ध्यान रखेंगे।
खगेन कोलिता, गोलाघाट अरम



DAILY LIVE FREE REVISION CLASSES
on Motion NEET YouTube Channel
From : 1st August 2022

शिक्षक का सेमिनार, ऐसी भीड़ पहली बार

पटना में ऐतिहासिक रहा एनवी सर का मेगा करियर काउंसलिंग शिविर



वे न नेता हैं और न ही अभिनेता लेकिन लोकप्रियता गजब नजर आ रही थी। साढ़े पांच हजार लोगों की श्रमता वाला पटना का वापू समागार खचाखच भरा था। जी हाँ, हम बात कर रहे हैं शिक्षक और मोशन एजुकेशन के फाउंडर, सीईओ एनवी सर का मेगा करियर काउंसलिंग व मोटिवेशनल शिविर की।

पटना के गांधी मैदान के बापू समागार का। सेमिनार में भाग लेने वाले स्थानीय जानकारों का कहना था कि पटना में अपनी तरह का यह पहला आयोजन था। विद्यार्थियों को संबोधित करते हुए नितिन विजय ने कहा कि मुझे पढ़ाना पसन्द था, इसलिए मैंने आईआईटी में पढ़कर भी शिक्षक की भूमिका स्वीकार की। मोशन

एजुकेशन हमारे जोश और जज्बे की कहानी है। इसकी शुरुआत 7 दिसम्बर 2007 को मात्र एक कमरे की फिजिक्स क्लास से हुई थी। तब मेरे पास डिग्री के अलावा केवल परिवार से मिले संस्कार, विद्यार्थियों की मदद का मिशन और निरंतर प्रयास का जज्बा ही था लेकिन आज मोशन लाखों

सेमिनार में पहुंचे विद्यार्थी और अभिभावक बोले

शोशल मीडिया पर एनवी सर के वीडियो देखते थे। उनके पटना आने की खबर से ही हम बहुत उत्साहित थे। उनका एनवी सर का हमारे लिए बहुत बड़ा बात है। 9 अप्रैल की रात को एक्सप्रेस में हमको नींद नहीं आई। सेमिनार में उनसे रू-ब-रू होकर मन में कुछ कर गुजरने का होसला जागा है और लग रहा है कि ऑल इंडिया फस्ट रैंक मेरी ही होगी। धन्यवाद एनवी सर।

ऋषभकुमार भगत, सेमिनार के बाद

सेमिनार में आकर अच्छा लगा। सेमिनार में बच्चों की शिक्षा के बारे में बताया है। यहाँ आकर सोचने का मौका मिला कि कैसे पढ़ाना है, आगे बढ़ाना है।

एक अभिभावक, सेमिनार के बाद

जेईई की तैयारी के लिए कोटा जाना चाहता था। पहले थोड़ा नर्वस था अनजान शहर में लाइफ कैसे चलेगी लेकिन एनवी सर को सुनकर मेरा असमंजस दूर हो गया। अब मैं कोटा जाकर कोविंग लूंगा।

सुमित रंजन, सेमिनार के बाद

सच कहूँ, इतना बड़ा सेमिनार और ऐसा प्रेम जीवन में पहली बार मिला है। इसके लिए कृतज्ञ महसूस कर रहा हूँ। एक शिक्षक के नाते इतना प्रेम मिलेगा सोचा भी ना था।

नितिन विजय, (फाउंडर और सीईओ, मोशन एजुकेशन)

परवरिश भावनात्मक जुड़ाव से ही आएगा बच्चों में बदलाव

कोटा
हम अपने बच्चे को जैसा बनाना चाहते हैं, वैसे पहले हम बर्न। मिसाल के लिए यदि कोई काम आपकी पसंद के मुताबिक नहीं होता है तो आप गुस्सा जाहिर करते हैं। मानकर चलें कि बच्चे के मन की नहीं होगी तो वह भी गुस्सा ही करेगा। घर-घर की कहानी है... ज्यादातर अभिभावक परेशान रहते हैं... कहते हैं बच्चे बात नहीं मानते, गुस्सा करते हैं, टीवी, मोबाइल, गेमिंग में लगे रहते हैं, पढ़ते नहीं...वे बच्चों को समझाते, धमकाते और कई बार मारपीट भी करते हैं...पर सुधार नहीं आता... उन्हें तो क्या करें...वे तब नहीं कर पाते, सोचते हैं आखिर कमी कहाँ रहती है...।

