


Memory-Based Questions

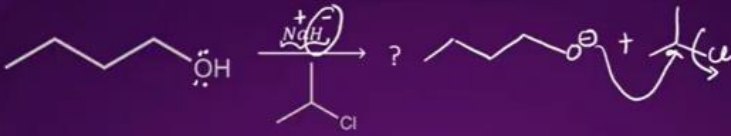
✓ Which of the following has the least spin only magnetic moment?

CHEMISTRY



- a  $\text{Fe}^{3+}$
- b  $\text{Fe}^{2+}$
- c  $\text{Cu}^{2+}$
- d  $\text{Ni}^{2+}$




Memory-Based Questions

? 

CHEMISTRY

- a 
- b 

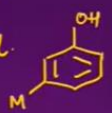



Memory-Based Questions

? Dettol has two components, A has  $6\pi$  e<sup>-</sup>s. What is B?


CHEMISTRY

- a Terpineol
- b Bithionol
- c Chloroxylenol
- d None of these

*chloroxylenol* 



-43:24



Memory-Based Questions


**?**  $t_{1/2}$  of a reaction and pressure of the reactant is given. Find the order of the reaction.

CHEMISTRY

- a** 1<sup>st</sup> order
- b** 2<sup>nd</sup> order
- c** Zero order
- d**  $\frac{1}{2}$  order

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Memory-Based Questions


**✓**  $A = \{x \in \mathbb{R} : |x + 1| < 2\}$ ,  $B = \{x \in \mathbb{R} : |x - 1| \geq 2\}$  then:

MATHS

- a**  $A \cup B = \mathbb{R} - [1, 3]$
- b**  $A \cap B = (-1, 1)$
- c**  $A \cap B = (-3, -1]$
- d**  $B - A = \mathbb{R} - (-3, 1]$

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Memory-Based Questions

**?**  $A = \{x \in \mathbb{R} : |x + 1| < 2\}$ ,  $B = \{x \in \mathbb{R} : |x - 1| \geq 2\}$  then:

**a**  $A \cup B = \mathbb{R} - [1, 3]$   
 $(-\infty, 1) \cup [3, \infty)$

**b**  $A \cap B = (-1, 1)$   
 $(-3, 1]$

**c**  $A \cap B = (-3, -1]$

**d**  $B - A = \mathbb{R} - (-3, 1]$

$|x+1| < 2 \Rightarrow -2 < x+1 < 2$   
 $\Rightarrow -3 < x < 1 \Rightarrow x \in (-3, 1) = A$

$|x-1| \geq 2 \Rightarrow x-1 \leq -2 \text{ or } x-1 \geq 2$   
 $\Rightarrow x \leq -1 \text{ or } x \geq 3 \Rightarrow B = (-\infty, -1] \cup [3, \infty)$

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Memory-Based Questions

**✓** A metal of thickness  $\frac{d}{2}$  is inserted between plates of capacitor having capacitance  $C$  and distance between plate is  $d$ . If new capacitance is  $C'$  the value of  $\frac{C}{C'}$  is

**a** 1:2

**b** 2:1

**c** 1:1

**d** 2:3

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Memory-Based Questions



✓ For a long solenoid, if the number of turns is **doubled** and the current through it is **halved**, then the magnetic field inside it along the axis will be:

P  
H  
Y  
S  
I  
C  
S

- a doubled       b halved  
 c four times       d remains same



Memory-Based Questions



✍ Consider four symmetrical objects of mass  $M$  and radius  $R$  i.e a solid sphere, solid cylinder, thin disk, thin ring. Moment of inertia of sphere about diameter is  $I_1$ , that about the axis of cylinder is  $I_2$ , about diameter of disc is  $I_3$  and about diameter of ring is  $I_4$  are related as  $2(I_2 + I_3) + I_4 = xI_1$ , the value of  $x$  is

