


Question Review

All 



If the slope of one of the line represented by the equation  $ax^2 + 2hxy + by^2 = 0$  be  $\lambda$  times that of the other, then:

☐  $4\lambda h = ab(1 + \lambda)$

☐  $\lambda h = ab(1 + \lambda)^2$

☒  $4\lambda h^2 = ab(1 + \lambda)^2$

☐ none of these

EXPLANATIONS

[Report](#) 

56 % were correct!

It is given that,  $m_2 = \lambda m_1 \Rightarrow m_1 + \lambda m_1 = \frac{-2h}{b}$

$$\Rightarrow m_1 = \frac{-2h}{b(1 + \lambda)}$$

$$\text{and } m_1 \cdot \lambda m_1 = \frac{a}{b} \Rightarrow m_1 = \sqrt{\frac{a}{b\lambda}}$$

$$\text{Hence, } \sqrt{\frac{a}{b\lambda}} = \frac{-2h}{b(1 + \lambda)}$$

On squaring both sides,  $4\lambda h^2 = ab(1 + \lambda)^2$



The number of triangles  $ABC$  that can be formed with  $a = 3, b = 8$  and  $\sin A = \frac{5}{13}$  is

☒ 0

☐ 1

☐ 2

☐ 3

EXPLANATIONS

[Report](#) 

47 % were correct!

Applying sine rule,  $\frac{\sin B}{b} = \frac{\sin A}{a}$  or  $\frac{\sin B}{8} = \frac{5/13}{3}$  or  $\sin B = \frac{40}{39} > 1$ , which is not possible. Hence no triangle can be formed by the given conditions.



The vectors  $\vec{a} = 2i - 3j + 4k, \vec{b} = i + j + k, \vec{c} = 3i - 4j + 5k$  are:

☒ linearly independent

☐ coplanar

☐ collinear

☐ none of theses

EXPLANATIONS

[Report](#)

49 % were correct!

Given;

$$a = 2i - 3j + 4k$$

$$b = i + j + k$$

$$c = 3i - 4j + 5k$$

$$\Delta = \begin{vmatrix} 2 & -3 & 4 \\ 1 & 1 & 1 \\ 3 & -4 & 5 \end{vmatrix}$$

$$\Rightarrow \Delta = 2(5 + 4) + 3(5 - 3) + 4(-4 - 3)$$

$$\Rightarrow \Delta = -4 \neq 0$$

So, the vectors are linearly independent.



A complex number  $z$  satisfies the equation,  $z + \bar{z} = z\bar{z}$ . Then,  $Im(z)$  lies in:

☐  $(-\infty, 1]$

☐  $[0, 1]$

☐  $(-1, 1)$

☒  $[-1, 1]$

EXPLANATIONS

[Report](#)

22 % were correct!

Let  $z = a + ib$

So,  $z = a - ib$

By given,

$$2a = a^2 + b^2$$

$$\Rightarrow a^2 - 2a + b^2 = 0$$

Since,  $a$  is real,

$$B^2 - 4AC \geq 0 \Rightarrow 4 - 4b^2 \geq 0$$

Upon simplification,

$$b \in [-1, 1]$$



The distance between the line  $\frac{x-1}{3} = \frac{y+2}{-2} = \frac{z-1}{2}$  and the plane  $2x + 2y - z = 6$  is:

☐ 9

☐ 1

☐ 2

☒ 3

## EXPLANATIONS

[Report](#)

35 % were correct!

Check for perpendicularity:

$$3 \cdot 2 + (-2) \cdot 2 + 2 \cdot (-1) = 0$$

So, the line and the plane are parallel, To find the distance between the line and the plane, take any point on the line,  $(1, -2, 1)$ .

Now the perpendicular distance of the point  $(1, -2, 1)$  from the plane will be the required distance. Hence distance

$$d = \left| \frac{2 - 4 - 1 - 6}{\sqrt{9}} \right| = 3$$



If  $\sqrt{2} \sec \theta + \tan \theta = 1$  then the general value of  $\theta$  is

☐  $n\pi + \frac{3\pi}{4}$

☐  $2n\pi + \frac{\pi}{4}$

☒  $2n\pi - \frac{\pi}{4}$

☐  $2n\pi \pm \frac{\pi}{4}$

## EXPLANATIONS

[Report](#)

39 % were correct!