दरअसल आप बहुत सफल उद्योगपति, अधिकारी, डॉक्टर, इंजीनियर या कुछ भी हो सकते हैं। लेकिन करियर की सफलता



सुशीला विजय, डायरेक्टर मोशन एजुकेशन



डॉ. स्वाति विजय, डायरेक्टर मोशन एजुकेशन

ऐसे आया बदलाव:
बदलाव की प्रक्रिया को हम एक उदाहरण से समझते हैं। कोई खूब गुच्छा खाता है। उसको भी पता है कि इससे कैंसर हो सकता है लेकिन वह फिर भी गुच्छा खाता है। लेकिन एक दिन गुच्छा खाने वाला उसका खास दोस्त कैंसर से चल बसता है। अबानक उसमें

हम औरजिनल कॉपी है तो बच्चा हमको देखकर सीखता है। वह हमको हम अपने बच्चे को जैसा बनाना चाहते हैं, पहले हम बर्न। बच्चे में बदलाव चाहते हैं तो शुरुआत खुद से करनी होगी। उदाहरण के लिए यदि कोई काम आपकी पसंद के मुताबिक नहीं होता है तो आप गुस्सा जाहिर करते हैं। मानकर चलें कि बच्चे के मन की नहीं होगी तो वह भी गुस्सा ही करेगा।

बच्चों से जुड़ें:
बच्चा आपकी बात सुने और माने इसके लिए आपस में भावनात्मक जुड़ाव जरूरी है। आपका बच्चे से इमोशनल कनेक्शन होगा तो उसके मन में स्वाभाविक प्यार और सम्मान होगा और वह आपकी कक्षा सुनेगा। आप प्यार, धन्यवाद बताना शुरू करें... इसके लिए जरूरी है कि बच्चे को समय दें।

रोज 20 से 30 मिनट वह काम करें जिससे बच्चा भावनात्मक रूप से आपसे जुड़े। उससे बात करना, उसके साथ किताबें पढ़ना, उसकी पसंद की फिल्म देखना, अंतासीरी या कुर्ची, लुका-छिपी, गिलो फाईटिंग जो भी उसको अच्छा लगेगा तो, वह करें। यह बच्चे और आपके बीच जरूर प्यार सा रिश्ता जगाएगा।

अकेले में निपटारा झगड़े:
बच्चे के लिए आप आइडल हैं या उन्हें कि आप उसके भगवान की तरह हैं। उसके सामने बहस, झगड़ा ना करें। इससे उसे घुरा महसूस होगा। उसके मन में आपके लिए सम्मान नहीं रहेगा। जरूरी है कि मम्मी-पापा एक टीम में नजर आएँ। ज्यादातर परिवारों में होता यह है कि मम्मी माना करती है तो पापा डिमांड पूरी कर देते हैं। मम्मी-पापा सख्ती दिखाते हैं तो

दादा-बादी या दूसरे बड़े बच्चों की मांग पूरी कर देते हैं। ऐसे में होता यह है कि घर में बड़े एक दूसरे पर आपस लगाने लगते हैं कि आपकी वजह से बच्चा बिगड़ रहा है। बच्चों का ऐसा बर्ताव बच्चों के जीवन की लय बिगाड़ता है। इसलिए परिवार में तालमेल जरूरी है। याद रखें—कोन सही है, यह इतना महत्वपूर्ण नहीं है। जरूरी यह है कि बच्चे के लिए क्या सही है।

पढ़ाई को लेकर दबाव नहीं बनाएं:
आप ही क्या कोई अभिभावक पसंद नहीं करेगा कि बच्चा 100 फीसदी नंबर लाए पर उनका सम्मान नहीं करे, उनसे प्यार नहीं करें। आप बच्चे को पढ़ाई में अहमित्तव तो बताएँ पर इसका लिए दबाव नहीं बनाएं। उसे समझाए कि फोकस रहकर पूरी कोशिश करें तो उसके बाद जो भी हासिल

