Question 1: 

\[ \text{Cl} \xrightarrow{\text{Mg, Dry ether}} A \xrightarrow{\text{Aq. C}_2\text{H}_5\text{OH}} B \]

Find B.

Answer = A

Question 2: Metal having much low melting point is refined by:

a. Liiquation
b. Electrolytic refining
c. Zone Refining
d. None of These

Answer = A
Question 3: From 0.2 gm of compound, 0.188 gm of AgBr is formed by Carius Method. Find % of Br?

a  80%
b  20%
c  40%
d  10%

Answer = C

Question 5: Which of the following shows Tyndall effect?

a  True solution
b  Lyophobic solution
c  Lyophilic solution
d  Suspension
**V_2O_3** and CrO are respectively:

- **A** Acidic and basic
- **B** Basic and amphoteric
- **C** Basic and basic
- **D** Amphoteric and basic

Which process can be used for purification having low melting point:

- **A** Distillation
- **B** Liqation
- **C** Electrolysis
- **D** Zone Refining

**FeCl_3 + K_4[Fe(CN)_6] → ?**

- **A** Brown ring complex
- **B** Sodium nitroprusside
- **C** Turnbull's blue
- **D** Prussian blue

Match the column:

<table>
<thead>
<tr>
<th>Column I</th>
<th>No of lone pairs</th>
</tr>
</thead>
<tbody>
<tr>
<td>XeO_2F_2</td>
<td>0</td>
</tr>
<tr>
<td>XeF_4</td>
<td>1</td>
</tr>
<tr>
<td>XeF_2</td>
<td>2</td>
</tr>
<tr>
<td>XeO_2F_6</td>
<td>3</td>
</tr>
</tbody>
</table>
Find the electrons in f orbital in element Np (atomic number 93)

The unit of ‘a’ in the correction factor of van der waals equation
\[ P + (an^2/V^3) ] [V - nb] = nRT \]

When 0.75 molal sucrose have a freezing point of -4°C \( (K_f = 1.86) \), then the amount of ice separated (in grams)

10 ml of KMnO₄ reacts with equal volume of 0.1 M Ferrous sulphate in acidic medium. Find strength of KMnO₄ in g/lit

One mole of octahedral complex ML₂Cl₂ reacts with AgNO₃ to give one mole of AgCl. The denticity of L is

A : ethyl phenyl ether can be prepared by Williamson synthesis
R : bromo benzene on reaction with sodium ethoxide gives ethyl phenyl ether

A and R are correct and R is the correct explanation of A
A and R are correct and R is not the correct explanation of A
Both A and R are incorrect
A is correct, R is incorrect
Which one of the following is not dimensionless

1. Relative permeability
2. Quality factor
3. Power factor
4. Permeability of free space ($\mu_0$)

Moment of a square of each side of mass $m$ length $l$ about a corner and perpendicular to plane.

A. $\frac{2}{3} ml^2$
B. $\frac{ml^2}{3}$
C. $\frac{5}{6} ml^2$
D. None

If $v = \sqrt{5000 + 24x}$ $m/s$ Then find Acceleration.

If $PT^3 = \text{constant}$, then find the coefficient of volume expansion.

A. $\frac{1}{T}$
B. $\frac{2}{T}$
C. $\frac{3}{T}$
D. $\frac{4}{T}$
E/B: Find the unit?
E = Electric field intensity
B = Magnetic field intensity

\[ \frac{E}{B} = \frac{c}{m/s} \]

A. \( m/s \)
B. \( J \)
C. \( N \)
D. \( T \)

First \( n \) resistor \( R = 10\Omega \) are connected in series, and this \( n \) resistor are connected to battery of \( V = 20\text{V} \) \( R = 10\Omega \). When this \( n \) resistor are connected to parallel to same battery then current increases 20 times find \( n \).

Ans-20

Q. The height of transmitting tower is 320 m and the height of receiving tower is 2000 m. The distance between them so that there is no hindrance in communication is -- (in km)

A 160  B 64  C 224  D 248

Q. From the given displacement time \((s-t)\) graph; choose the correct PE vs t graph.

\[ U = \frac{1}{2} k x^2 = \frac{1}{2} k A^2 \sin^2 \omega t \]
Q. Two persons X and Y are moving towards each other with speeds of 36 km/hr and 72 km/hr. Y hears the sound of frequency 1320 Hz from X. What is the actual frequency? [Speed of sound = 340 m/s]

\[ f' = f_0 \left( \frac{V + V_0}{V - V_s} \right) \]

\[ 1320 = f_0 \left( \frac{340 + 20}{340 - 10} \right) \]

\[ f_0 = \frac{1320 \times 11}{340 + 10} = 1210 \text{ Hz} \]