$$\sqrt{2} \sec \theta + \tan \theta = 1 \Rightarrow \frac{\sqrt{2}}{\cos \theta} + \frac{\sin \theta}{\cos \theta} = 1$$

$$\Rightarrow \sin \theta - \cos \theta = -\sqrt{2}$$

Dividing by  $\sqrt{2}$  on both sides:

$$\frac{1}{\sqrt{2}} \sin \theta - \frac{1}{\sqrt{2}} \cos \theta = -1$$

$$\Rightarrow \frac{1}{\sqrt{2}} \cos \theta - \frac{1}{\sqrt{2}} \sin \theta = 1 \Rightarrow \cos \left( \theta + \frac{\pi}{4} \right) = \cos(0)$$

$\Rightarrow \theta + \frac{\pi}{4} = 2n\pi \pm 0 \Rightarrow \theta = 2n\pi - \frac{\pi}{4}$

$\lim_{x \rightarrow 0} \frac{(1+x)^5 - 1}{(1+x)^3 - 1} =$

☐ 0

☐ 1

☒ 5/3

☐ 3/5

EXPLANATIONS

Report 

86 % were correct!

Using L-Hopital Rule:

$\lim_{x \rightarrow 0} \frac{(1+x)^5 - 1}{(1+x)^3 - 1} = \lim_{x \rightarrow 0} \frac{5(1+x)^4}{3(1+x)^2} = 5/3$

Domain of  $y = \frac{1}{\sqrt{|x| - x}}$  is

☒  $(-\infty, 0)$

☐  $(-\infty, 0]$

☐  $(-\infty, -1)$

☐  $(-\infty, \infty)$

EXPLANATIONS

Report 

55 % were correct!

For  $y$  to be defined,  $|x| - x > 0 \Rightarrow |x| > x$

This happens for all negative x's. So,  $x \in (-\infty, 0)$

What will happen if  $CCl_4$  is treated with  $AgNO_3$

☐ A white ppt. of  $AgCl$  will form

☐  $NO_2$  will be evolved

☐  $\text{CCl}_4$  will dissolve in  $\text{AgNO}_3$

☒ Nothing will happen

## EXPLANATIONS

[Report](#) 

25 % were correct!

Because  $\text{CCl}_4$  is a organic solvent and  $\text{AgNO}_3$  is insoluble in organic solvent.

Hardness of water is conventionally expressed in terms of equivalent amount of

☐  $\text{MgCO}_3$

☐  $\text{Na}_2\text{CO}_3$

☒  $\text{CaCO}_3$

☐  $\text{Na}_2\text{CO}_3$

## EXPLANATIONS

[Report](#) 

47 % were correct!

Hardness of water is conventionally expressed in terms of equivalent amount of  $\text{CaCO}_3$ . The total water hardness is the sum of the molar concentrations of  $\text{Ca}^{2+}$  and  $\text{Mg}^{2+}$ , in mol/L or mmol/L units.

Iodoethane is converted to Butane by reacting it with ..... metal in presence of ether.

☒ Na

☐ Al

☐ Mg

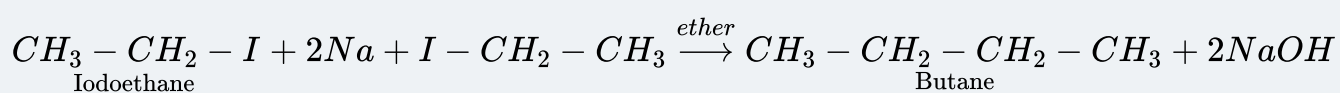
☐ Zn

## EXPLANATIONS

[Report](#) 

73 % were correct!

It is an example of Wurtz reaction



Which one of the following arrangements represents the correct order of electron gain enthalpy (with negative sign) of the given atomic species.

☐  $Cl < F < S < O$

☒  $O < S < F < Cl$

☐  $S < O < Cl < F$

☐  $F < Cl < O < S$

EXPLANATIONS

[Report](#) 

35 % were correct!

Halogens have very high electron affinity. Electron affinity decrease down the group with an exception of Fluorine. Electron affinity of fluorine is unexpectedly low ( $< Cl$ ). This may perhaps be due to small size of  $F$  atom due to which electronic repulsion takes place.