मायबिजकिड : लाइफ स्किल्स सीखकर करें सफलता का आगाज

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कोटा
हमारा एजुकेशन सिस्टम ऐसा है कि जो सर्वोत्कृष्ट की जानकारी तो देता है लेकिन व्यावहारिक दुनियाँ से कैसे निपटना... इसके बारे में कुछ नहीं बताया जाता। जब आप अच्छे डॉक्टर,

इंजीनियर, सीए, विधि विशेषज्ञ जैसे प्रोफेशनल बन जाते हैं तो अगले स्टेप में आप खुद को एक टीम लीडर, फाइनेंस मैनेजर, कम्प्यूटेशनल...की भूमिका में पाते हैं। नई जिम्मेदारियों के मुताबिक आपको इन कई जरूरी लाइफ

स्किल्स की जरूरत महसूस होती है। मायबिजकिड इसी काम को पूरा करने का प्रयास है। आका बच्चा यदि 8 से 16 साल का है तो जरूरी लाइफ स्किल्स को सीखने का सही समय है। बाद में उस पर बोर्ड एग्जाम, नीट, जेईई,

सीए, केट, क्लेट जैसे प्रतियोगिता परीक्षाओं का दबाव आ जाएगा, उसके बाद प्रोफेशनल व्यवस्था रहेगी।

नितिन विजय, फाउंडर और सीईओ, मोशन एजुकेशन

कोटा
क्या आप अपने बच्चे को भविष्य में बिजनेस लीडर या इन्वेंटर के रूप में देखते हैं... क्या आपको लगता है कि वह एक कंपनी शुरू करेगा या अपेक्षाकृत तेजी से कॉर्पोरेट जगत में तरक्की की सोचिएगा... यदि ऐसा है तो व्यवसाय की दुनिया के एडवेंचर की जर्नी शुरू करने के लिए मायबिजकिड आदर्श जरिया है। मायबिजकिड बच्चों के लिए कोटा का पहला बिजनेस और फाउंडर लॉनिंग वेंच्यूरों में है या कहें कि बच्चों के लिए लिए ऑनलाइन एमबीए जैसा है। 5+ माह के इस पाठ्यक्रम में 16 सप्ताह के इस पाठ्यक्रम को एक्सपर्ट और आईआईटी के एक्सपर्ट्स की व्यवसायिक समझ। इसमें दो तरह के प्रोग्राम हैं—पहला 8 से 11 और दूसरा 12 से 16 साल तक के बच्चों के लिए।

जोओ, होमवर्क करो और अच्छे नंबर लो, बाले परंपरागत तरीके से नहीं पढ़ाते। कम्प्यूटेशनल स्किल, लीडरशिप, टीम वर्क, बजट रिस्कल, आत्मविश्वास बनाने, जीवन के लिए व्यावहारिक दृष्टिकोण, निर्णय लेने और समस्या समाधान की कला सिखाते हैं। यह सब उसको स्टेडी टेलिंग, गेम्स, एनिमेशन और मायबिजकिड के जरिए मजेदार तरीके से सिखाते हैं। हम बच्चे को हसल्टे-ब्लेकले उद्योगिकी की राह पर ले जाते हैं। बेन स्टॉर्मींग के जरिए उसको चुनौतियों का सामना करने लायक बनाते हैं। ऐसा माहौल देते हैं जहाँ वे यूनीक बिजनेस आइडिया से संपन्न बिजनेस लीडर की तरह तैयार हो सकें।

बिजनेस आइडिया आजमाने का मौका:
मायबिजकिड के जरिए आपके बच्चे को रीयल लाइफ बिजनेस आइडिया को आजमाने का मौका भी मिलता है। इसके तहत उनको