P  
H  
Y  
S  
I  
C  
S

$$\begin{aligned}
 \therefore 2(I_2 + I_3) + I_4 &= xI_1 \\
 \Rightarrow 2\left(\frac{MR^2}{2} + \frac{MR^2}{4}\right) + \frac{MR^2}{2} &= x \times \frac{2}{5}MR^2 \\
 \Rightarrow 2\left(\frac{3}{4}\right) + \frac{1}{2} &= x \times \frac{2}{5} \\
 \Rightarrow 2 &= x \times \frac{2}{5} \\
 \Rightarrow x &= 5
 \end{aligned}$$



Memory-Based Questions

? Arrange the following species in decreasing order of their standard reduction potential value:

C  
H  
E  
M  
I  
S  
T  
R  
Y

- ~~a~~  $2 > 1 > 5 > 3 > 4$
- b  $5 > 4 > 3 > 2 > 1$
- c  $2 > 1 > 4 > 5 > 3$
- d  $5 > 1 > 2 > 4 > 3$



Memory-Based Questions

✓ Arrange the following species in decreasing order of their standard reduction potential value:

C  
H  
E  
M  
I  
S  
T  
R  
Y

- a  $2 > 1 > 5 > 3 > 4$
- b  $5 > 4 > 3 > 2 > 1$
- c  $2 > 1 > 4 > 5 > 3$
- d  $5 > 1 > 2 > 4 > 3$



✓ Correct order of magnitude of electron gain enthalpy is:

C  
H  
E  
M  
I  
S  
T  
R  
Y

- a  $F > Cl > Te > Po$
- ~~b~~  $Cl > F > Te > Po$
- c  $Po > Te > Cl > F$
- d  $Cl > Te > Po > F$



Memory-Based Questions

**✓** Assertion: From a mixture of benzoic acid and naphthalene, benzoic acid can be separated using benzene.  
Reason: Benzoic acid is soluble in hot water.

C  
H  
E  
M  
I  
S  
T  
R  
Y

- a** Both assertion and reason are true and reason is the correct explanation of assertion
- b** Both assertion and reason are true and reason is not the correct explanation of assertion
- c** Assertion is true and reason is false
- d** Assertion is false and reason is true



Memory-Based Questions

**?** Electron, proton, neutron and alpha particle have same value of kinetic energy. What is the correct order of de-Broglie wavelength?

C  
H  
E  
M  
I  
S  
T  
R  
Y

- a**  $\lambda_p = \lambda_n = \lambda_e = \lambda_\alpha$
- b**  $\lambda_\alpha < \lambda_n < \lambda_p < \lambda_e$
- c**  $\lambda_p = \lambda_e = \lambda_\alpha = \lambda_n$
- d**  $\lambda_\alpha < \lambda_p < \lambda_e < \lambda_n$

$$\lambda = \frac{h}{\sqrt{2mkE}}$$

$\lambda \propto \frac{1}{\sqrt{m}}$

mass:  $\alpha > n > p > e$

$\lambda_\alpha < \lambda_n < \lambda_p < \lambda_e$



Memory-Based Questions



Which of the following is/are correct?

Statement 1: BOD of polluted water may be 17 ppm.

Statement 2: BOD represents the amount of oxygen required to decompose biodegradable and non-biodegradable substances.

- a Statement 1 is correct and statement 2 is correct
- b Statement 1 is correct and statement 2 is not correct
- c Statement 1 is not correct and statement 2 is correct
- d Statement 1 is not correct and statement 2 is not correct

C  
H  
E  
M  
I  
S  
T  
R  
Y



0.10 M, 10 mL of an acid reacts with 30 mL of 0.05 M  $\text{Ca}(\text{OH})_2$  completely. The basicity of acid is:

- a 1
- b 2
- c 3
- d 4

$$\begin{aligned} \text{Equivalent of acid} &= \text{Equivalent of base} \\ 0.10 \times 10 \times n &= 0.05 \times 30 \times 2 \\ n &= \frac{30 \times 0.1}{2} \\ &= 1.5 \end{aligned}$$

C  
H  
E  
M  
I  
S  
T  
R  
Y

