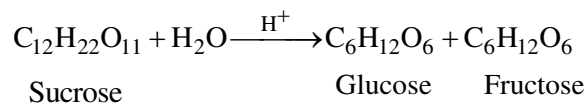


## SAMPLE PROBLEMS (CHEMISTRY)

1. Inversion of sucrose is studied by observing the angle of rotation –at time t

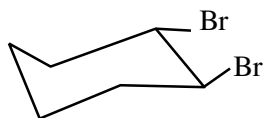


It was observed that  $(\gamma_\infty - \gamma_0) \propto a$  and  $(\gamma_\infty - \gamma_t) \propto (a - x)$ , where  $\gamma_0$ ,  $\gamma_t$  &  $\gamma_\infty$  –are the –angle of rotation in the beginning, –at time t and at the end of the reaction, respectively. From the following values, calculate the rate constant & the time at which the solution is optically inactive.

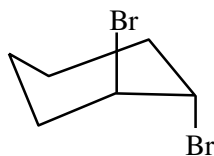
Time (min)	0.0	46.0	$\infty$
Rotation of polarized light (degree)	24.1	10.0	–10.7

- (a)  $0.011 \text{ min}^{-1}$  & 1.077 min.                      (b)  $0.011 \text{ min}^{-1}$  & 10.72 min.  
(c)  $0.011 \text{ min}^{-1}$  & 107.2 min                      (d)  $11 \text{ min}^{-1}$  & 107 min.
2. In polymeric  $(\text{BeCl}_2)_n$ , there are  
(a) three centre four electron bonds.              (b) three centre three electron bonds  
(c) two centre three electron bonds              (d) two centre two electron bonds
3. The oxidation state of Central Metal ion & Magnetic moment of Brown Ring complex  
(a) +1 & 2.8 BM    (b) +1 & 3.87 BM  
(c) +1 & 4.8 BM    (d) +2 & 4.89 BM
4. Self-protective oxide film on aluminum can be removed by  
(a) boiling aluminum with water                  (b) amalgamating with mercury  
(c) adding conc.  $\text{HNO}_3$                               (d) reacting with chlorine
5. In gaseous phase which alcohol is most acidic?  
(a)  $\text{Me}_3\text{COH}$     (b)  $\text{Me}_2\text{CHOH}$   
(c)  $\text{MeCH}_2\text{OH}$     (d)  $\text{MeOH}$
6. p – Xylene boils at a lower temperature than O-xylene  
(a) p – xylene molecule is symmetrical in Nature  
(b) o – xylene molecule is non-polar  
(c) p – xylene molecular is non - polar  
(d) o – xylene molecular is polar

7.



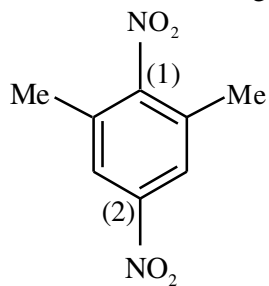
(I)



(II)

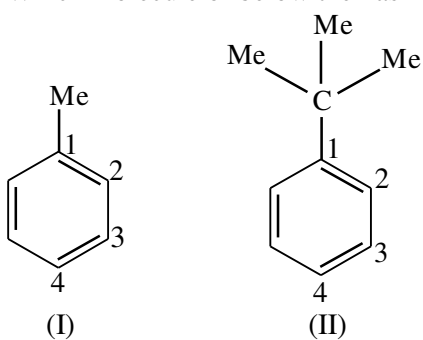
- (a) I is soluble in n-octane  
(b) II is soluble in  $\text{CH}_3\text{OH}$   
(c) Both are soluble in n-octane  
(d) I is soluble in  $\text{CH}_3\text{OH}$  but-II is soluble in n-octane.

8. Which C-N bond length in the below given molecule is large



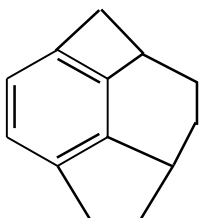
- (a) 1  
(b) 2  
(c) Both are equal in length  
(d) can't say

9. Which molecule of below the has highest electron density of C<sub>4</sub>.



- (a) I  
(b) II  
(c) Both have same  
(d) can't say

- 10.



This molecule is

- (a) Aromatic  
(b) Anti Aromatic  
(c) Non-Aromatic  
(d) None

**SAMPLE PROBLEMS**  
**(CHEMISTRY)**

- |        |        |        |        |         |
|--------|--------|--------|--------|---------|
| 1. (c) | 2. (a) | 3. (b) | 4. (b) | 5. (a)  |
| 6. (d) | 7. (d) | 8. (a) | 9. (a) | 10. (c) |