लाइफ स्किल्स को अनदेखा करती है हमारी शिक्षा प्रणाली

मायबिजकिड न है समाधान

कोटा
क्या आपको लगता है कि सिर्फ किताबी ज्ञान से नैतुल कर दुनिया में सफलता हासिल की जा सकती है। नहीं न। दरअसल हमारी शिक्षा प्रणाली विज्ञान, गणित, सामाजिक अध्ययन, लेखाशास्त्र, अर्थशास्त्र जैसे विषय तो पढ़ाती है लेकिन, बहुत ही महत्वपूर्ण चीज लाइफ स्किल्स को अनदेखा किया जाता है।

देश में मात्र एक दशक में कॉलेजों की संख्या में तीन गुना वृद्धि हुई है और वे हर साल लगभग 3.7 करोड़ स्नातक पैदा करते हैं। लेकिन विज्ञान के शिक्षा के स्तर में वृद्धि के साथ ही बेरोजगारी दर में वृद्धि हुई है। तकनीक ने कई कार्यों के ऑटोमेशन को जन्म दिया है। जिससे उपलब्ध नौकरियों की संख्या और कम हो गई है। ऐसे में आज लाखों शिक्षित युवाओं के लिए रोजगार के नए अवसर पैदा करना देश के सामने बड़ी चुनौती है। आज हमें नौकरी चाहने वालों के बजाय नौकरी देने वाले यानी दूरदृष्टि वाले उद्योगियों की जरूरत है क्योंकि सही कौशल और उद्यमशील दृष्टिकोण ही बेरोजगारी की चुनौती का समाधान कर सकता है।

समझने में मदद करेगा कि उद्यमिता क्या है, आपको यह दिखाएगा कि एक उद्यमी बनने के लिए प्रशिक्षित करता है। यह बच्चों को सफल होने के लिए उद्यमशील कौशल और ज्ञान प्रदान करता है। यह कार्यक्रम आपको यह समझने में मदद करेगा कि उद्यमिता क्या है, आपको यह दिखाएगा कि एक उद्यमी बनने के लिए क्या करना पड़ता

NV Sir को बिजनेस वर्ल्ड डिस्कर्ट 40 अंडर 40 Award

शिक्षा के क्षेत्र में उल्लेखनीय कार्य के लिए किया सम्मान

कोटा

मोशन एजुकेशन के फाउंडर और सीईओ नितिन विजय को जूनी-मानी बिजनेस वर्ल्ड डिस्कर्ट 40 अंडर 40 से सम्मानित किया गया है। शिक्षा के क्षेत्र में उल्लेखनीय कार्य के लिए उन्हें यह सम्मान दिया गया।

गुरुग्राम के होटल लीला पैलेस में आयोजित समारोह में सम्मान पर प्रतिक्रिया में विजय ने कहा— 'मैं शिक्षा की कौशी कहलाने वाले कोटा से आता हूँ और एक शिक्षक



के रूप में पहचाना जाता हूँ। कभी सोचा नहीं था कि एक उद्यमी के रूप में अवार्ड मिलेगा। उन्होंने अपनी उपलब्धि माता-पिता, पत्नी, मोशन टीम और विद्यार्थियों को समर्पित की। इस मौके पर विजय ने कहा कि हम शिक्षा की गुणवत्ता बढ़ाने और लागत कम करने के मिशन पर कार्य कर रहे हैं। फर्स्टमैजिस्ट्रेशन ऑफ एजुकेशन की ओर जा रहे हैं। उन्होंने कहा— 'हेल्थ केयर के क्षेत्र में जब भी पेशेंट आता है तो उसको बलाना पड़ता कि उसे क्या बीमारी है। दूसरी

ओर हर बच्चा अलग होता है लेकिन बच्चों को एक जैसी ही शिक्षा दी जाती है जबकि उनकी समस्या का समाधान अलग-अलग ही होता है। गौरतलब है कि सम्मान समारोह का आयोजन नई दिल्ली आधारित जूनी-मानी बिजनेस वर्ल्ड डिस्कर्ट 40 अंडर 40 से किया गया था। इस पत्रिका का प्रकाशन 1983 में टेलीग्राफ की प्रकाशक आनंद बाजार पत्रिका ने शुरू किया था। अनुराग बत्रा इसके संपादक हैं।



मोशन एजुकेशन के फाउंडर— सीईओ नितिन विजय को बिजनेस वर्ल्ड की ओर से बेस्ट इंटरप्रेन्योर अवार्ड—40 अंडर 40 के समारोह का वीडियो देखने के लिए यह क्यू आर कोड स्कैन करें।



कोटा अब मोशन में है नॉलेज के ऑशन में है...

