

Memory-Based Questions

? Which of the following water soluble vitamin cannot be excreted easily?

C  
H  
E  
M  
I  
S  
T  
R  
Y

- a B<sub>1</sub>
- b B<sub>2</sub>
- c B<sub>6</sub>
- d B<sub>12</sub>



Memory-Based Question

Find the ratio of rotational kinetic energy to the total kinetic energy of a rolling solid sphere?

P  
H  
Y  
S  
I  
C  
S

Under pure rolling condition :  $v = \omega R$

$$\text{Translational } K.E = \frac{1}{2} mv^2$$

$$\text{Rotational } K.E = \frac{1}{2} \times \frac{2}{5} mR^2 \left(\frac{v}{R}\right)^2 = \frac{1}{5} mv^2$$

$$\text{Total } K.E : \frac{1}{2} mv^2 + \frac{1}{5} mv^2 = \frac{7}{10} mv^2$$

$$\text{So, } \frac{\text{Rotational } K.E}{\text{Total } K.E} = \frac{\frac{1}{5} mv^2}{\frac{7}{10} mv^2} = \frac{2}{7}$$



Memory-Based Questions



✓ Find  $\cos^{-1}\left(\frac{3}{10}\cos\left(\tan^{-1}\frac{4}{3}\right) + \frac{2}{5}\sin\left(\tan^{-1}\frac{4}{3}\right)\right)$ .

M  
A  
T  
H  
S

a 0

✓ b  $\frac{\pi}{3}$

c  $\frac{\pi}{6}$

d  $\frac{\pi}{2}$  or  $\frac{\pi}{4}$



Memory-Based Questions

Q-3



✓ If  $l_1$  is the tangent to the hyperbola  $\frac{x^2}{9} - \frac{y^2}{4} = 1$  and  $l_2$  is a straight line passing through  $(0, 0)$  and perpendicular to  $l_1$ . If the locus of point of intersection of  $l_1$  and  $l_2$  is  $(x^2 + y^2)^2 = \alpha x^2 + \beta y^2$ . Then, the values of  $\alpha + \beta$  is 5

M  
A  
T  
H  
S



Memory-Based Questions

CHEMISTRY

✓ A nucleus has 2 types of radioactive decays. The half life of first is 3 hours and for the second is 4.5 hours. Calculate the correct half life of nucleus.

- a 0.56 hours
- b 3.75 hours
- c 2.23 hours
- d 1.80 hours



Memory-Based Questions

CHEMISTRY

✓ Select the nitrogen atom having odd number of electrons.

- a  $N_2O_5$
- b  $NO_2$
- c  $N_2O$
- d  $N_2O_4$



SUBSCRIBE

Memory-Based Questions



✓ Which of the following s-block elements does not give flame test?

C  
H  
E  
M  
I  
S  
T  
R  
Y

- a Be
- b Na
- c Li
- d Rb



Memory-Based Questions



? Which of the following is a metalloid?

C  
H  
E  
M  
I  
S  
T  
R  
Y

- a Bi
- b Sc
- c Te
- d Hg

B  
Si  
Ge  
As  
Sb  
Te  
Po



Memory-Based Question

✓ If a ball of mass  $0.4 \text{ kg}$  moving with speed  $6 \text{ m/s}$  is hit by a bat and it returns with the same speed in opposite direction, then the impulse offered to it is

- a  $12 \text{ kg} - \text{m/sec}$
- b  $10 \text{ kg} - \text{m/sec}$
- c  $6 \text{ kg} - \text{m/sec}$
- d  $18 \text{ kg} - \text{m/sec}$

P  
H  
Y  
S  
I  
C  
S



Memory-Based Questions

✓  $\lim_{x \rightarrow 0} \frac{\cos(\sin x) - \cos x}{x^4}$  is equal to:

- a  $\frac{1}{4}$
- b  $\frac{1}{12}$
- c  $\frac{1}{6}$
- d  $\frac{1}{8}$

M  
A  
T  
H  
S



Memory-Based Questions

✓ Find the area bounded by  $y^2 = 8x$  and  $y^2 = 16(3 - x)$ .

M  
A  
T  
H  
S

- a 16
- b 8
- c 32
- d 64



Memory-Based Questions

?  $f: \mathbb{R} \rightarrow \mathbb{R}$   
 If function  $f(x) = x - 1$  and  $g(x) = \frac{x^2}{x^2+1}$  then  $f \circ g$  is:

M  
A  
T  
H  
S

- a One-one and onto
- b One-one but not onto
- c Onto but not one-one
- d Neither one-one nor onto



$$\frac{x^2 - (x^2 - 1)}{x^2 + 1} =$$

$$f(g(x)) = g(x) - 1 = \frac{x^2}{x^2+1} - 1$$

$$= \frac{-1}{x^2+1} \quad \begin{matrix} < 0 \\ > 0 \end{matrix}$$

Info

$$f(g(x)) = \frac{-1}{x^2+1} \rightarrow \text{even}$$

many-one



Memory-Based Questions



$$z^2 + z + 1 = 0, z \in \mathbb{C}. \text{ Find } \left| \sum_{k=1}^{15} \left( z^k + \frac{1}{z^k} \right)^2 \right| = \underline{30}.$$

M  
A  
T  
H  
S

8 Question  
↓  
6 → Easy

