

DAILY TEST SERIES FOR IIT-JEE 2009 FROM VIDYA DRISHTI

05.04.2009

Total time: 20 min

Matrix Match Type Questions

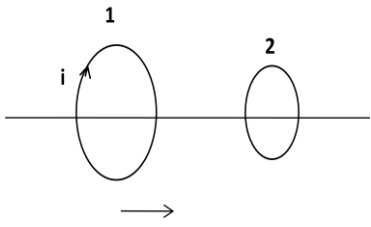
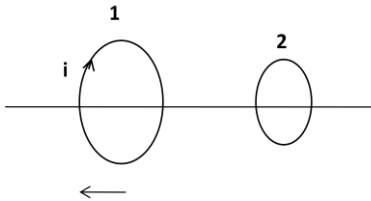
This section contains 3 questions. Each question contains statements given in two columns which have to be matched. Statements in **Column I** are labeled as A, B, C and D whereas statements in **Column II** are labeled as p, q, r and s. The answers to these questions have to be appropriately bubbled as illustrated in the following example.

If the correct matches are A-q, A-r, B-p, B-s, C-r, C-s and D-q, then the correctly bubbled matrix will look like the following:

	p	q	r	s
A	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
B	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
C	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
D	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

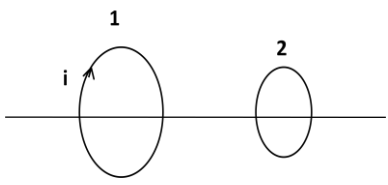

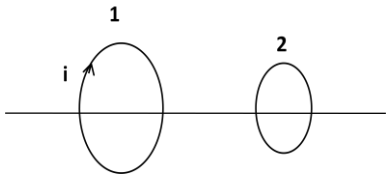

Physics

Two circular coils are mounted coaxially. The direction of current and movement of coil 1 are shown in column I. The corresponding effect on other coil has been given in column II.

	Column I		Column II
a	Coil 1 moves towards right; current i constant 	p	Repulsion between coils
b	Coil 1 moves towards right; current i constant 	q	Attraction between coil
c	Current i increasing ; coil stationary	r	Induced current in coil 2

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d	Current i increasing ; coil stationary	s	Induced current in coil 2
			

Chemistry

Match molecules the relative rate of S_N2 reaction taking place on substrates in column I.

	Column I		Column II
a	$\text{CH}_3\text{CH}_2\text{Br}$	p	0.0005
b	$\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{Br}$	q	2
c	$(\text{CH}_3)_2\text{CHCH}_2\text{Br}$	r	20
d	$(\text{CH}_3)_3\text{CCH}_2\text{Br}$	s	50

Mathematics

Match column I with column II

	Column I		Column II
a	$\sin^{-1} \sin 10$	p	$4 - \pi$
b	$\sin^{-1} \sin 5$	q	$2\pi - 6$
c	$\tan^{-1} \tan (-6)$	r	$3\pi - 10$
d	$\tan^{-1} \tan 4$	s	$5 - 2\pi$

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SOLUTION:

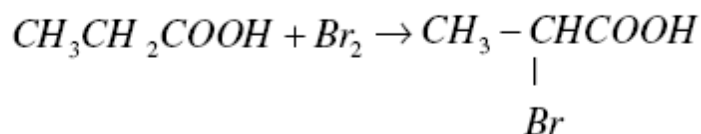
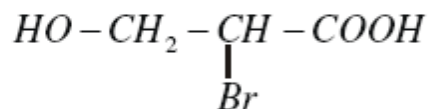
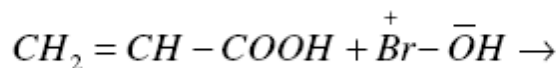
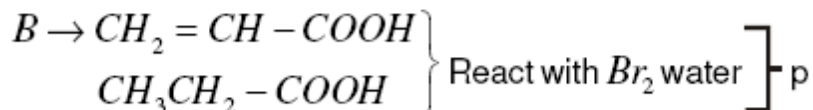
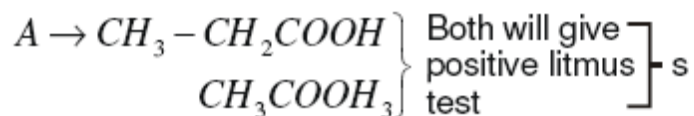
Physics

a → p, s; b → q, r; c → p, s; d → q, r

Hint: Use Lenz's law.

Chemistry

a → s; b → p; c → s; d → s



α - bromo acid

Hell-volhard-zelinsky (HVZ) reaction

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In such cases, the required angle α can be found easily by means of the graph of the function $y = \sin x$. Plot the number 10 on x-axis at the point P and find $\sin 10$ geometrically. (It is the ordinate PN) and then draw the horizontal line (i.e. the line $y = \sin 10$). The abscissa of one of the points intersection of this straight line with the graph lies at Q in the interval $[-\pi/2, \pi/2]$ and its sine is equal to sine 10. The abscissa of Q, say α , is the desired angle. It can be found easily by geometrical reasoning. It is easy to see that the point α and 10 are symmetric about the point $3\pi/2$ so that $10 - 3\pi/2 = 3\pi/2 - \alpha$, whence $\alpha = 3\pi - 10$.

Try to solve other parts