स्टेशन पर अब ऑटो वाले बैगा कोर्चिस के डायरेक्शन में है, राजीव गांधी नगर हो या जवाहर नगर, सारे होस्टल्स, पीजी भी फुल ऑन टशन में है, क्योंकि कोटा अब मोशन में है।

विद्यार्थियों की चहक और गरमा-गरम कचौड़ियों की महक के साथ पोहे, पेटीज और मोमोस भी फिर से सर्विलेसन में है क्योंकि कोटा अब मोशन में है।

क्लास में फिर बच्चों की खिलखिलाहट सुनकर हर टीचर के चेहरे पर मुस्कान है, स्टूडेंट्स भी अपनी आँखों में

जेईई—नीट जैक करने के सपने लिए क्लासरूम में पढ़ रहे पूरे डिवोशन में है, क्योंकि कोटा अब मोशन में है। अब क्लासरूम से कैंपस तक हर जगह है शोर, एनबी सर कोई हंसगुल्ला छोड़े तो जोर से आवाज आती है वन्स मोर, डाउट कार्डर के बाहर स्टूडेंट्स भी अपने हर डाउट को नोट किए इंतजार—ए—सॉल्यूशन में है, क्योंकि कोटा अब मोशन में है।

स्टेशनरी पर सिर्फ आरडी शर्मा, एचवी वर्मा सुनाई देता है, हर गली, कॉलोनी में बच्चों का जमावड़ा दिखाई देता है,



Nitin Vijay
(NV Sir)

Amit Verma
(AV Sir)

Dr. Ashish Maheshwari
(AM Sir)

Jitendra Chandwani
(JC Sir)

Ashish Bajpai
(AB Sir)

Lalit Vijay
(LV Sir)

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नीट में चयनित विद्यार्थी इन कॉलेज में ले सकते है एडमिशन

18 लाख विद्यार्थी दे रहे हैं नीट 2022 की परीक्षा, 612 मेडिकल कॉलेज और 91927 सीट्स के लिए परीक्षा का आयोजन

नीट, मेडिकल जैसे विभिन्न पाठ्यक्रमों में उम्मीदवारों को प्रवेश देने के लिए स्वयं की प्रवेश परीक्षा का संचालन करता है। इस बार NEET 2022 का कट ऑफ प्रतिशत अंको के रूप में जारी किया जाएगा, कट ऑफ परीक्षार्थी के योग माने जाने का मापदंड होता है। परीक्षार्थियों द्वारा प्रवेश परीक्षा में प्राप्त किये गए अंको के आधार पर प्रतिशत अंक की गणना की जाएगी और फिर आगे सामान्य प्रक्रिया लागू होगी। जो परीक्षार्थी NEET 2022 की कट-ऑफ के बराबर या उससे अधिक अंक प्राप्त करेंगे,

केवल उन्हें ही प्रवेश की आगामी प्रक्रियाओं के लिए योग्य घोषित किया जाएगा। परीक्षा उत्तीर्ण करने के बाद, उम्मीदवार योग्य है या नहीं यह जानने के लिए मेरिट प्रतिशत को ध्यान में रखा जाएगा। मेरिट सूची में अधिकारियों द्वारा विशेष श्रेणियों में उपलब्ध सीटों की संख्या से चार गुना ज्यादा परीक्षार्थियों को शामिल किया जाएगा। प्रत्येक श्रेणी में अंतिम परीक्षार्थी द्वारा प्राप्त किया गया प्रतिशत स्कोर NEET 2022 का मेरिट कट ऑफ बन जाएगा।

