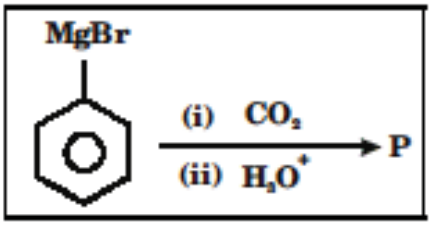
1. **Assertion (A): A solution of sucrose in water is dextrorotatory but on hydrolysis in presence of little hydrochloric acid it becomes laevorotatory.**
Reason (R): Sucrose on hydrolysis gives unequal amounts of glucose and fructose, as a result of which change in sign of rotation is observed.
(A) Both 'A' and 'R' are true and 'R' is the correct explanation of 'A'.
(B) Both 'A' and 'R' are true but 'R' is not the correct explanation of 'A'.
(C) 'A' is true and 'R' is false.
(D) 'A' is false and 'R' is true.

2. 

In the above reaction, product P is:
(A) 

(B) 

(C) 

(D) $C_6H_5COC_6H_5$

3. **The order of reactivities of the following alkyl halide for SN_2 reaction is:**
(A) RF > RCl > RBr > RI (B) RF > RBr > RCl > RI (C) RI > RBr > RCl > RF (D) RCl > RBr > RBr > RI

4. **A certain current liberates 0.504 g of hydrogen in 2 hours. How many grams of copper can be liberated by the same current flowing for the same time in $CuSO_4$ solution?**
(A) 12.7 (B) 16 (C) 31.8 (D) 63.5

5. **The molarity of pure water is:**
(A) 100 M (B) 55.5 M (C) 5.55 M (D) 18 M

1. If $A = \begin{bmatrix} 1 & 0 \\ \frac{1}{2} & 1 \end{bmatrix}$, then A^{100} is equal to:

(A) $\begin{bmatrix} 1 & 0 \\ \left(\frac{1}{2}\right)^{100} & 1 \end{bmatrix}$ (B) $\begin{bmatrix} 1 & 0 \\ 25 & 1 \end{bmatrix}$ C) $\begin{bmatrix} 1 & 0 \\ 50 & 1 \end{bmatrix}$ (D) $\begin{bmatrix} 1 & 0 \\ 100 & 1 \end{bmatrix}$

2. The plane $2x - y + 3z + 5 = 0$ is rotated through 90^0 about its line of intersection with the plane $5x - 4y - 2z + 1 = 0$. The equation of the plane in the new position is:

(A) $6x - 9y - 29z - 31 = 0$ (B) $27x - 24y - 26z - 13 = 0$

(C) $43x - 32y - 2z + 27 = 0$ (D) $26x - 43y - 151z - 165 = 0$

3. A man is known to speak the truth 3 out of 4 times. He throws a die and reports that it is a six. The probability that it is actually a six is:

(A) $\frac{3}{8}$ (B) $\frac{1}{5}$ (C) $\frac{3}{4}$ (D) $\frac{5}{8}$

4. The area bounded by $y = \cos x$, $y = x + 1$, $y = 0$ is:

(A) $\frac{3}{2}$ (B) $\frac{2}{3}$ (C) $\frac{1}{2}$ (D) $\frac{5}{2}$

5. A cylindrical gas container is closed at the top and open at the bottom. If the iron plate of the top is $\frac{5}{4}$ times as thick as the plate forming the cylindrical sides, the ratio of the radius to the height of the cylinder using minimum material for the same capacity is:

(A) $\frac{4}{1}$ (B) $\frac{1}{5}$ (C) $\frac{4}{5}$ (D) $\frac{20}{1}$