Hence correct order is  $Cl > F > S > O$

250 ml of a sodium carbonate solution contains 2.65 grams of  $Na_2CO_3$ . If 10 ml of this solution is diluted to one litre, what is the concentration of the resultant solution (mol. wt. of  $Na_2CO_3 = 106$ )

☐ 0.1M

☐ 0.01M

☒ 0.001M

☐ 0.0001M

EXPLANATIONS

[Report](#) 

57 % were correct!

$$\text{Molarity} = \frac{W(\text{gm}) \times 1000}{\text{molecular wt.} \times V(\text{ml})} = \frac{2.65 \times 1000}{106 \times 250} = 0.1M$$

10ml of this solution is diluted to 1000ml

$$N_1 V_1 = N_2 V_2$$

$$10 \times 0.1 = 1000 \times x$$

$$x = 0.001M$$

At  $90^\circ C$  pure water has  $[H_3O^+] = 10^{-6} M$ , the value of  $K_w$  at this temperature will be

☐  $10^{-6}$

☒  $10^{-12}$

☐  $10^{-14}$

☐  $10^{-8}$

EXPLANATIONS

Report 

60 % were correct!

For pure water  $[H^+] = [OH^-]$

$$K_w = [H^+][OH^-]$$

$$\therefore K_w = 10^{-12}$$

What is the minimum concentration of  $SO_4^{2-}$  required to precipitate  $BaSO_4$  in a solution containing  $1.0 \times 10^{-4} mol Ba^{2+}$  ? (  $K_{sp}$  for  $BaSO_4$  is  $4 \times 10^{-10}$  )

☐  $4 \times 10^{-10} M$

☐  $2 \times 10^{-4} M$

☒  $4 \times 10^{-6} M$

☐  $2 \times 10^{-3} M$

EXPLANATIONS

Report 

57 % were correct!



$$\begin{aligned} K_{sp} &= [Ba^{2+}] \times [SO_4^{2-}] \\ 4 \times 10^{-10} &= [1 \times 10^{-4}] \times [SO_4^{2-}] \\ [SO_4^{2-}] &= \frac{4 \times 10^{-10}}{1 \times 10^{-4}} = 4 \times 10^{-6}. \end{aligned}$$

The number of possible alcoholic isomers for  $C_4H_{10}O$  are

☐ 3

☒ 4

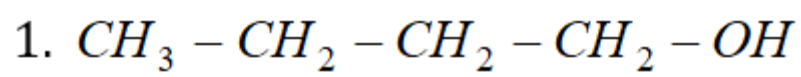
☐ 5

☐ 6

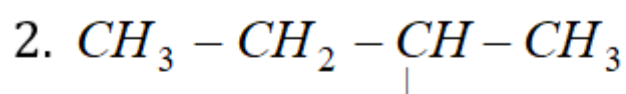
EXPLANATIONS

Report 

48 % were correct!

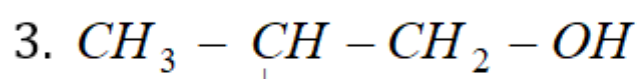


Butan -1 -ol

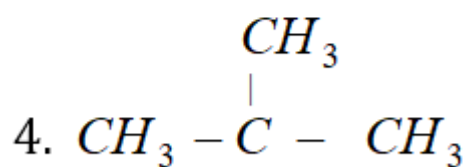


OH

Butan -2 -ol

CH<sub>3</sub>

2 methyl pro pan -1 -ol



OH

2-Methyl pro pan -2 -ol

You look ----- . What's the matter?

☒ sad

☐ sadness

☐ sadly

☐ none

## EXPLANATIONS

[Report](#) 

94 % were correct!

An adjective defines noun/ pronoun. Here, 'you' is a pronoun which is described by the adjective 'sad'.

sadness = noun

sadly = adverb

Which one is correct?

☒ Do you brush your teeth daily?

☐ Did you brush your teeth daily?

☐ Have you brushed your teeth daily?

☐ All of above.

## EXPLANATIONS

[Report](#) 

74 % were correct!



Habitual actions are indicated by simple present tense.

\_\_\_\_\_ eagle is the national bird of America

☐ A

☐ An

☒ The

☐ None

The passive voice of "Did Sanjeev kiss her?" is:

☒ Was she kissed by Sanjeev?

☐ Has she been kissed by Sanjeev?

☐ Did she kiss Sanjeev?

☐ Does she kiss Sanjeev?

EXPLANATIONS

[Report](#) 

76 % were correct!

**Active:** *Subject + verb + object.*

**Passive:** *Object + be-verb + past participle (v<sub>3</sub>) + by subject.*

The tense remains the same.

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