TOP COLLEGES ON THE BASIS OF AIIMS 2021

Top Government Medical College	Seats	UR Rank	OBC Rank	SC Rank	ST Rank
AIIMS New Delhi	125	53	256	875	4820
AIIMS Jodhpur	125	8855	1242	84045	16903
AIIMS Bhopal	125	572	1235	7905	24629
AIIMS Bibi Nagar Telangana	62	19796	6841	34449	49612
AIIMS Bhubaneswar	125	3719	1306	7136	63824
AIIMS Bathinda	100	8855	3130	84045	48344
AIIMS Mangalagiri	125	4388	6544	27923	46174
AIIMS Rishikesh	125	7027	1836	14388	51247
AIIMS Raipur	125	17941	2146	23342	58873
AIIMS Kalyani	125	12259	6856	49984	66326
AIIMS Patna	125	12041	19793	105598	60121
AIIMS Guwahati	50	5580	20156	43097	81716
AIIMS Bilaspur	50	4142	7191	42343	63142
AIIMS Nagpur	125	18186	3394	21841	45713
AIIMS Guwahati	50	8319	8483	105837	71700
AIIMS Gorakhpur	125	3437	4662	34677	62192
AIIMS Jammu	50	8115	20074	86250	64858
AIIMS Rai Bareilly	100	4572	5080	103776	62084
AIIMS Deoghar	62	6318	19831	104065	124218

JIPMER 2021

JIPMER Puducherry	150	26107	42658	906861	146530
JIPMER Karaikal	50	62036	49453	NA	171972

TOP COLLEGES ON THE BASIS OF NEET (ALL INDIA QUOTA) 2021

Top Government Medical College	UR Rank	OBC Rank	SC Rank	ST Rank
Maulana Azad Medical College, New Delhi	87	372	6966	1438
Stanley Medical College, Chennai	9446	12003	106238	55081
University College of Medical Science, New delhi	2085	830	16798	3319
Lady Hardinge Medical College, Delhi	579	1127	37077	8726
Seth Gordhandas Sunderdas Medical College, Mumbai	773	6783	56313	26577
Grant Medical College, Mumbai	18292	10505	94949	103436
Madras Medical College, Chennai	755	3728	55718	39570
Vardhman Mahavir College, Delhi	143	472	12809	28650
SMS Medical College, Jaipur	731	19765	26396	20366
SN Medical College, Jodhpur	19737	8496	54600	66248
Government Medical College Hospital, Patiala	4492	20651	117465	55398
Lokamanyu Tilak Municipal Medical College, Mumbai	4264	14527	111607	106911
R.G. Kar Medical College and Hospital, Kolkata	1674	3468	76324	11687
Gandhi Medical College, Secunderabad	4014	5997	35330	42201
B. J. Medical College, Ahmedabad	721	2168	124146	9767

**आपकी करोड़ों में एक लाइली को,
NEET Preparation के लिए लाखों की Scholarship**

「 मात्र
₹ 75,000*
प्रतिवर्ष में करें 」

NEET 2023/24 की तैयारी!



- ◆ **Why is there a requirement for a separate girls' NEET batch?**
Comparing the registration ratio of students in the NEET programs, it is discovered that the ratio of girls in the NEET batch is always high. Hence, to maintain the comfort zone of girls and discipline in the batch, Motion Education has divided the NEET batches. There is not only a separate batch for girls and boys but also the batch strength is limited. Through this, students enrolled in the NEET girls batch get the proper attention of their faculties. In addition, this batch is safe and conducted during the even hours so that girls don't face trouble coming to classes.
- ◆ **What are the benefits of joining the NEET girls batch?**
There are many benefits that students can avail themselves of through the classroom course of NEET program. Some of these include:
 - ❖ Get the guidance of Kota's top NEET faculties
 - ❖ Comprehensive study material
 - ❖ Regular doubt support
 - ❖ Exam pattern-based test series (weekly/monthly test)
 - ❖ DPP, PYQs, CPS, and access to Motion Learning App
- ◆ **What will be the teaching medium of the lectures and study material provided to aspirants in the NEET girls batch?**
Motion's priority is to facilitate the best resources and aid to students of both English and Hindi mediums. This is the reason we conduct classes for English as well as Hindi medium students. Study material distributed to students is also based on the choice of medium they opt for during the registration.
- ◆ **Is the fee structure for classes XI, XII and XII passed the same?**
The discounted fee for enrollment in the NEET girls batch is 75,000 INR per year. All the girls enrolling in this NEET program whether they are in class XI, XII or drop year have to only pay 75,000 INR. Also, there will be no extra charges taken for the facilities offered by Motion Education like the study material and unlimited access to Motion Learning App.