A: 1400 Hz  B: 1440 Hz  C: 1210 Hz  D: 1300 Hz

Q. Find charge of 4μF capacitor in steady state.

A: 4 μC  B: 6 μC  C: 8 μC  D: 10 μC

\[ q_0 = \frac{CV}{2} = \frac{2 \times 4}{2} = 8 \mu C \]

Q. If E and H represents electric field and magnetizing intensity respectively, what is the dimensional formula of \( E \) and \( H \)?

A: [ML^2T^{-3}A^{-2}]  B: [MLT^{-2}A^{-2}]  C: [ML^2T^{-2}A^{-2}]  D: [ML^0L^0T^0A^0]

\[ E = \frac{F}{n_i} = \frac{F}{n_i} = \frac{F}{n_i t} = \frac{F}{n_i t} \]

\[ B = \frac{\mu_0 (n_i)}{\mu_0} \text{H} \]

\[ H = \frac{E}{n_i} \Rightarrow \frac{M L T^{-2}}{L^{-1} A^2 T^1} = [M L^2 T^{-3} A^{-2}] \]
Q. If the intensity of light is increased for the same colour?

\[ E = \frac{hc}{A} \]
\[ I = \frac{E}{At} \]
\[ KE_{\text{max}} = E - \phi \]

- A. Frequency will increase \( \times \)
- B. No. of photons will increase \( \checkmark \)
- C. Kinetic energy of photoelectrons will increase \( \times \)
- D. Momentum will increase \( \times \)

Q. Find moment of inertia of a square plate (mass M, side length L) about an axis passing through one of its corner and perpendicular to the plane.

\[ I = I_{\text{cm}} + Md^2 \]
\[ = \frac{ML^2}{6} + M \left( \frac{L^2}{2} \times \frac{2}{3} \right) = \frac{4ML^2}{6} = \frac{2}{3} ML^2 \]

- A. \( \frac{ML^2}{3} \)
- B. \( \frac{2ML^2}{3} \)
- C. \( \frac{ML^2}{6} \)
- D. \( \frac{ML^2}{12} \)

JEE Main August 27 Shift 1 Maths Questions and Answers

A(0, 6) & B(2t, 0), where t is parameter midpoint of A & B is M. perpendicular bisector of AB cuts y-axis at C. find locus of midpoint of MC

Ans: \( 3y = 9 - 2x^2 \)
Q \[ I = \int_{6}^{16} \frac{\ln x^2}{\ln x^2 + \ln (x - 22)^2} \, dx = ? \]

Ans: 5

If \[ \int \frac{dx}{(x^2 + x + 1)^2} = A \tan^{-1} \frac{2x + 1}{\sqrt{3}} + B \frac{(2x + 1)}{x^2 + x + 1} , \]
then find A & B.

Ans: \[ A = \frac{4}{3\sqrt{3}} , B = \frac{1}{3} \]

\[ 9 \left( \sqrt{3}A + B \right) \]
\[ 9 \left( \frac{\sqrt{3}}{3} \times \frac{4}{3} + 1 \right) \]
\[ = 3A \left( \frac{\sqrt{3}}{3} \right) = 15 \]

\[ \text{If } u(n) = \prod_{r=0}^{n} \left( 1 + \frac{n^2}{r^2} \right) \text{ then } \lim_{n \to \infty} \left( u \right) \frac{1}{n^2} . \]

P(2, -4) is a point on \( y^2 = 8x \). Tangent & normal at P cuts directrix at A & B respectively. If ABPQ is a square then find sum of coordinates of Q.
If \( \frac{z + i}{z + 2i} \) is purely real then find locus of \( z \).

**Ans:** \( y \)-axis

\[
\sum_{k=0}^{20} \left( \binom{20}{k} \right)^2 = ?
\]

\[
\text{Ans: } \frac{Y_n}{2^n} \geq (x_n)^2 = 2x_n
\]

A dice has probability of occurrence of a number \( \left( \frac{1}{6} + x \right) \) and the number opposite to it on the dice is \( \left( \frac{1}{6} - x \right) \) and the rest of the numbers has probability \( \frac{1}{6} \). The probability that when the dice is rolled twice and the sum = 7 is \( \frac{13}{96} \). Find \( x \).