◆ मोशन प्रयास के अंतर्गत विद्यार्थियों को क्या-क्या सुविधाएं मिलेंगी?
मोशन प्रयास के अंतर्गत कोचिंग, हॉस्टल, भोजन एवं स्कूल की सुविधा दी जाएगी जिससे परिजन इन सभी आवश्यकताओं की उपलब्धता एवं गुणवत्ता को लेकर निश्चित हो सकें एवं विद्यार्थी अपना सम्पूर्ण ध्यान प्रतियोगी परीक्षा की तैयारी में लगा सकें।

◆ मोशन प्रयास में प्रवेश लेने वाले विद्यार्थियों को पाठ्य सामग्री किस भाषा में प्राप्त होगी?
मोशन प्रयास के अंतर्गत विद्यार्थियों की सुविधानुसार सम्पूर्ण पाठ्य सामग्री (स्टडी मटेरियल), टेस्ट सीरीज, डेली प्रॉब्लम प्रेक्टिस शीट इत्यादि हिंदी माध्यम में उपलब्ध होगी जिससे उन्हें समझने में कोई समस्या ना हो और विद्यार्थी मन लगाकर अध्ययन कर सकें।

◆ क्या हॉस्टल, स्कूल एवं भोजन आदि की फीस मोशन प्रयास की फीस के अतिरिक्त होगी?
मोशन प्रयास में एडमिशन लेने वाले विद्यार्थियों के लिए कोचिंग एवं स्कूल के साथ साथ ही 31 मार्च 2023 तक हॉस्टल एवं भोजन की सभी सुविधाएं एक ही फीस में होगी। जहां प्रयास कोर्स फीस रूप 160000/- जमा कराने के पश्चात विद्यार्थी पूरी तरह से मोशन एजुकेशन की जिम्मेदारी पर होगा।

◆ मोशन प्रयास में 11वीं एवं 12वीं के हिंदी-इंग्लिश जैसे अनिवार्य विषय की तैयारी के लिए कोई सुविधा होगी?
मोशन प्रयास के अंतर्गत आवश्यकता अनुसार बोर्ड परीक्षाओं की दृष्टि से हिंदी एवं इंग्लिश जैसे विषयों की तैयारी भी विषय विशेषज्ञों द्वारा करवाई जाएगी जिससे विद्यार्थी को बेहतर बोर्ड स्कोर में भी मदद मिल सकेगी।

◆ मोशन प्रयास के अंतर्गत छात्र एवं छात्राओं के लिए किस तरह से हॉस्टल की सुविधा प्रदान की जाएगी?
मोशन प्रयास में छात्र एवं छात्राओं के लिए

पृथक-पृथक हॉस्टल की व्यवस्था होगी जिससे वे शांत एवं सुरक्षित वातावरण में अध्ययन कर सकें।

◆ मोशन प्रयास के अंतर्गत अध्ययन करने वाले विद्यार्थियों को क्लासरूम कोचिंग के अतिरिक्त और क्या सुविधा मिलेगी?
मोशन प्रयास के अंतर्गत अध्ययन करने वाले विद्यार्थियों को क्लासरूम कोचिंग के अतिरिक्त मोशन लर्निंग एप की सुविधा भी दी जाएगी जिससे वे वीडियो लेक्चर के माध्यम से रिवीजन कर सकते हैं और क्लास की लाइव रिकॉर्डिंग को फिर से दोहराने के साथ साथ ही अपने स्तर के अनुसार टेस्ट देकर अपनी तैयारी को परख सकते हैं।

◆ मोशन प्रयास में क्या केवल मेडिकल एवं इंजीनियरिंग की तैयारी करावाई जाएगी। 12वीं बोर्ड की तैयारी कैसे करें?
मोशन प्रयास के अंतर्गत हर छोटे से लेकर बड़े टॉपिक को इस तरह से पढ़ाया जाएगा कि विद्यार्थियों को मेडिकल अथवा इंजीनियरिंग के साथ ही 11वीं एवं 12वीं की भी तैयारी हो सके। विद्यार्थियों को इसके लिए अतिरिक्त कोचिंग लेने की आवश्यकता नहीं होगी।

◆ मोशन प्रयास में फीस जमा करने का तरीका?
मोशन प्रयास कोर्स में रजिस्ट्रेशन होने के बाद स्टूडेंट बैंक की ब्याज रहित आसान मासिक किश्तों में अपनी फीस जमा कर सकता है।

◆ मोशन प्रयास में कौन-कौन सी कक्षा का प्रस्ताव दिया जा रहा है?
मोशन प्रयास में कक्षा 11वीं अथवा 12वीं साइंस के विद्यार्थियों को मेडिकल अथवा इंजीनियरिंग प्रवेश के साथ साथ बोर्ड परीक्षा एवं 12वीं पास विद्यार्थियों को पूरी तरह से मेडिकल अथवा इंजीनियरिंग प्रवेश परीक्षा की तैयारी करवाई जावेगी।

कोटा कोचिंग में पहली बार...

हिन्दी माध्यम
के विद्यार्थियों की कामयाबी का
मोशन प्रयास

नीट एवं जेईई
कक्षा 11वीं, 12वीं एवं
12वीं पास विद्यार्थियों के लिए



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* प्रतिवर्ष

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Umeed Rank Ki Ho Ya Selection Ki, JEET NISCHIT HAI!

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- AIR-11 TO 25
39 TIMES
- AIR-26 TO 50
43 TIMES
- AIR-51 TO 100
78 TIMES

JEE MAIN+ADVANCED

- AIR-1 TO 10
8 TIMES
- AIR-11 TO 25
6 TIMES
- AIR-26 TO 50
18 TIMES
- AIR-51 TO 100
30 TIMES

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1105+	50+	168+	150+
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105+	37+	269+	97+
IMO	ITHO	NSTSE	IEO
			RMO



NITIN VIJAY (NV Sir)
Founder & CEO

NATION'S BEST SELECTION PERCENTAGE (%) RATIO

STUDENT QUALIFIED IN NEET

2021	3276 / 3411 = 93.12%
2020	2663 / 2843 = 93.66%
2019	2041 / 2212 = 92.27%

STUDENT QUALIFIED IN JEE ADVANCED

2021	1256 / 2994 = 41.95%
2020	994 / 2538 = 39.16%
2019	769 / 2105 = 36.53%

STUDENT QUALIFIED IN JEE MAIN

2021	2994 / 4089 = 73.25%
2020	2538 / 3554 = 71.44%
2019	2288 / 3316 = 68.99%

Dear Students,

Which one would you choose a rank or just the selection? If you take my advice don't pressurize yourself, just concentrate on your studies and continue working hard. Once a student starts preparing for NEET/JEE exam, their entire focus must be on systematic preparation for the selection. At Motion Education, we ensure to cater to every student's need, our teachers impart lessons after understanding the psychology of students and help them in attaining stress-free results. Through our Classroom program aided with technology, we facilitate a highly advanced nurturing platform & believe in Customising studying techniques helping students in strengthening their concepts and making their exam preparations more effective.

NITIN VIJAY (NV Sir) Founder & CEO

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Get upto **100% SCHOLARSHIP**
on the basis of NEET 2022

NEET Score	FEE After Scholarship
600+	10,000 (Kit Cost)
571-600	22,881
551-570	34,322
531-550	40,042
511-530	45,762
491-510	51,483
471-490	57,203
451-470	62,923
431-450	68,644
351-430	80,084
Only Qualified	91,525

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